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A global open-source dataset of monthly irrigated and rainfed cropped areas (MIRCA-OS) for the 21st century

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Abstract

Crop production is among the most extensive human activities on the planet – with critical importance for global food security, land use, environmental burden, and climate. Yet despite the key role that croplands play in global land use and Earth systems, there remains little understanding of how spatial patterns of global crop cultivation have recently evolved and which crops have contributed most to these changes. Here we construct a new data library of subnational crop-specific irrigated and rainfed harvested area statistics and combine it with global gridded land cover products to develop a global gridded (5-arcminute) irrigated and rainfed cropped area (MIRCA-OS) dataset for the years 2000 to 2015 for 23 crop classes. These global data products support critical insights into the spatially detailed patterns of irrigated and rainfed cropland change since the start of the century and provide an improved foundation for a wide array of global assessments spanning agriculture, water resource management, land use change, climate impact, and sustainable development.

Background & Summary

Croplands account for 13% of the planet's habitable land^{1,2}. On the one hand, crop production is central to ensuring the food security of an ever-growing global population and supporting the livelihoods of more than a billion people. On the other hand, it exerts a profound influence on Earth systems – imposing substantial environmental burdens for water³, land⁴, greenhouse gas emissions^{1,2}, biogeochemical cycles⁵, and biodiversity^{6,7} and modifying land-atmosphere interactions. These benefits and impacts of crop production are highly dynamic across space and time and are in large part influenced by the specific crops being cultivated in a particular place^{1,2}. Given the outsized role that crop production will likely continue to play in determining the overall economic, social, and environmental sustainability of humanity, it is essential to better understand global patterns of cropped areas, how these patterns have recently evolved, and which crops have contributed most to these changes.

Several initiatives have begun to address the challenges of mapping spatial patterns and temporal trends in global irrigated and rainfed cropped areas. Datasets on the extent of rainfed and irrigated cropland have been developed at global⁸ and regional⁹ scales, but the limited spatial (i.e., restricted to specific regions) and temporal (i.e., constrained to particular years) coverage of these analyses hinders a comprehensive assessment of crop-specific changes since the beginning of the century. A growing number of studies have also attempted to map irrigated areas or crop types at global or national scales using satellite imagery and remotely sensed data⁹⁻¹¹. While these approaches provide finer spatial resolution, the resultant data products are often inconsistent with official statistics and do not combine information on irrigation status and crop type. Other datasets^{2,12,13} offer greater temporal coverage but at coarser spatial resolutions (i.e., national or sub-national administrative units), limiting their utility in spatially explicit assessments or modeling of rainfed and irrigated cropland changes. A few existing global gridded products on crop-specific irrigated and rainfed areas have also been developed – namely GAEZ¹⁴⁻¹⁶ (Global Agroecological Zones), SPAM¹⁷⁻¹⁹ (Spatial Production Allocation Model), and MIRCA2000²⁰ (Monthly Irrigated and Rainfed Cropped Areas) – with limitations on either temporal coverage or intra-annual granularity. While all of the efforts described above have provided valuable insights into aspects of either spatial patterns or temporal trends of global cropland areas, there remains a critical need for integrated information that is both spatially and temporally detailed on global changes in crop-specific irrigated and rainfed areas in the 21st century.

Here, we address this gap by developing the MIRCA-OS dataset, a global gridded (5-arcminute) crop-specific irrigated and rainfed cropped area dataset of the 21st century (2000-2015). Through an improved methodology based on that used for the MIRCA2000²⁰ dataset (Figure 1), we first leverage a global assessment of food production data²¹ to build a comprehensive data library of municipal- to national-scale crop-specific irrigated and rainfed harvested area statistics – covering 23 crop classes (Table 2) for all study years and all countries from the best available international and national data sources (Table 1). We then combine this data library with information on updated crop-specific and spatially detailed planting and harvesting dates^{22,23} to produce crop calendars for each administrative unit and crop. Within each administrative unit, crop-specific irrigated and rainfed harvested areas are spatially allocated to 5-arcminute grid cells based on a sequential and iterative downscaling approach constrained by information on crop-specific harvested area (HA)¹⁷⁻¹⁹, cropland extent (CE)^{24,25}, and area equipped for irrigation (AEI)²⁶. In doing so, we produce five main data products: 1) crop calendars for irrigated and rainfed crops (CC-I & CC-R), 2) monthly growing area grids of irrigated and rainfed areas (MGAG-I & MGAG-R), 3) maximum monthly growing area grids for irrigated and rainfed crops (MMGAG-I & MMGAG-R), 4) maximum monthly cropped area grids for irrigated and rainfed crops (MMCAG-I & MMCAG-R), and 5) annual harvested area

grids for 23 irrigated and rainfed crop classes. All data products, input datasets, code, and metadata are publicly available in HydroShare²⁷. We also provide aggregations at the 0.5° resolution to align with global assessment model needs. These data products hold great potential for enabling a new understanding of fine-scale patterns and temporal evolution of global irrigated and rainfed croplands and can contribute directly to informing multi-scalar efforts on food security, water sustainability, climate adaptation, and development at national and international levels.

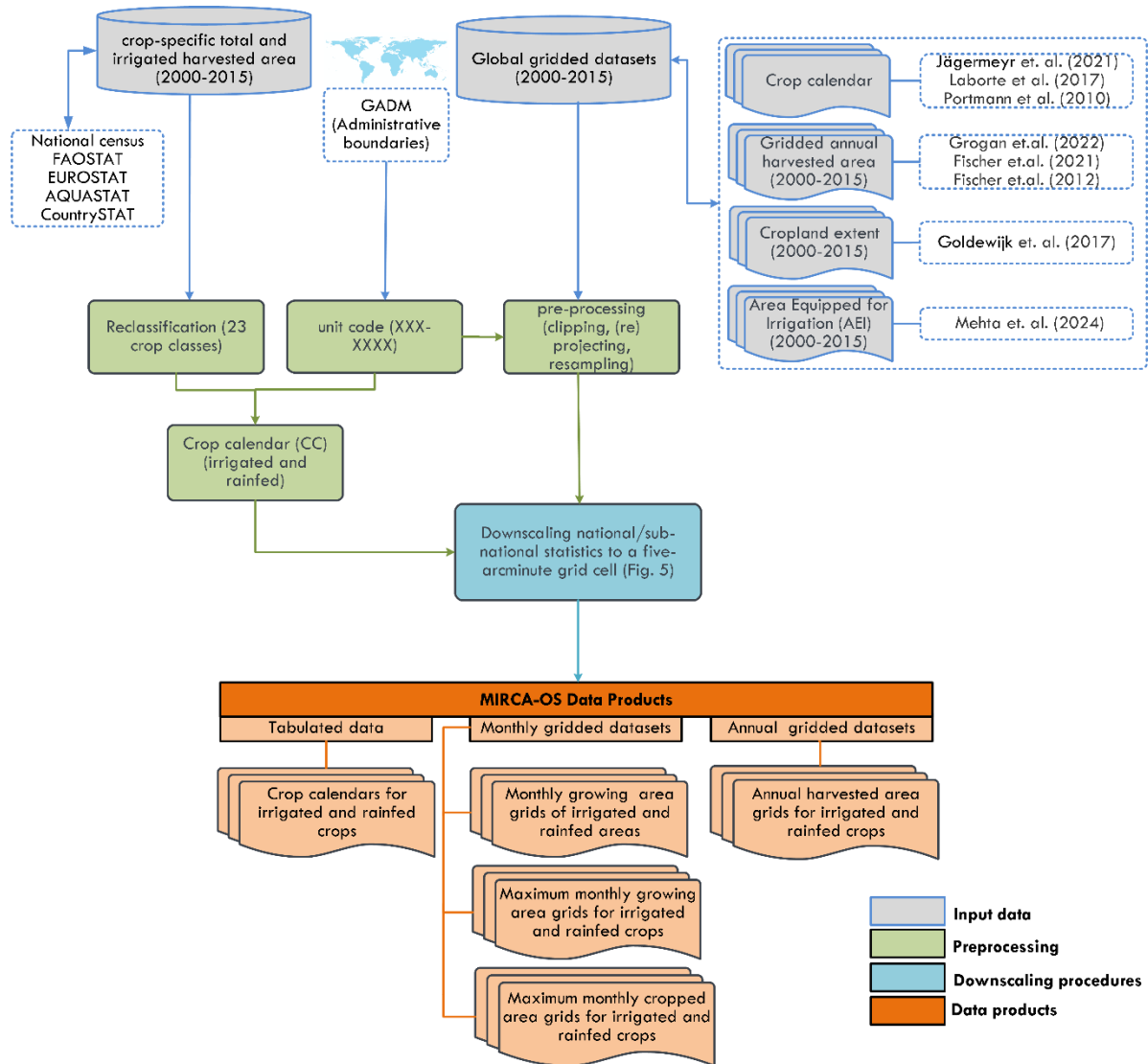


Figure 1. Workflow used to develop the MIRCA-OS dataset. A unit code is a seven-digit unique identifier assigned to each spatial unit. The first three digits correspond to the M49 United Nations country code, while the remaining four digits uniquely identify each spatial unit.

Methods

We develop global gridded (5-arcminute) maps of crop-specific irrigated and rainfed areas for 5-year timesteps from 2000 to 2015 for 23 crop classes – barley, cassava, cocoa, coffee, cotton, fodder grasses, groundnuts, maize, millet, oil palm, potatoes, pulses, rapeseed, rice, rye, sorghum, soybean, sugar cane, sugar beet, sunflower, wheat, other perennials, and other annuals (Table 2). The choice of spatial resolution is primarily to ensure consistency with other global gridded datasets, though our approach is readily adaptable to all resolutions. The selection of 2015 as the end of the study period is primarily due to the different years with which agricultural censuses occur within each country (ranging from -/+3 years before/after each time step; e.g., 2000 maps are based on agricultural censuses occurring from 1997-2003) as well as delays in reporting of each country's sub-national agricultural statistics (i.e., the year 2020 full census reports of most countries are not yet publicly accessible). Consequently, there is a significant delay between the agricultural year and the year of our latest MIRCA-OS products. To reduce this lag, better alignment between the timelines of census collection and reporting is necessary. As more census data becomes available, the MIRCA-OS will be extended to more recent years.

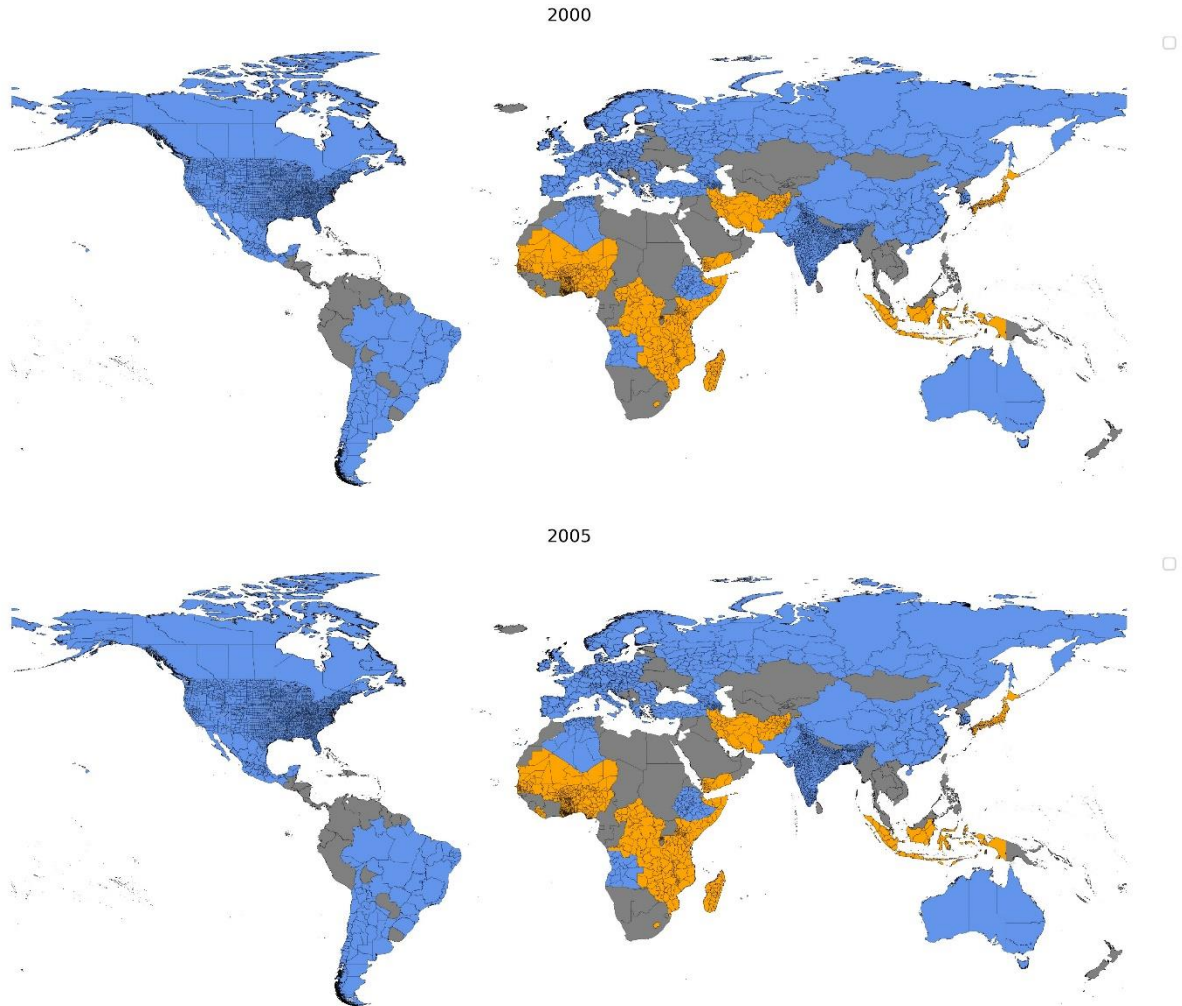
Table 1. Characteristics of input datasets used to generate MIRCA-OS.

Input dataset	Characteristics	Remarks
Administrative boundaries ²⁸ (2000-2015)	Shapefile of all spatial units' boundaries from GADM.	
Harvested area statistics (2000-2015)	Census-based statistics of total and irrigated harvested area at national and subnational units.	National census reports, national data portal, Eurostat ¹³ , FAOSTAT ² , AQUASTAT ²⁹ , CountrySTAT ³⁰ and Gambhir and Marston (2024) ³¹ . For detailed information, see Supplementary Table S1 and Supplementary Note 2.
Crop calendars for irrigated and rainfed crops ^{20,22,23,32}	A dataset provides planting and maturity months at a spatial unit or a 0.5° spatial resolution.	We used the latest crop calendars dataset for all crops except groundnuts, pulses, rice, and other annuals, while the MIRCA2000 crop calendar was used for groundnuts, pulses, and other annuals. RiceAtlas ³³ crop calendar was used for rice.
Cropland extent ²⁴ (2000-2015)	A HYDE3.2 5-arcminute gridded map of cropland extent.	
Area Equipped for Irrigation (AEI) ²⁶ (2000-2015)	5-arcminute gridded map of area equipped for irrigation.	
Gridded crop-specific annual harvested area ¹⁴⁻¹⁶ (2000-2015)	GAEZ and GAEZ+2015 Datasets: 5-arcminute gridded maps of crop-specific annual harvested areas.	A 5-arcminute gridded map of crops for 2000, 2010, and 2015. The 2005 maps were spatially interpolated.
Validation datasets ^{20,34-37}	To validate MIRCA-OS products against all available gridded data products.	

Data Sources

Administrative boundaries

Several input data sources were used to generate the MIRCA-OS datasets (Table 1). Spatial units were delineated using the official administrative boundaries from Global Administrative Areas²⁸ (GADM). We identified each spatial unit using a seven-digit unit code. The first three digits correspond to the M49 United Nations country code, while the remaining four digits are uniquely assigned to each spatial unit.³¹ Because of shifting political boundaries and differences in the level of disaggregation of crop statistics through time, we developed a unique map of global administrative boundaries for each time step in our analysis (Figure 2).



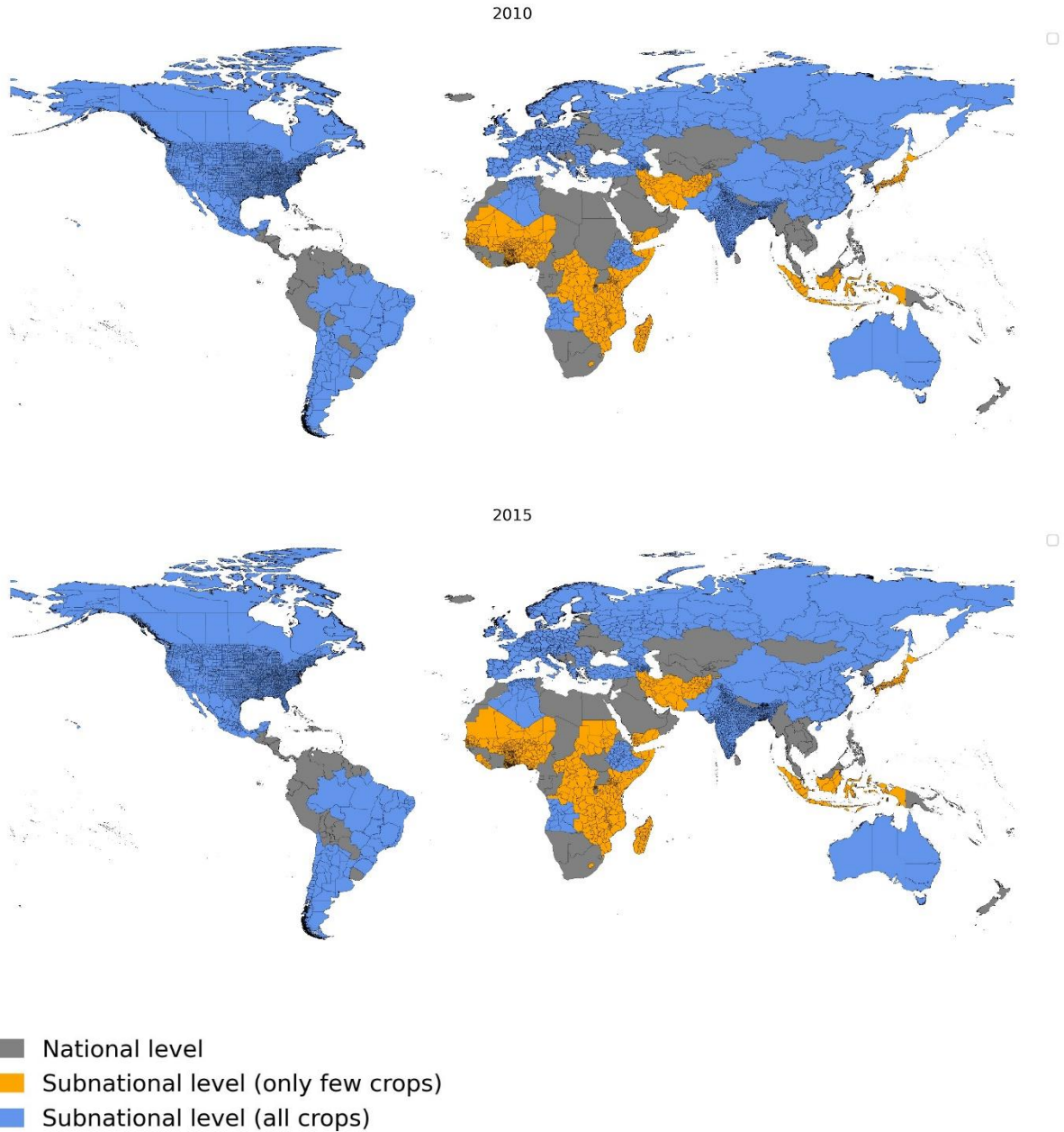


Figure 2. Administrative boundaries of spatial units used for spatial downscaling. Levels of spatial disaggregation are dependent on the detail provided within each country’s crop statistics and range from the municipal to national level.

Harvested area statistics

We developed a comprehensive data library of municipal- to national-scale crop-specific irrigated and rainfed harvested area statistics for all study years and all countries using a suite of international (i.e., FAOSTAT², AQUASTAT¹², CountrySTAT³⁰, USDA NASS³⁸, EUROSTAT¹³) and national (i.e., Ministries of Agriculture and/or Water Resources) sources. We gathered data for the finest spatial administrative level

available. Harvested area data at the municipal or district level were collected for Bangladesh (only for the year 2015), India (2005 to 2015), and the United States. Complete province-level data were gathered for 41 countries, while limited (e.g. in terms of number of crops or years with available data) province-level data were collected for 26 additional countries. For other countries, national-level data were collected, covering most countries in Africa and Asia, some regions in South America, and several small island nations. Comprehensive country-specific data descriptions are provided in Supplementary Table S1 and Note 2.

For countries where crop-specific irrigated harvested area data was available (i.e., the United States, Mexico, and India), data was taken directly from the national census. For various European countries, the total harvested and irrigated area data at the provincial level (according to the Nomenclature of Territorial Units for Statistics, or NUTS2) were gathered from EUROSTAT¹³. This data on crop-specific irrigated areas is available from 2000 to 2013, with gaps in the data for most countries—2010 being an exception where data coverage extends to all countries. However, irrigated area data from Greece, France, Italy, and Spain has fewer gaps relative to other countries for the whole period; in cases where only a single year's data on irrigated areas was available, the national-level irrigated areas collected from AQUASTAT²⁹ were allocated to each province assuming that the regional proportions remain constant for the target period. When more than one year of data was available, a linear interpolation was performed to estimate the crop-specific irrigated area for the target year. For some countries, while data on total harvested areas and areas equipped for irrigation were accessible at a subnational level, no specific statistics on irrigated areas for individual crops were available. For these instances, we used the proportion of area equipped for irrigation to the total harvested area within each spatial unit to assign the national-level irrigated area from AQUASTAT to each province. For other countries, subnational data on total harvested area were available for only a few crops, and there were no specific statistics on irrigated areas for individual crops. To address this, national-level irrigated areas were proportionally assigned to each spatial unit based on the total harvested area and area equipped for irrigation in each province. After assigning these crops, the remaining Crop Land Equivalent (CLE) and Area Equipped for Irrigation (AEI) were computed and used to allocate the remaining crops at the national level. For countries with no national census reports of total and irrigated harvested area for each crop, the national-level total harvested area came from FAOSTAT, and the irrigated harvested area came from AQUASTAT. The rainfed harvested areas were computed as the difference between total and irrigated harvested areas for each crop class and spatial unit. In cases where the irrigated harvested area was larger than the total harvested area, the rainfed harvested area was assumed to be zero.

Crop growing periods

Information on crop growing periods was taken from a recent global crop calendar dataset^{22,23}, which provides 0.5° gridded information on the planting and harvesting dates - disaggregated as irrigated and rainfed systems. Jägermeyr et al.²² combine various national and international observational sources to create a new composite crop calendar product. We used this source of crop calendars for barley, cassava, cotton, maize, millet, potatoes, rapeseed, rye, sugar beet, sugar cane, sorghum, soybeans, sunflower, and wheat. We used the RiceAtlas³³ Calendar for rice crops to account for multiple growing seasons. This approach was particularly important for addressing spatial units with more than two rice growing seasons, where we were unable to utilize the latest crop calendar data. For groundnuts, pulses, and other annuals, for which recent datasets did not provide information, we used the MIRCA2000²⁰ crop calendar. Cocoa, coffee, oil palm, fodder, other perennials, and sugar cane were classified as perennial crops.

Global gridded inputs

Gridded (5-arcminute) cropland extent (CE) came from the History Database of the Global Environment (HYDE) dataset²⁴. The latest version of the HYDE dataset, version 3.2, offers comprehensive data on land use and land cover from 10,000 BCE to 2015 AD²⁴. In our study, we utilized HYDE's annual maps of cropland extent spanning from 2000 to 2015. Gridded crop-specific total harvested area (HA) data at 5-arcminute resolution for the years 2000 and 2010 were obtained from the FAO/IIASA Global Agroecological Zones^{14,15} (GAEZ v4) dataset. The harvested area for the year 2005 was temporally interpolated for each crop and grid cell. The harvested area for the year 2015 data came from the recent GAEZ+15 update¹⁶. To define the extent of irrigated area of each 5-arcminute grid cell, we used recent gridded data on the area equipped for irrigation (AEI) for the years 2000 to 2015 from Mehta et al.^{26, 28,29,18-23}

Preprocessing:

Crop-specific harvested area data were reclassified into 46 crop classes (23 irrigated + 23 rainfed) (Table 2). Compared to the original MIRCA2000 dataset, we did not include date palm, citrus, and grapes due to a lack of gridded crop-specific HA information for those crop classes. These crops were grouped into the other perennials class. In most countries, the data on grain and silage for maize and sorghum were not reported separately. To ensure consistency for the few countries that distinguish these uses in their statistics, we aggregated the grain and silage harvested area for each of these crops into maize and sorghum crop classes. Consequently, the fodder crop category does not encompass the silage of maize and sorghum. Another significant challenge in harmonizing fodder crop classes arises from FAOSTAT no longer reporting these classes separately. As a result, our dataset relies entirely on national and regional census reports and the AQUASTAT database for the harvested area of fodder, potentially leading to underestimation in countries that did not include fodder crop classes in their census reports. The reclassification of all other crops into other annuals and other perennials was done according to the annual and perennial categories used by Monfreda et al.²¹.

All gridded input datasets were spatially preprocessed to ensure a consistent spatial resolution (5 arcminutes) and projection (WGS84). The gridded planting and harvesting dates for each crop in each spatial unit were assigned by extracting the majority of pixel values within each spatial unit. For certain crop classes, some cross-walking was required between MIRCA-OS and the GAEZ HA maps. The GAEZ HA map of stimulants was used in MIRCA-OS for both cocoa and coffee crop classes. The GAEZ HA maps for other cereals were used in MIRCA-OS for the rye crop class. The GAEZ HA map of other crops (NES) was split between other perennials and other annuals based on the proportions of annual and perennial crops of each spatial unit for each year – as determined from FAOSTAT. The GAEZ HA maps of banana, olives, and the perennial portion of NES crops were aggregated and reclassified in MIRCA-OS as other perennials. Similarly, the GAEZ HA maps for tobacco, yam, vegetables, and the annual portion of NES crops were aggregated and reclassified in MIRCA-OS as other annuals.

Table 2. Crop classes used for MIRCA-OS.

Crop classes	Crop name within crop class
Barley	Barley
Cassava	Tapioca; cassava
Coffee	Coffee
Cocoa	Cocoa
Cotton	Cotton
Fodder	Alfalfa; grasses and legumes; clover; hay; haylage, forage
Groundnuts	Groundnuts; peanuts
Maize	Maize; corn (both grain and silage) ; sweet corn; popcorn
Millet	Pearl millet; finger millet; small millet
Oil palm	Oil palm
Potatoes	Potato
Pulses	Chickpeas; pigeon peas; cowpeas; peas, beans; lentils; other Pulses
Rapeseed	Rapeseed; canola; mustard
Rice	Rice; paddy
Rye	Rye
Sugar beet	Sugar beet
Sugar cane	Sugar cane
Sorghum	Sorghum (grain and silage)
Soybeans	Soybean
Sunflower	Sunflower
Wheat	Spring soft wheat; winter soft wheat, durum
Others perennial	Abaca (manila hemp); agave fibers; almonds; apples; apricots; areca nuts (betel);avocados; bananas; berries; blueberries; brazil nuts; carobs; cashew nuts; cashew apple; cinnamon (canella) ; citrus fruit; coconuts; cranberries; currants; date palm, figs; fruit fresh; fruit tropical fresh; gooseberries; grapefruit and pomelos ; grapes; kapok fiber; kapok seed in shell; kola nuts; kiwi fruit; lemons and limes; mangoes and mate; natural gums; natural rubber;nutmeg, mace, and cardamon; nuts, other; olives; oranges; papayas; peaches and nectarines; pears; pepper; peppermint; persimmons; pineapples; pistachios; plantains; plums; pyrethrum, dried flowers; quinces; ramie; sisal; sour cherries; spices; stone fruit; strawberries; tangerines and mandarins; tea leaves; tung nuts; vanilla and walnuts
Others annual	Other crops not listed before

Data Quality Indicators

We assessed the quality of the harvested area statistics for each country using five criteria: 1) availability of subnational data (assessing the resolution from municipal to national level), 2) temporal consistency (evaluating the availability of consistent data throughout the study period), 3) synchrony (measuring how closely the timing of data collection matches the study period), 4) spatial consistency (determining whether the data covers the entire target area), and 5) availability of segregated irrigated and rainfed areas (checking if data is available separately for these categories). Each criterion was scored from 0 to 1 for each crop and country, and the total scores were summed, where a lower score represents poor data quality and a higher score represents high data quality (i.e. equal weightage was given to each metric). For irrigated statistics, we observe relatively lower total quality metric scores in 2000 and 2005 due to the unavailability of irrigated area data from AQUASTAT in the early 2000s (Figure 3). This data quality is similar across crops but widens in 2010 and 2015. For statistics on total harvested area, we see no substantial differences in data quality from 2000 to 2015 but with wide variation in data quality between crops (Figure 4).

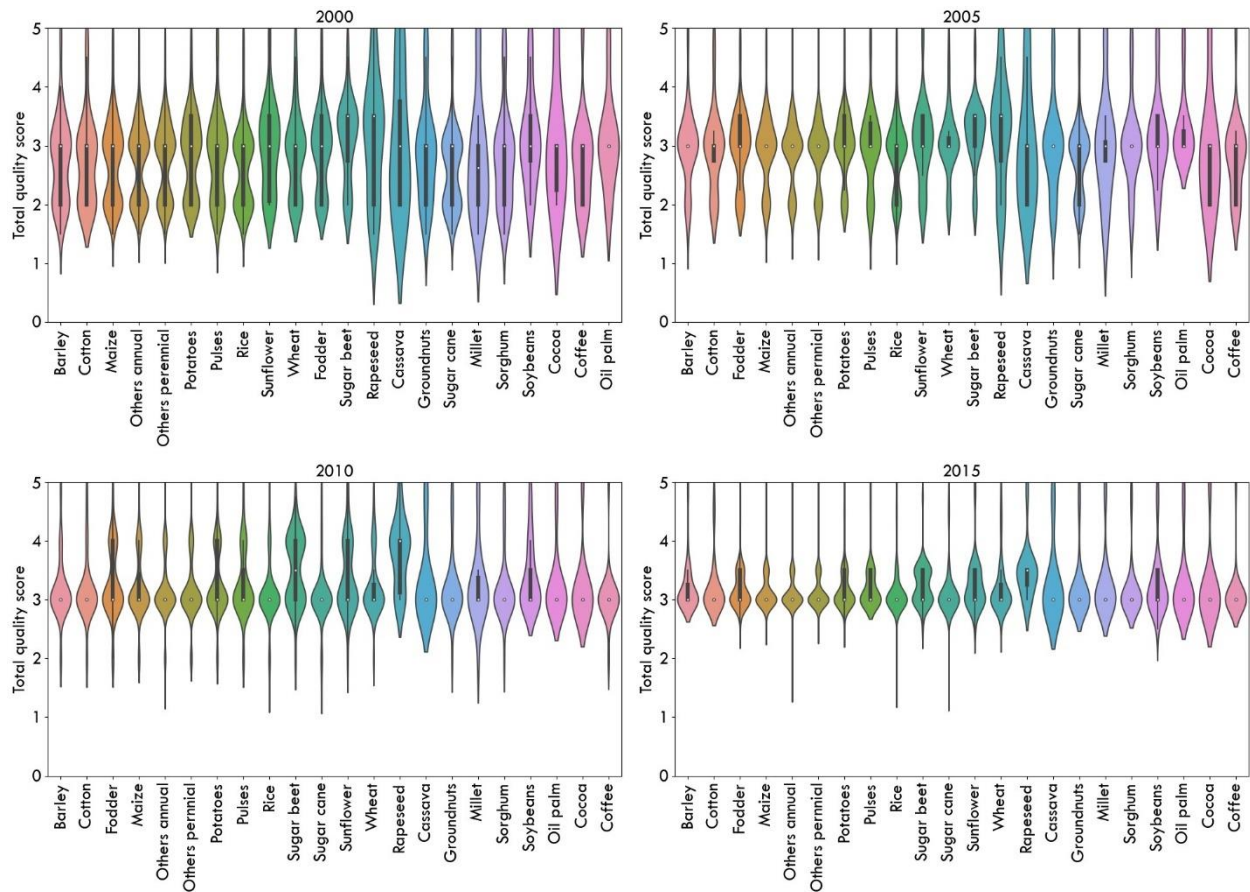


Figure 3. Distribution of total data quality scores for irrigated harvested area statistics. Each panel represents a different year, showing the distribution of total quality scores across various irrigated crops. A lower score represents poor data quality, while a higher score represents high data quality.

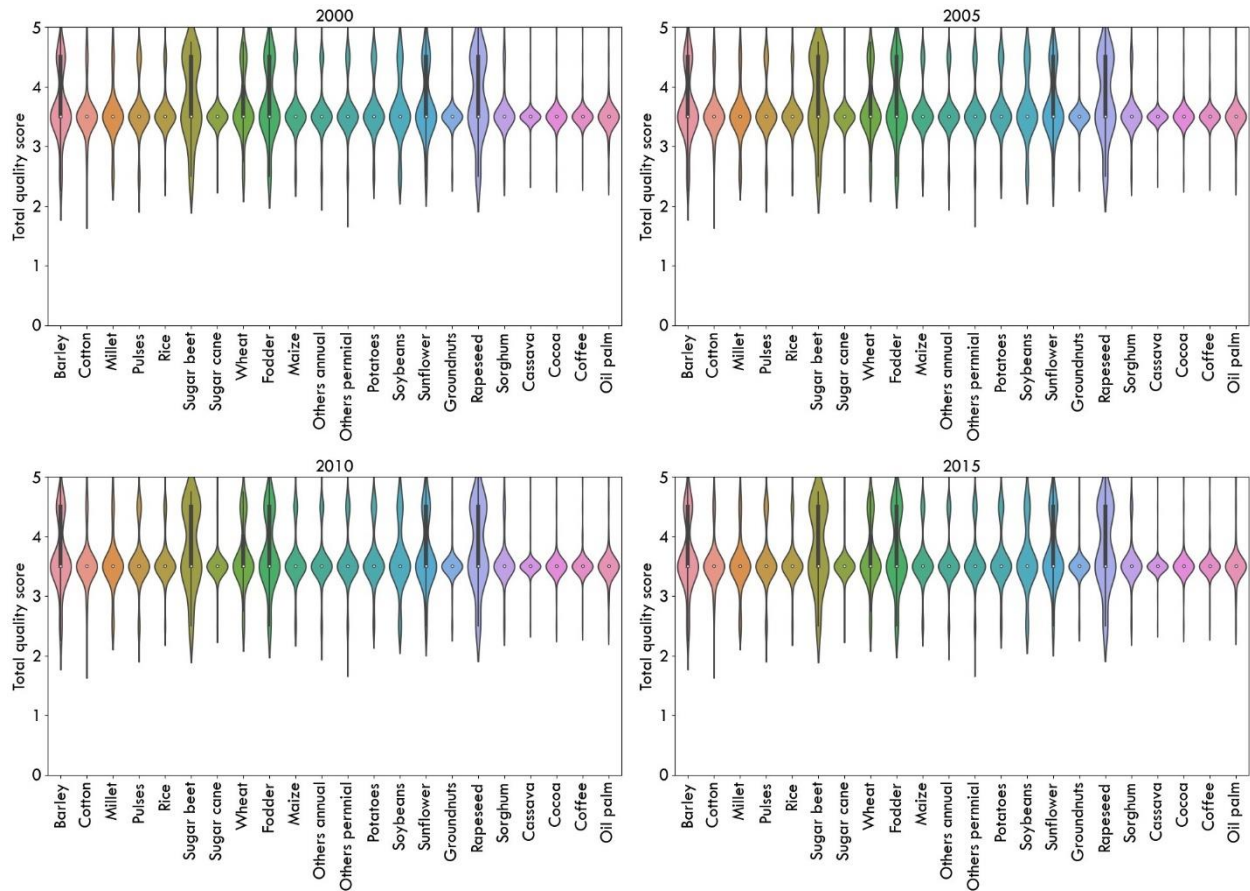


Figure 4. Distribution of total data quality scores for total harvested area statistics. Each panel represents a different year, showing the distribution of total quality scores across various crops. A lower score represents poor data quality, while a higher score represents high data quality.

Compilation of Crop calendars:

By combining the harvested area statistics along with the crop calendar, we develop monthly growing areas (i.e., Crop calendars (CC)) of irrigated and rainfed crops for each (sub-)national administrative unit. These temporally disaggregated CCs were necessary to enable the monthly spatial downscaling from the administrative unit to the grid cell. Two growing seasons were considered for wheat and three growing seasons for rice, based on the latest crop calendar^{22,23} and RiceAtlas calendars³³, respectively. For the irrigated other annuals class, up to five growing seasons were considered, while up to three growing seasons were considered for the rainfed other annuals class, according to the MIRCA2000²⁰ crop calendars. In comparison to MIRCA2000, the current version lacks multiple growing seasons for barley, maize, rye, and sorghum due to the constraints imposed by the availability of the latest crop calendar for multiple growing seasons. In many countries (excluding Bangladesh, China, most European Union countries with EUROSTAT data, India, Mexico, the Republic of Korea, and the United States), rice and wheat harvested areas are each reported as annual totals without differentiating per season. To allocate the irrigated harvested areas of wheat into multiple growing seasons (winter wheat and spring wheat), we used the FAO irrigated crop calendar²⁹, which provides the harvested area and growing season of major crops for the most recent available year (between 1987 and 2015, depending on the country). The

FAO irrigated crop calendar is not available for the entire study period, so we assumed that the seasonal distribution of those crops remained constant throughout our study period. We used this information to determine the proportion of total irrigated harvested areas of wheat to be allocated to the different growing seasons. The irrigated harvested areas of rice were allocated into up to three growing seasons (Rice1, Rice2, and Rice3) according to RiceAtlas³³ calendars and production dataset. For rainfed crops of rice, wheat, and other annuals, multiple cropping seasons were determined according to the MIRCA2000²⁰ crop calendar.

Spatial Downscaling to the Grid Cell Level:

We adopted an improved methodology that builds on that developed for the MIRCA2000²⁰ (monthly irrigated and rainfed cropped areas for the year 2000) dataset (Figure 5). Each administrative 'unit's crop-specific irrigated and rainfed harvested area was downscaled to each eligible five-arcminute grid cell falling within the administrative unit, with limits on eligible area determined by data on the gridded crop-specific harvested area (HA), cropland extent (CE), and area equipped for irrigation (AEI). All of the gridded datasets (AEI, CE, and HA) have inconsistencies as they come from different sources. For instance, in some locations, AEI pixel values were larger than CE values. To minimize these inconsistencies, we employed a stepwise prioritization strategy during the downscaling process (Table 3). While downscaling, the highest priority was given to ensure the sum of a crop-specific irrigated area at each grid cell is lower than or equal to the AEI. For any amounts of harvested area that remained to be allocated within the administration unit after meeting this highest priority, we then spatially distributed these harvested areas to maximize the consistency of each grid's crop-specific irrigated and rainfed areas with CE and HA (Table 3)

Table 3. Priority level for downscaling a CC of each administrative unit to growing area grids. The procedure was adapted from MIRCA2000²⁰. Priority 1 was given the highest priority to ensure the sum of crop-specific irrigated areas at each grid cell is lower than or equal to the AEI. We aimed to maximize the consistency between crop-specific irrigated and rainfed areas at each grid cell with the CE and HA data.

Priority	Input dataset	Goal
1	Area equipped for irrigation ²⁶ (AEI)	In each month and grid cell, the total irrigated area is less than or equal to the corresponding area equipped for irrigation.
2	Cropland extent ²⁴ (CE)	In each month and grid cell, the combined area of crop-specific irrigation and rainfed areas is less than or equal to the cropland extent.
3	Total harvested area ¹⁴⁻¹⁶ (HA)	In each grid cell and crop class, the combined yearly harvested area for irrigated and rainfed crops is equal to the total harvested area for that particular crop.

The downscaling procedure was sequential and iterative, consisting of seven distinct steps: four to assign irrigated areas and three more to assign rainfed areas. The allocation of irrigated and rainfed areas was performed crop by crop and spatial unit by spatial unit. After each step, the sum of downscaled grid cell harvested areas was compared with the total crop-specific harvested area of the CC; if all of a crop's harvested area was not distributed after completing a step, then we proceeded to the subsequent step (Figure 5). All steps of the spatial downscaling procedure are summarized below, and detailed downscaling methods are available in Supplementary Note 1.

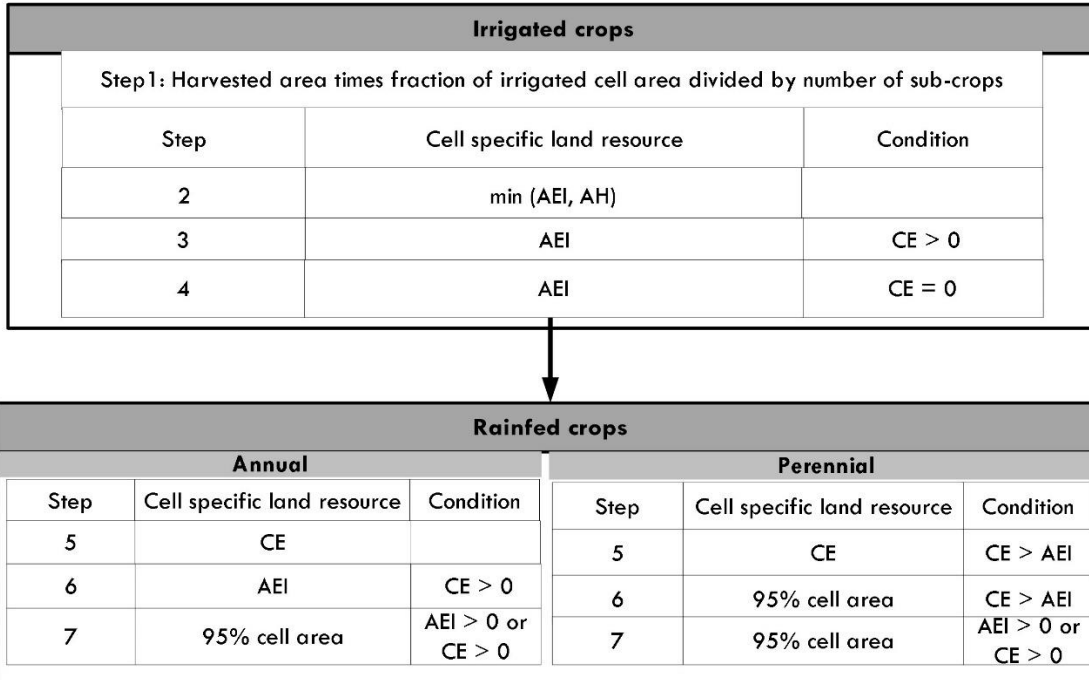


Figure 5. Procedure for spatial downscaling. Ordering sequences for downscaling growing areas of each spatial unit from the crop calendar (CC) to a 5-arcminute grid cell level, constrained by available land resources (CE, AH, and AEI). The specified conditions dictate the requirements for assigning cell-specific irrigated and rainfed growing areas. Adapted from Portmann et al²⁰.

In this study, harvested area is defined as the total area from which a specific crop is harvested in a given growing season or year. It accounts for multiple harvests of the same crop in a year. In contrast, growing area refers to the total area where a specific crop is cultivated from planting to harvest.

In step 1, the irrigated growing area of each crop in a specific grid cell during any month of the growing period was estimated as the product of the total harvested area (HA) of the crop and a fraction of the grid cell area equipped for irrigation (AEI), divided by the number of sub crops. For crops with multiple growing seasons, the irrigated growing area was equally distributed among each sub-crop, ensuring that the total did not exceed the AEI for any grid cell. After completing each step, the sum of the allocated cell growing areas within each spatial unit was compared to the monthly growing area of the calendar unit in the CC. This comparison was conducted to verify whether the full growing area was assigned or if additional areas needed to be allocated in the subsequent step.

To determine which crop statistics to allocate first, all irrigated crops were ranked based on their irrigated harvested area within each administrative unit (starting with the crop with the largest harvested area) and the corresponding crop category. While assigning ranks, perennial crops (sugar cane, oil palm, cocoa, and coffee) were processed first, followed by other perennials and fodder crops. This prioritization is due to the limited flexibility in allocating the growing area for perennial crops. Annual crops (barley, cassava, cotton, fodder, groundnuts, maize, millet, potatoes, pulses, rapeseed, rice, sorghum, soybeans, sunflower, and wheat) were then processed, followed by the other annuals crop classes. Following their ranking, Steps 2 through 4 were computed for each crop reported in an administrative unit iteratively based on their rank, starting from the top-ranked crop, and then these steps were repeated iteratively for each subsequent crop, accounting for the remaining AEI and CE.

After each step, the maximum cumulative irrigated area assigned for all preceding crops was determined by selecting the maximum total irrigated area assigned during the growing months of the processed crops. The irrigated area still available after each step was estimated as the difference between the cell-specific area equipped for irrigation (AEI) and the maximum cumulative irrigated area assigned in the previous step/s. The total harvested area available was also estimated as the difference between the HA in the grid cell and the total area allocated in the previous step/s. This ensured that the cumulative monthly growing area assigned for each crop and month did not exceed the area equipped for irrigation or the upper bound of the total harvested area.

In step 2, irrigated growing areas for each crop and sub-crop were allocated based on the available AEI and HA in each grid cell. After determining the available AEI and HA, the minimum value of the two was allocated in this step. In step 3, the irrigated growing area of each crop and sub-crop was assigned to the remaining AEI after the previous steps for grid cells with a cropland extent value greater than zero. In step 4, the remaining harvested area in the calendar unit was allocated to the amount of AEI left after the previous steps were completed, even if the grid cell had no cropland extent.

After allocating the irrigated growing areas for all sub-crops, steps 5 to 7 were performed to assign the rainfed growing areas for each sub-crop and grid cell. The remaining cropland extent after assigning the irrigated areas was determined as the difference between the cell-specific CE and the total assigned irrigated area from steps 1 to 4. In step 5, the rainfed growing areas for each annual crop and sub-crop were allocated based on the remaining cropland extent after the previous steps. Perennial crops were allocated to grid cells not occupied by AEI. In steps 6 and 7, rainfed areas could be distributed beyond the cropland extent, taking into account the available area constrained to AEI and 95% of the grid cell area²⁰. We utilize only 95% of the cell area to account for other land uses (e.g., roads and settlements).

Data Records

Each annual and monthly gridded dataset is in standard raster format (GeoTIFF/NetCDF) with global coverage (180°E–180°W; 90°S–90°N) and a 5-arcminute (approximately 10km x 10km at the equator and using the WGS84 coordinate system). The crop calendars for irrigated and rainfed crops from 2000 to 2015 are also available in CSV format. The dataset also includes metadata that provides an overview of the dataset characteristics. A detailed description of each dataset is provided below.

Crop Calendar for 23 irrigated and rainfed crops:

Description: A crop calendar (CC) presents tabulated data compiled by combining agricultural statistics of various spatial units and their corresponding cropping calendars. Each entry in the CC includes the unit code, crop or sub-crop name, number of sub-crops, categorization (perennial, annual, fodder, or others), annual harvested area, and planting and maturity months. Separate crop calendars were prepared for both irrigated and rainfed crops for the years 2000, 2005, 2010, and 2015.

File format: CSV

Period: 2000 to 2015

File name: MIRCA-OS_year_system_version

Unit: harvested area (ha)

Where 'year' signifies the data year, and the 'system' indicates whether the harvested area pertains to an irrigated (assigned as 'ir') or rainfed (assigned as 'rf') system. 'Version' represents the version of the dataset.

Repository: HydroShare²⁷

Monthly growing area grids (MHAG) for 23 irrigated and rainfed crops:

Description: This dataset presents monthly growing area grids for 23 irrigated and 23 rainfed crops, in a spatial resolution of 5 arcminutes, for the years 2000, 2005, 2010, and 2015 (Figure 6). It depicts the growing area of each crop per spatial unit within a grid cell from planting to maturity month.

File format: NetCDF

File name: MIRCA-OS_Crop_subcrop_year_system_version

where 'crop' denotes the crop name, 'subcrop' indicates multiple cropping. A numerical value is assigned to each subcrop following the crop name. For example, 'Rice1' signifies the rice crop growing in the first season. 'year' signifies the data year, and 'system' indicates whether the growing area pertains to an irrigated (assigned as 'ir') or rainfed (assigned as 'rf') system. 'Version' is the version of the dataset.

Spatial Metadata:

Extent X: -180° to +180°

Extent Y: -90° to +90°

Extent Z (month): A numeric value ranging from 1 to 12, each representing a monthly harvested area layer for each month with 5 arcminutes spatial resolution.

Resolution: 5-arcminutes (0.083333 decimal degrees)

Coordinate reference system: longitude/latitude (WGS84 datum)

Units: growing area (ha)

Repository: HydroShare²⁷

Maximum monthly growing area grids (MMHAG) for 23 irrigated and rainfed crops:

Description: This dataset presents the maximum monthly growing area grids for 23 irrigated and 23 rainfed crops, in a spatial resolution of 5 arcminutes, for the years 2000, 2005, 2010, and 2015. A maximum monthly grid was determined as the maximum pixel value within each monthly grid without taking multiple cropping into account. These datasets are crucial for users keen to know about non-seasonal crop-specific maximum irrigated and rainfed harvested areas. Particularly for user groups aiming to simulate cropping seasons independently through various dynamic vegetation models, the MMHAG dataset proves to be highly beneficial ²⁰.

File format: Geotiff

File name: MIRCA-OS_crop_year_system_version

where 'crop' represents the crop name, 'year' signifies the data year, and 'system' indicates whether the harvested area pertains to an irrigated (assigned as 'ir') or rainfed (assigned as 'rf') system, 'version' is the version of the dataset.

Spatial Metadata:

Extent: X: -180° to +180°

Extent Y: -90° to +90°

Resolution: 5-arcminutes (0.083333 decimal degrees) and 30-arcminutes (0.5 decimal degrees)

Coordinate reference system: longitude/latitude (WGS84 datum)

Units: harvested area (ha)

Repository: HydroShare²⁷

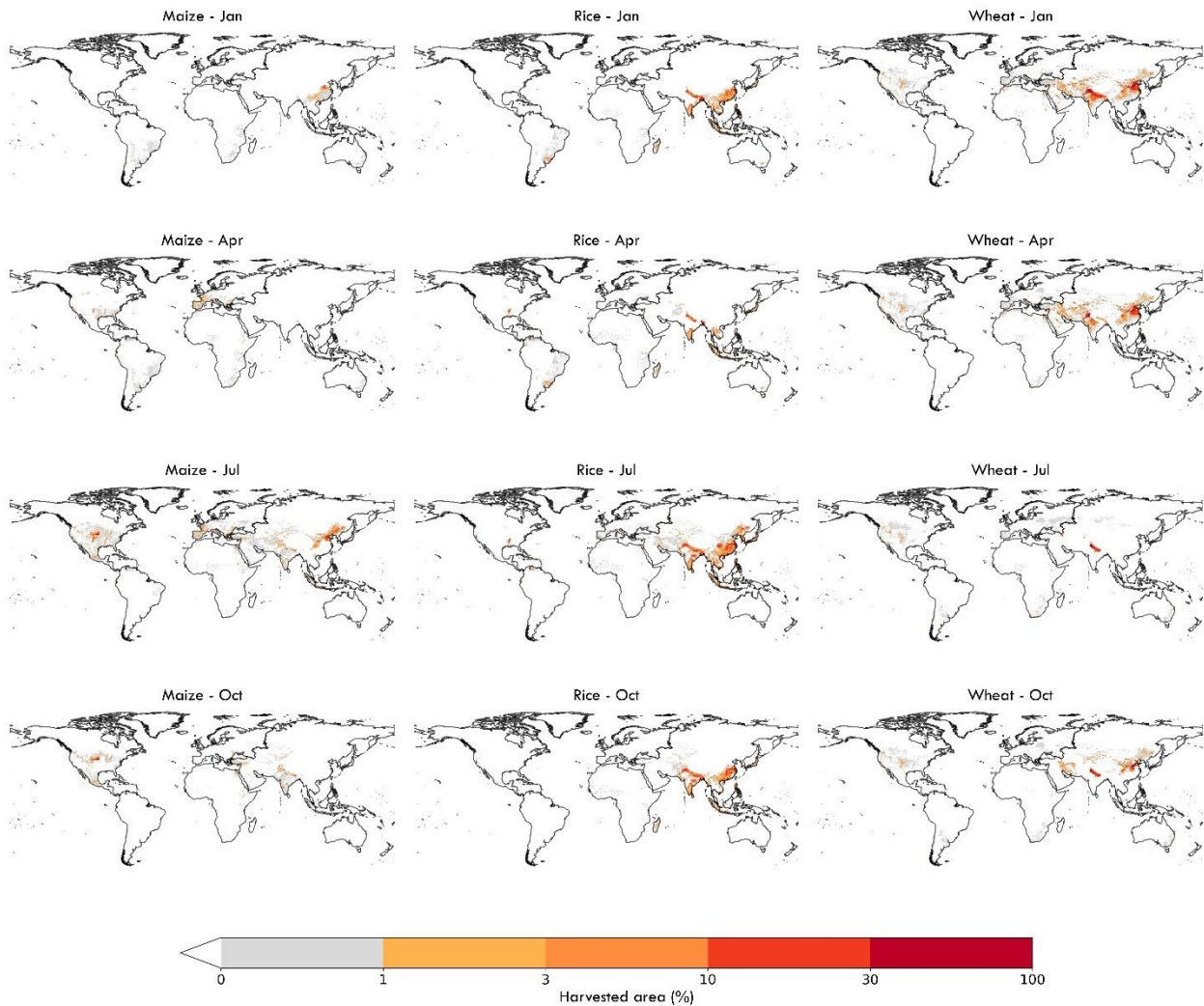


Figure 6. The global monthly irrigated area of selected crops in the year 2015. Panels show monthly irrigated area maps for maize, rice, and wheat for the months of January, April, July, and October. Pixel values represent the percentage of a crop’s harvested area relative to the grid cell area.

Maximum monthly cropped area grids (MMCAG) for either all irrigated crops, all rainfed crops, or the total of irrigated and rainfed crops

Description: These datasets represent the maximum monthly cropped area grids for 23 irrigated and 23 rainfed crops, in a spatial resolution of 5 arcminutes, for the years 2000, 2005, 2010, and 2015. The maximum monthly cropped area grids of irrigated and rainfed crops were determined by summing the monthly growing area grids of all crops and then selecting the maximum grid cell value from those summed areas. These datasets reveal the maximum monthly cropping extent or the maximum share of the irrigated and rainfed cropping area used in a particular year.

File format: Geotiff

File name: MIRCA-OS_year_system_version

where 'year' signifies the data year, and 'system' indicates whether the harvested area pertains to an irrigated (assigned as 'ir'), rainfed (assigned as 'rf') system or total (assigned as 'tot'), 'version' is the version of the dataset.

Spatial Metadata:

Extent X: -180° to $+180^{\circ}$

Extent Y: -90° to $+90^{\circ}$

Resolution: 5-arcminutes (0.083333 decimal degrees) and 30-arcminutes (0.5 decimal degrees)

Coordinate reference system: longitude/latitude (WGS84 datum)

Units: harvested area (ha)

Repository: HydroShare²⁷

Annual crop harvested area grids for 23 irrigated and rainfed crops:

Description: These data represent annual harvested area grids of 23 irrigated and 23 rainfed crops in 5 arcminutes spatial resolution for 2000, 2005, 2010, and 2015 (Figure 7 and Figure 8). For crops with single cropping season, the annual crop harvested area was determined as the maximum pixel value of that specific crop's monthly harvested area grids. For those crops with multiple cropping, an annual harvested area was determined as the sum of each sub-crop's maximum monthly harvested area grids.

File format: Geotif

File name: MIRCA-OS_crop_year_system_version

Period: 2000 to 2015

where 'crop' represents the crop name, 'year' signifies the data year, and 'system' indicates whether the harvested area pertains to an irrigated (assigned as 'ir') or rainfed (assigned as 'rf') system, 'version' is the version of the dataset.

Spatial Metadata:

Extent X: -180° to $+180^{\circ}$

Extent Y: -90° to $+90^{\circ}$

Resolution: 5-arcminutes (0.083333 decimal degrees)

Coordinate reference system: longitude/latitude (WGS84 datum)

Units: ha

Repository: HydroShare²⁷

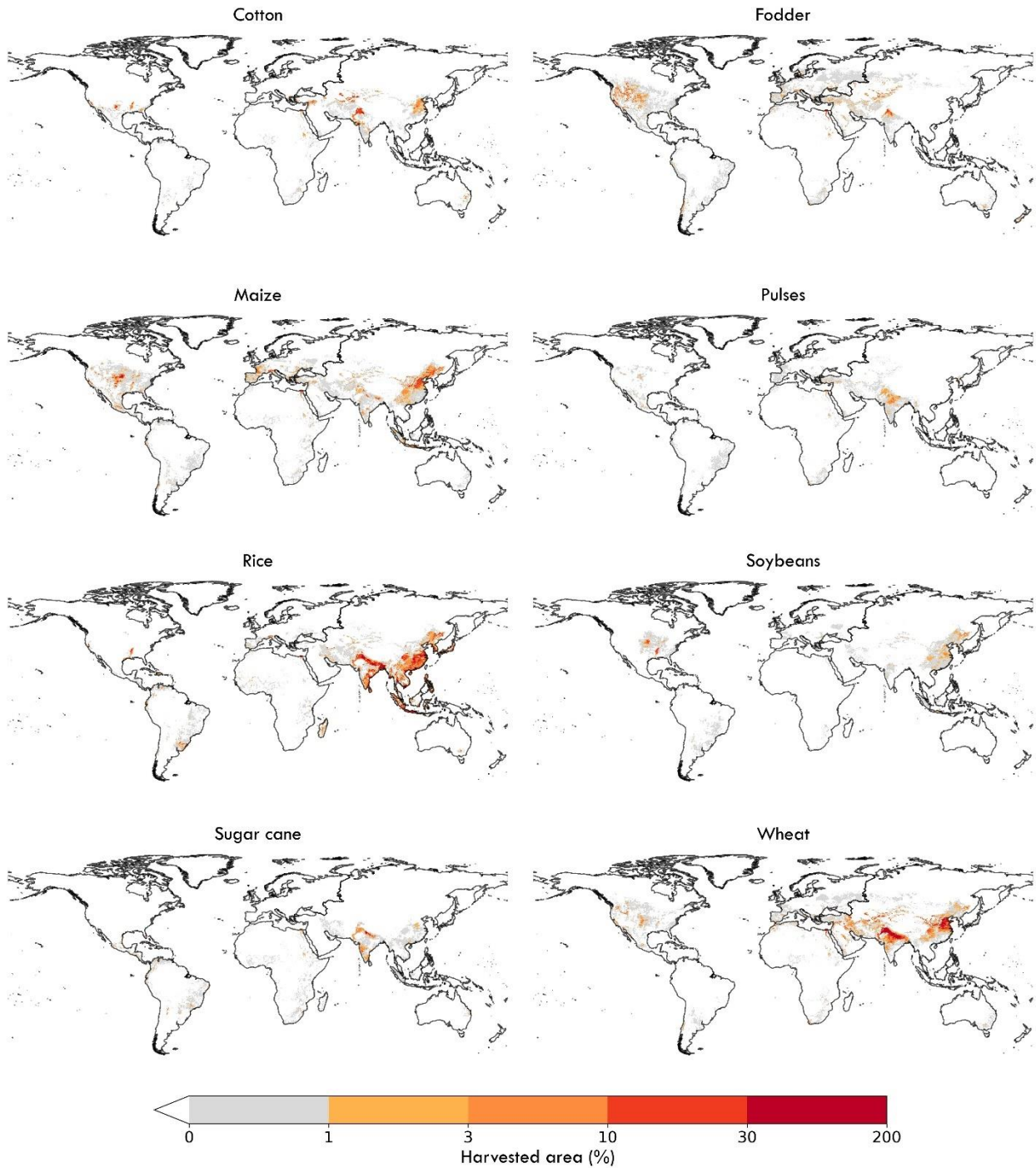


Figure 7. Global irrigated areas of selected crops in the year 2015. Pixel values show the harvested area as a percentage of the grid cell area.

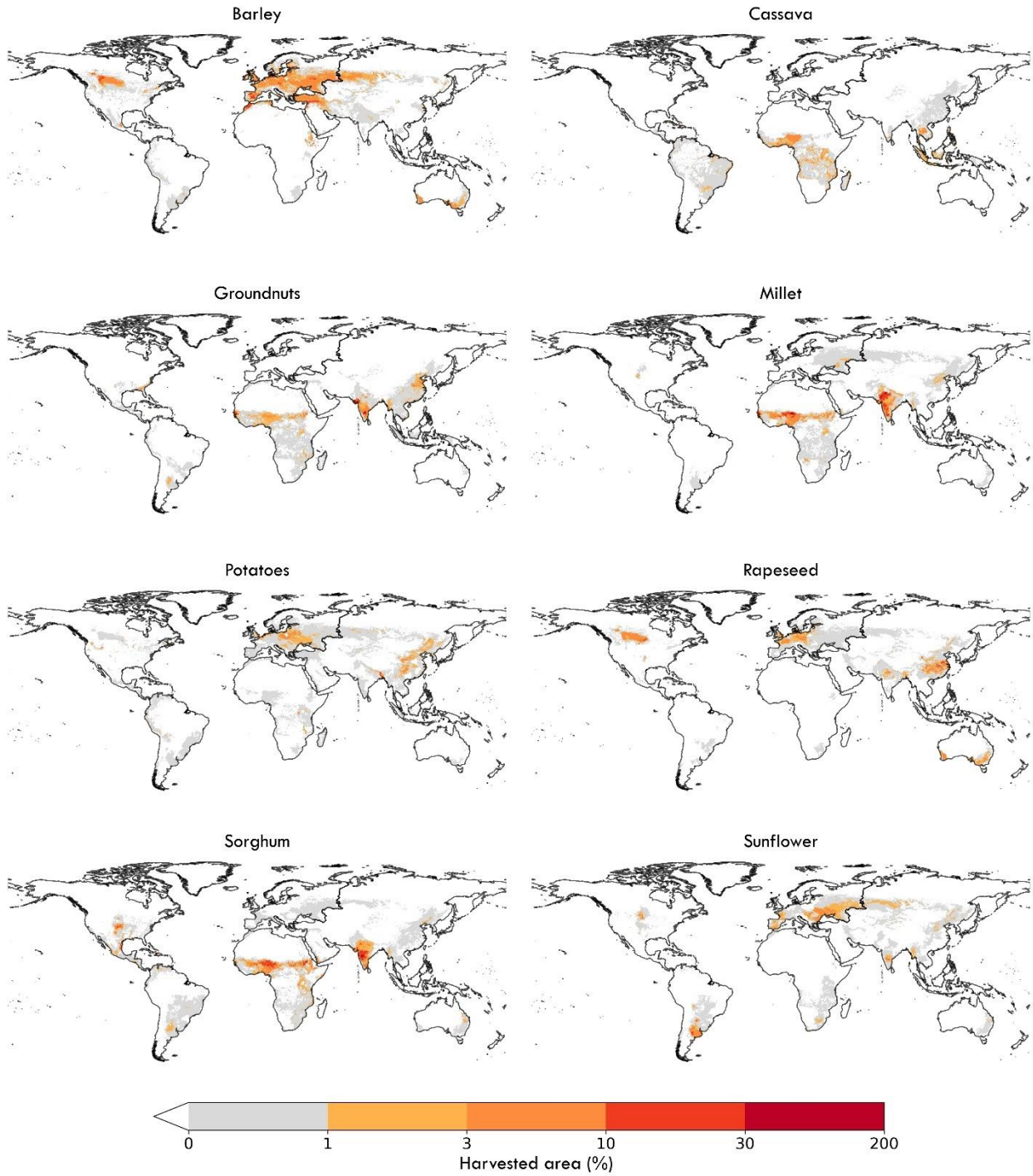


Figure 8. Global rainfed area of selected crops in the year 2015. Pixel values show the harvested area of rainfed crops in the year 2015 as a percentage of grid cell area.

Technical Validation

Global comparisons

The MIRCA-OS dataset was compared against all available comparable global and regional data products on crop-specific irrigated areas. First, we compared the presence/absence and relative difference of crop-specific irrigated and rainfed harvested areas between MIRCA-OS for the year 2000 and the original MIRCA2000 dataset for four major crops — maize, rice, soybeans, and wheat (Figure 9). The spatial agreement between the MIRCA-OS and MIRCA2000 datasets is also depicted in stacked bar charts, demonstrating the agreement levels for irrigated and rainfed crops ranked from highest to lowest agreement (Figure 11 and Figure 12). In addition, we also quantified the level of agreement between the two datasets using the intersection over union (IoU) score (Table 4), which is the ratio of the area of intersection to the area of union³⁹. The IoU scores enable quantifying a pixel-level similarity between the crop-specific harvested area of MIRCA-OS and MIRCA2000 datasets.

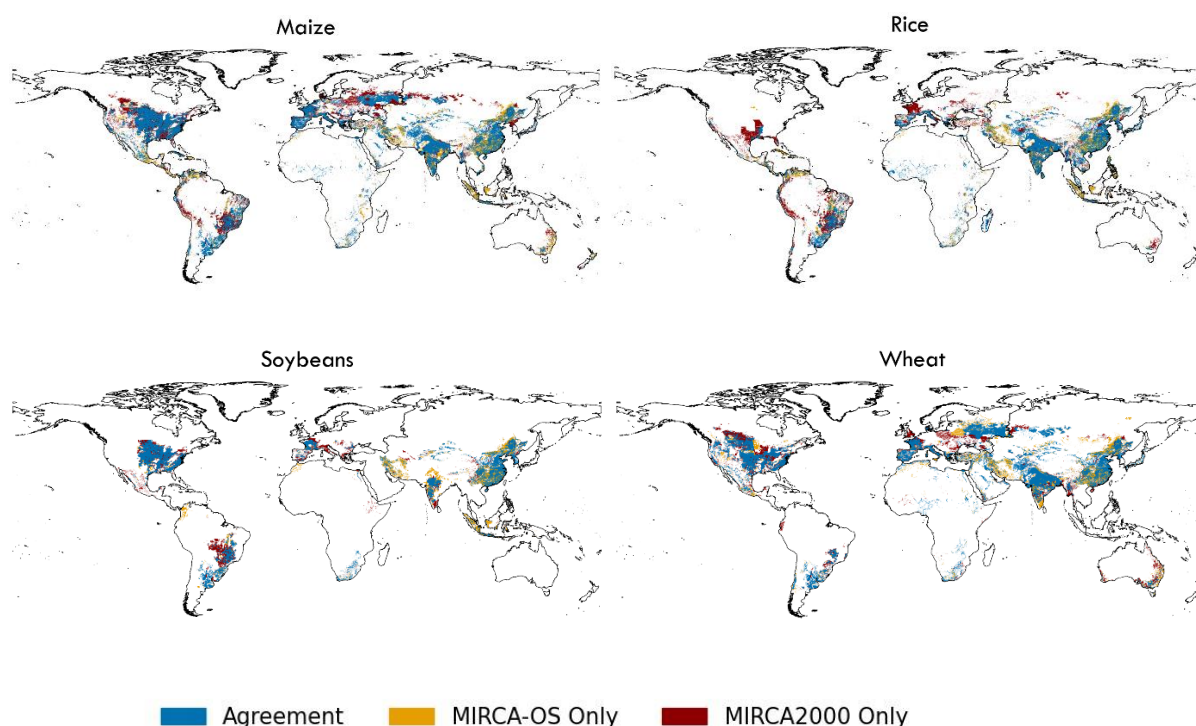


Figure 9. Pixel-level spatial agreement between MIRCA-OS and MIRCA2000. Locations of agreement (depicted in blue) or disagreement (depicted in orange and red) are shown for the irrigated extent of four primary crops—maize, rice, soybeans, and wheat – for the year 2000.

The presence/absence maps (Figure 9) and relative difference maps (Figure 10) show that the two datasets agree well overall. However, for maize in Russia, India, and China and for wheat and soybeans in the United States, the datasets exhibit a higher absolute relative difference. Given the differences in input datasets (including CE, HA, and AEI) and underlying statistics between MIRCA-OS and MIRCA2000, some differences are not surprising (e.g., rice in Peru, Spain, and France (except two provinces); wheat in Canada, Poland, and the United Kingdom; soybeans in central Brazil). Across all study crops, we find the most extensive agreement for maize, other annuals, and wheat, with lower levels of agreement for cassava, cocoa, and oil palm (Figures 10 to 11). Low levels of agreement with the original MIRCA2000

dataset for certain crops were primarily attributable to improved and more refined underlying crop-specific harvested area statistics.

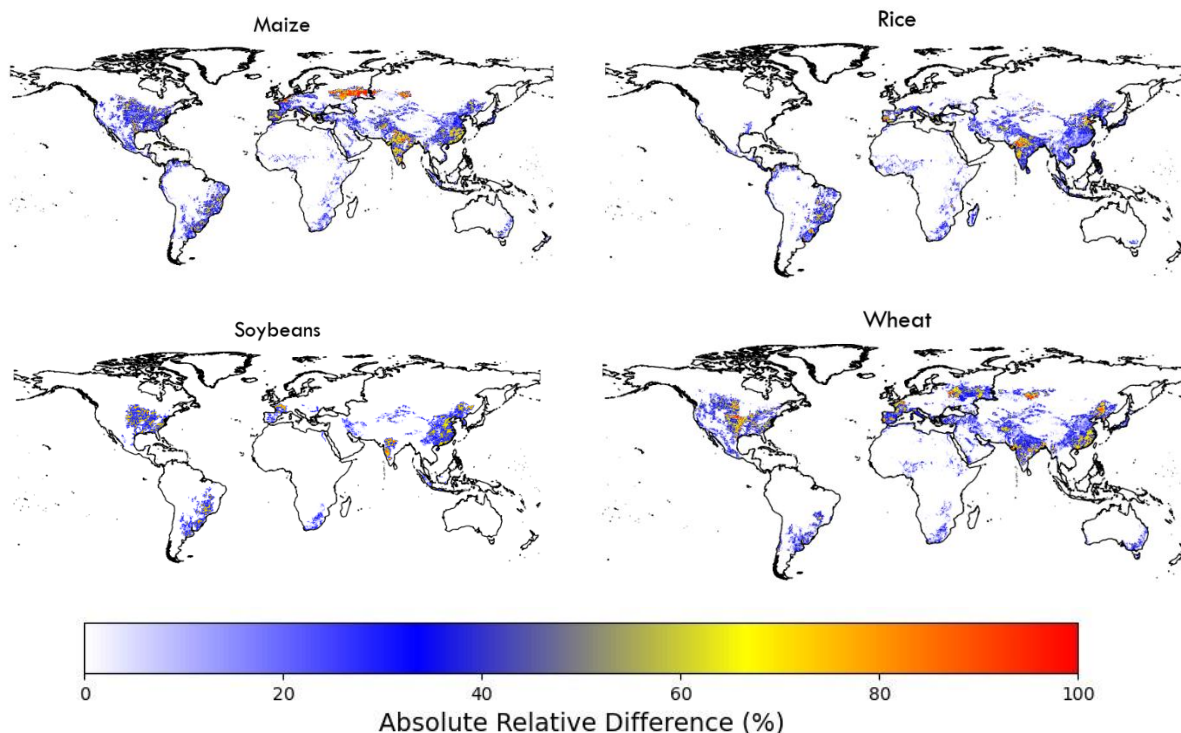


Figure 10. Pixel-level absolute relative difference between MIRCA-OS and MIRCA2000 for four primary irrigated crops for the year 2000.

Similarly, the IoU scores calculated for each irrigated and rainfed crop showed varying levels of agreement from crop to crop as well as between irrigated and rainfed systems, with the overall scores for rainfed systems showing better agreement (Table 4). For maize, other annuals, pulses, sorghum, soybeans, and wheat, there is a high similarity in the spatial distribution of irrigated and rainfed areas between the MIRCA-OS and MIRCA2000 datasets. IoU scores showed larger differences in the spatial distribution of irrigated areas for cassava, cocoa, coffee, and oil palm. This is mainly due to more comprehensive coverage of the underlying irrigated area statistics which were available for the development of each dataset. For example, MIRCA2000 did not report any irrigated area of cassava, cocoa, coffee, and oil palm for India, while our dataset contained substantial irrigated areas for those crops.

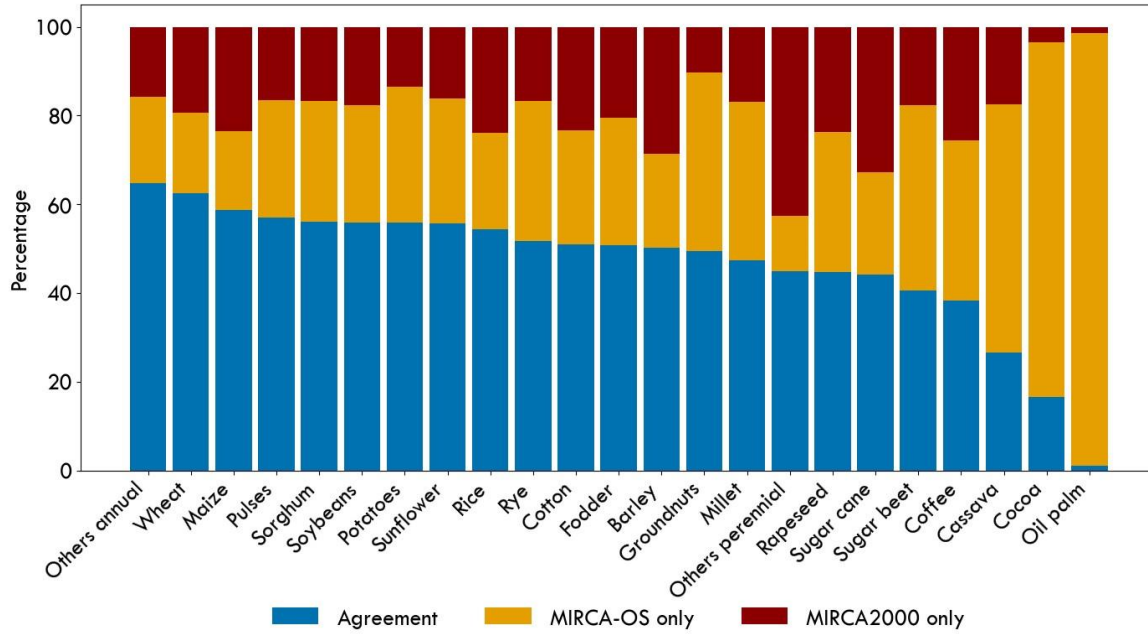


Figure 11. Spatial agreement for irrigated crops between MIRCA-OS and MIRCA2000 datasets for the year 2000. Each bar in the chart represents a different crop type and shows the proportion of agreement and exclusive presence in the two datasets. Bars are ordered based on their percentage of spatial agreement.

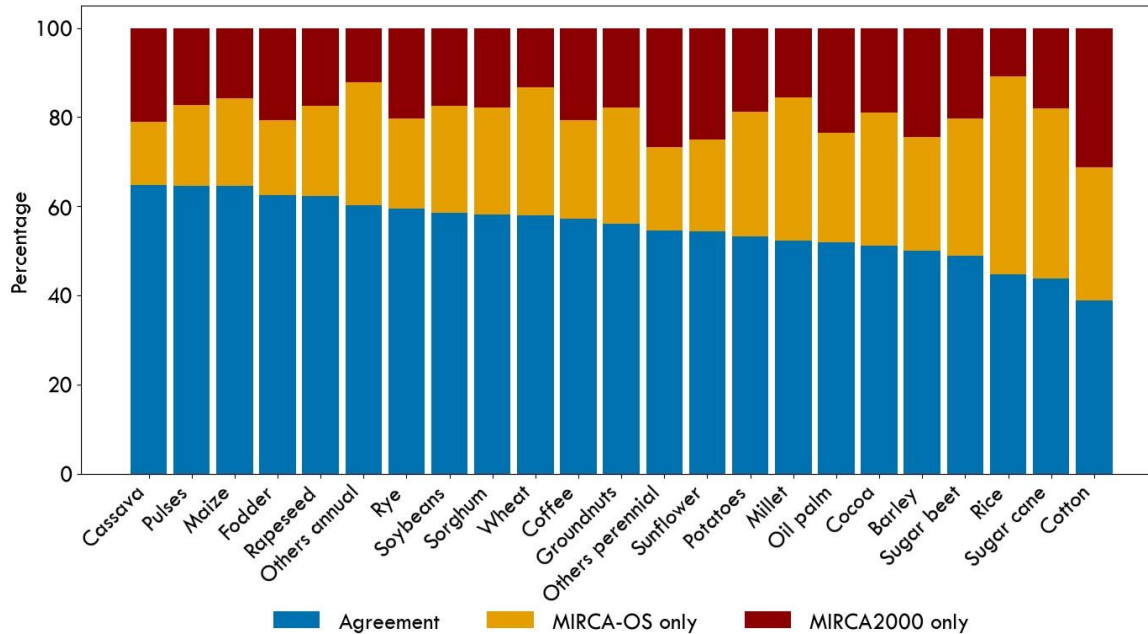


Figure 12. Spatial agreement for rainfed crops between MIRCA-OS and MIRCA2000 datasets for the year 2000. Each bar in the chart represents a different crop type and shows the proportion of agreement and exclusive presence in the two datasets. Bars are ordered based on their percentage of spatial agreement.

Table 4. IoU scores of agreement between MIRCA-OS and MIRCA2000 for the year 2000. A score of 0 indicates no spatial overlap, and a score of 1 indicates perfect spatial agreement.

Crop	IoU Score for:	
	Irrigated crops	Rainfed crops
Barley	0.502	0.507
Cassava	0.266	0.650
Cocoa	0.165	0.512
Coffee	0.382	0.566
Cotton	0.510	0.522
Fodder	0.508	0.624
Groundnuts	0.495	0.544
Maize	0.631	0.633
Millet	0.474	0.507
Oil palm	0.10	0.515
Other annuals	0.647	0.604
Other perennials	0.449	0.445
Potatoes	0.559	0.529
Pulses	0.570	0.637
Rapeseed	0.446	0.614
Rice	0.504	0.489
Rye	0.517	0.561
Sorghum	0.559	0.569
Soybeans	0.579	0.574
Sugar beet	0.404	0.465
Sugar cane	0.440	0.426
Sunflower	0.557	0.521
Wheat	0.617	0.576

We also performed a pixel-level scatter plot analysis and calculated corresponding Pearson coefficients (Figure 13 and Figure 14). We found relatively high coefficients for most crops and observed that the magnitudes of both irrigated and rainfed harvested areas were consistently lower for MIRCA-OS as compared to MIRCA2000. Major crops such as cotton, fodder, maize, sorghum, soybeans, and wheat exhibited a high pixel-level correlation between MIRCA-OS and MIRCA2000 datasets. In addition, for crops such as cocoa, groundnuts, other perennials, rice, and sugarcane, although they demonstrated low to moderate IoU scores, there was a notably higher correlation in a pixel-harvested area between the two datasets. Conversely, certain crops with relatively high IoU scores in spatial distribution (e.g., other annuals, potatoes, sunflowers) showed lower Pearson coefficients at the pixel level. This suggests significant differences in the pixel-level harvested area despite similar spatial distributions for these crops between the two datasets. Still, other crops such as cassava, coffee, and oil palm exhibited both low IoU scores and Pearson coefficients, indicating considerable disparities in both spatial distribution and pixel values of harvested areas between the datasets. Overall, despite considerable differences in input data and statistics between MIRCA2000 and MIRCA-OS, we find good agreement in both the spatial distribution and harvested area magnitude, particularly in the core breadbasket regions for each crop.

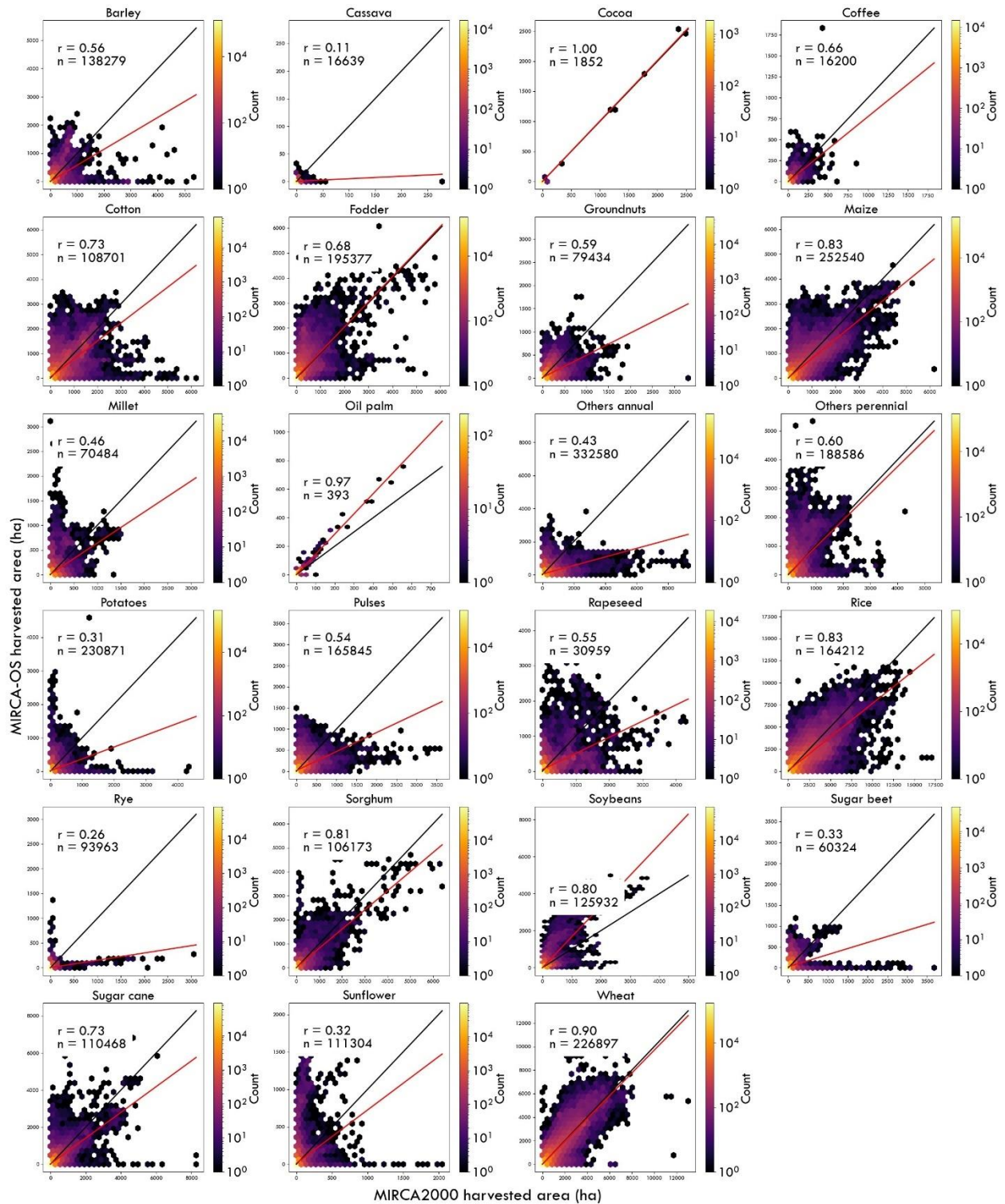


Figure 13. Hexagonal analysis of irrigated harvested areas in MIRCA-OS and MIRCA2000. The color bar indicates the number of grid cells within each hexagon. 'r' and 'n' represent the Pearson coefficient and the number of grid cells analyzed, respectively. The black line indicates the 1-to-1 line (i.e., no difference), while the red line represents the fitted linear regression.

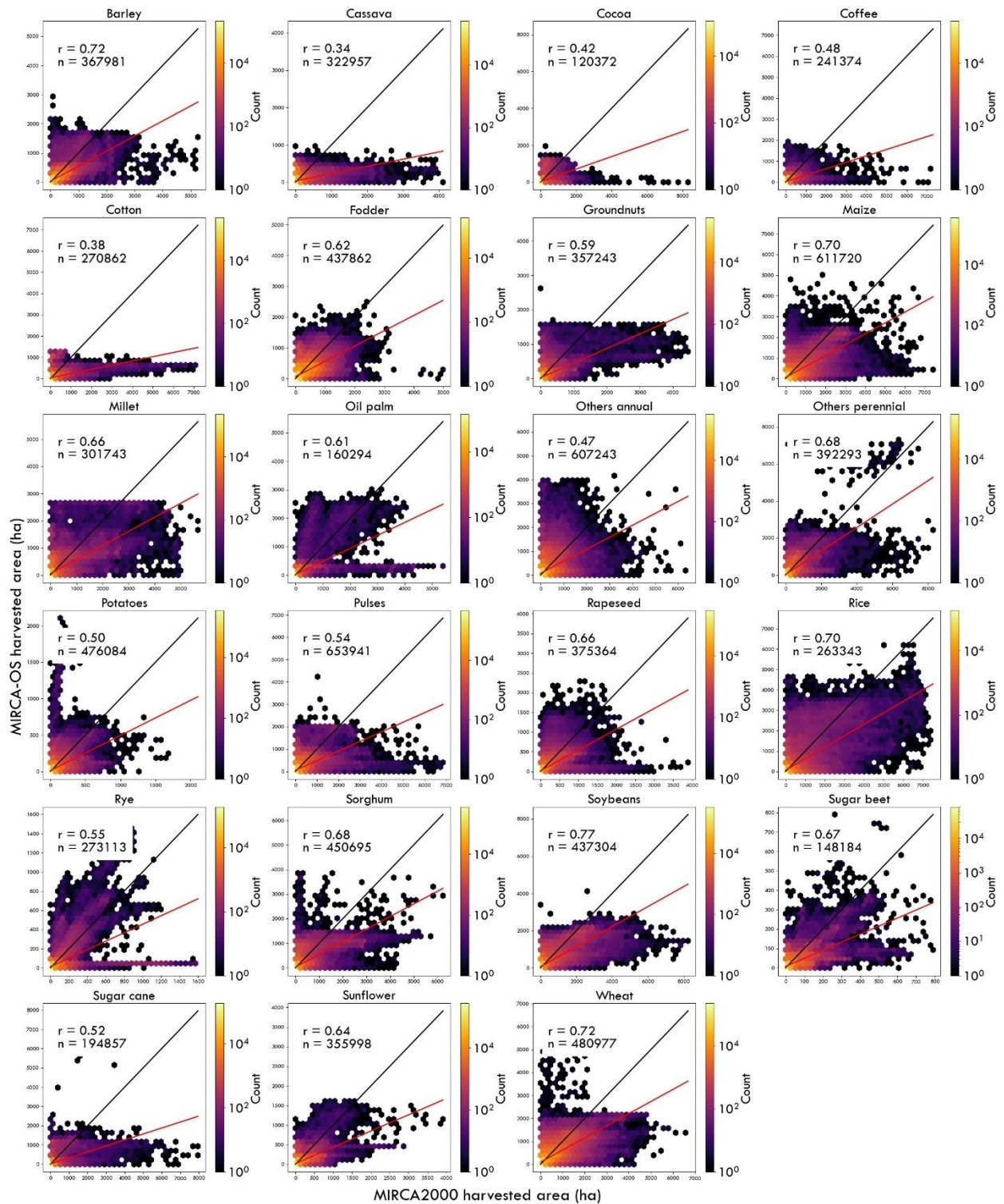


Figure 14. Hexagonal analysis of rainfed harvested areas in MIRCA-OS and MIRCA2000. The color bar indicates the number of grid cells within each hexagon. 'r' and 'n' represent the Pearson coefficient and the number of grid cells analyzed, respectively. The black line indicates the 1-to-1 line (i.e., no difference), while the red line represents the fitted linear regression.

Moreover, we compared our MIRCA-OS rice annual harvested area dataset against the recent GloRice(I)³⁷ dataset, which is a global gridded paddy rice distribution dataset covering the years 1961 to 2021. We extracted the NetCDF raster files for the years 2000, 2005, 2010, and 2015, which provided the maximum harvested area extent of each five-arc-minute resolution pixel covered by paddy rice. We then compared each year's rice area map against the MIRCA-OS for the same period. The presence and absence maps (Figure 15) showed a good level of agreement between the two datasets for most countries, where our dataset showed more pixels than the GloRice dataset.

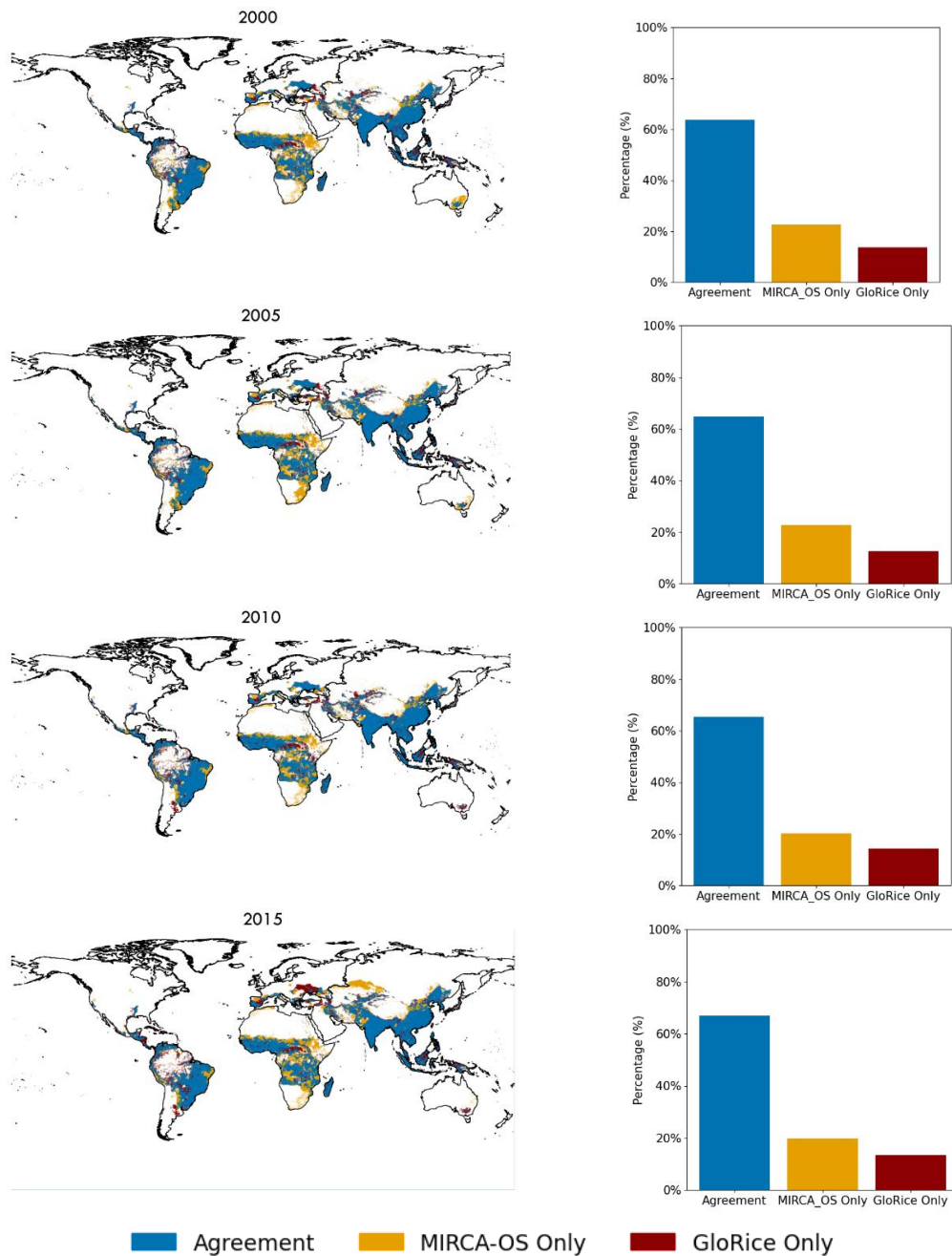


Figure 15. Pixel-level spatial agreement on the total harvested area of rice between MIRCA-OS and GloRice from 2000 to 2015. Locations of agreement (depicted in blue) and disagreement (depicted in

orange and red) are shown for the irrigated extent of rice. The bar chart on the right side shows the percentage levels of agreement and disagreement between the two datasets.

A pixel-level hexagonal plot analysis and its corresponding Pearson coefficients, shown in Figure 16, reveal high Pearson coefficients for all years, with values ranging from 0.85 to 0.9. For all the years, a high Pearson coefficient was observed, indicating a strong correlation between the MIRCA-OS and GloRice datasets

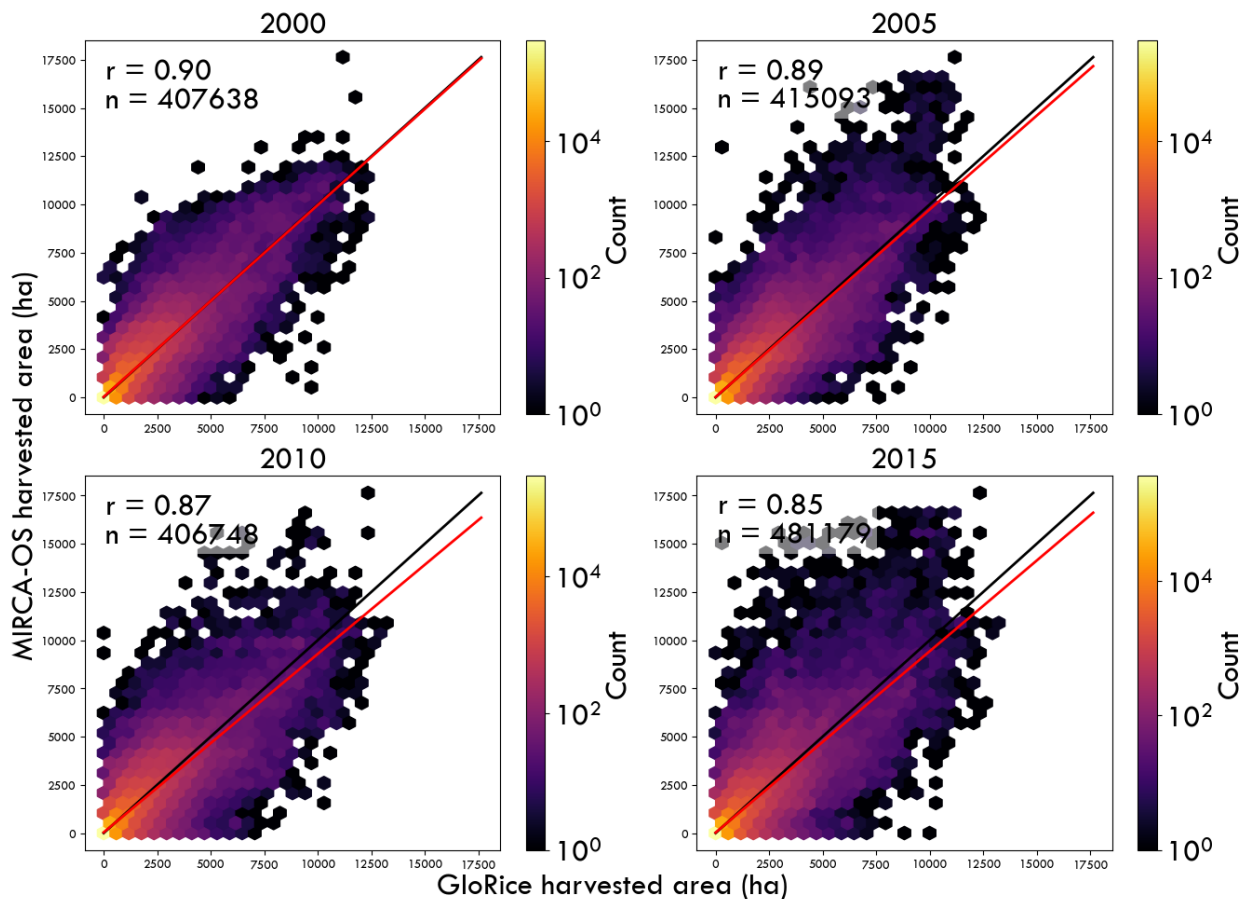


Figure 16. Hexagonal analysis of the total harvested area of rice in MIRCA-OS and GloRice from 2000 to 2015. The color bar indicates the number of grids within each hexagon. 'r' and 'n' represent the Pearson coefficient and the number of grid cells analyzed, respectively. The black line indicates the 1-to-1 line (i.e., no difference), while the red line represents the fitted linear regression.

Continental-level comparison

Europe

We utilized the European Irrigation Map for 2010 (EIM2010), an updated version of EIM2000, which provides a 10 km x 10 km resolution of irrigated area per grid cell for 14 major crops based on the 2010 agricultural census. We compared the irrigated area data from EIM2010 with the annual irrigated area

dataset from MIRCA-OS for the year 2010. The spatial presence maps (Figure 17) and the estimated IoU scores indicated a generally high level of agreement between the MIRCA-OS and EIM2010 datasets regarding the spatial distribution of irrigated areas across Europe. These results suggest that the datasets align well for maize and potatoes, with more variability observed for rice and sugar beet. The MIRCA-OS dataset reports a larger irrigated rice area than the EIM2010 dataset. This discrepancy might be due to different methodologies or data sources used in compiling the datasets.

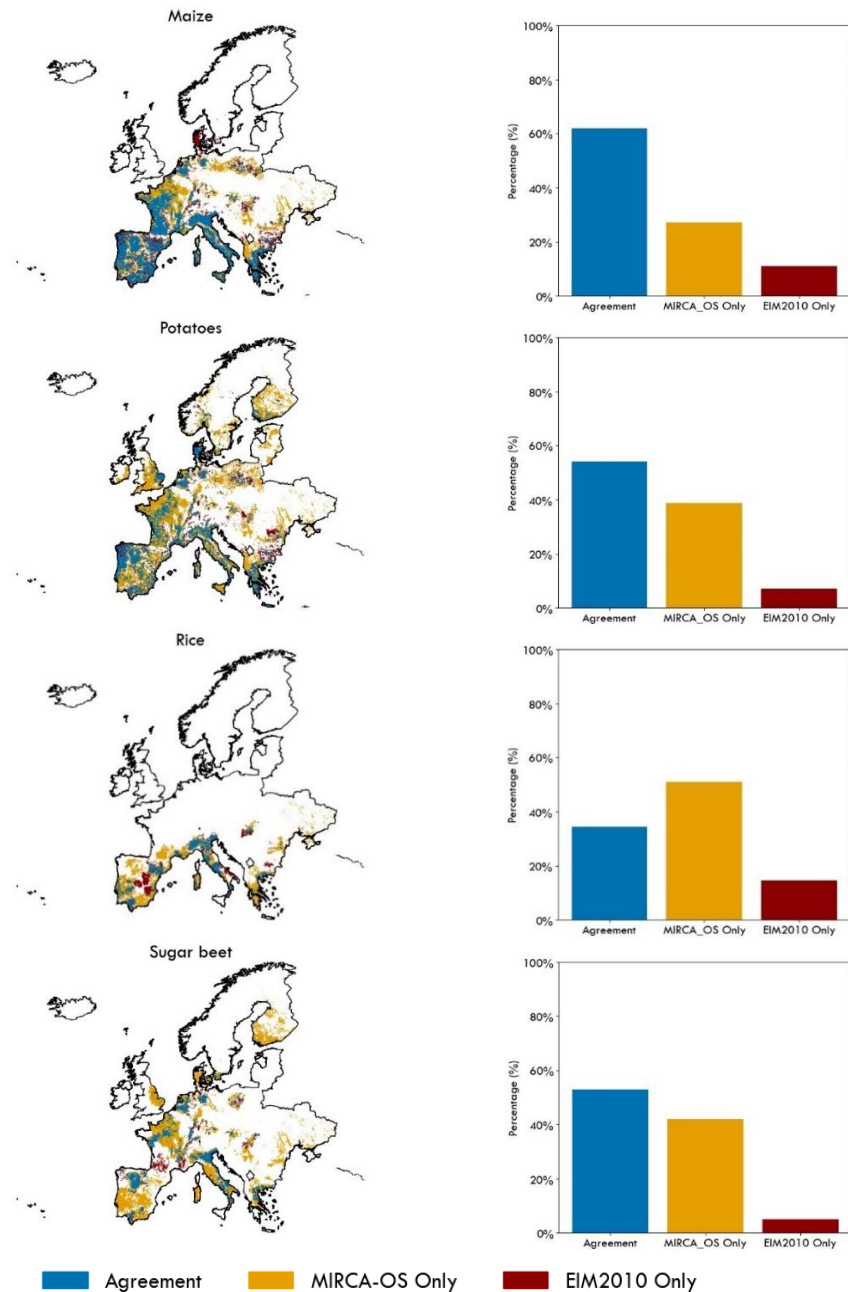


Figure 17. Pixel-level spatial agreement on irrigation presence between MIRCA-OS and EIM2010 for 2010. Locations of agreement (depicted in blue) and disagreement (depicted in orange and red) are shown for the irrigated extent of four primary crops—maize, potatoes, rice, and sugar beet

in Europe. The bar chart on the right side shows the percentage levels of agreement and disagreement between the two datasets.

The IoU scores shown in Table 5 revealed that for most crops, the MIRCA-OS and EIM2010 datasets, developed based on different approaches and assumptions, have a moderate level of agreement. However, a lower level of agreement was observed for some crops, such as pulses, rice, and rapeseed. In these crops, the EIM2010 dataset has more aerial coverage, particularly in Norway and Sweden, while our dataset showed no irrigated area for these crops based on the collected statistics.

Table 5. IoU scores of spatial agreement between MIRCA-OS and EIM2010 irrigated crops for 2010. A score of 0 indicates no spatial overlap, and a score of 1 indicates perfect spatial agreement.

Crop	IoU score
Maize	0.534
Potatoes	0.415
Pulses	0.264
Rice	0.249
Rapeseed	0.209
Sugar beet	0.308
Sunflower	0.441

A pixel-level hexagonal plot analysis and its corresponding Pearson coefficients shown in Figure 18 reveal moderate to high Pearson coefficients for most crops, although lower coefficients were observed, particularly for sunflower and rice. For rice, our MIRCA-OS dataset, as shown in Figure 17, has more aerial coverage than the EIM2010 dataset. For sunflowers, our dataset showed no irrigated sunflower areas in Norway, Sweden, and the UK, while EIM2010 indicated a considerable irrigated area in these regions. This discrepancy resulted in lower Pearson coefficients for these crops.

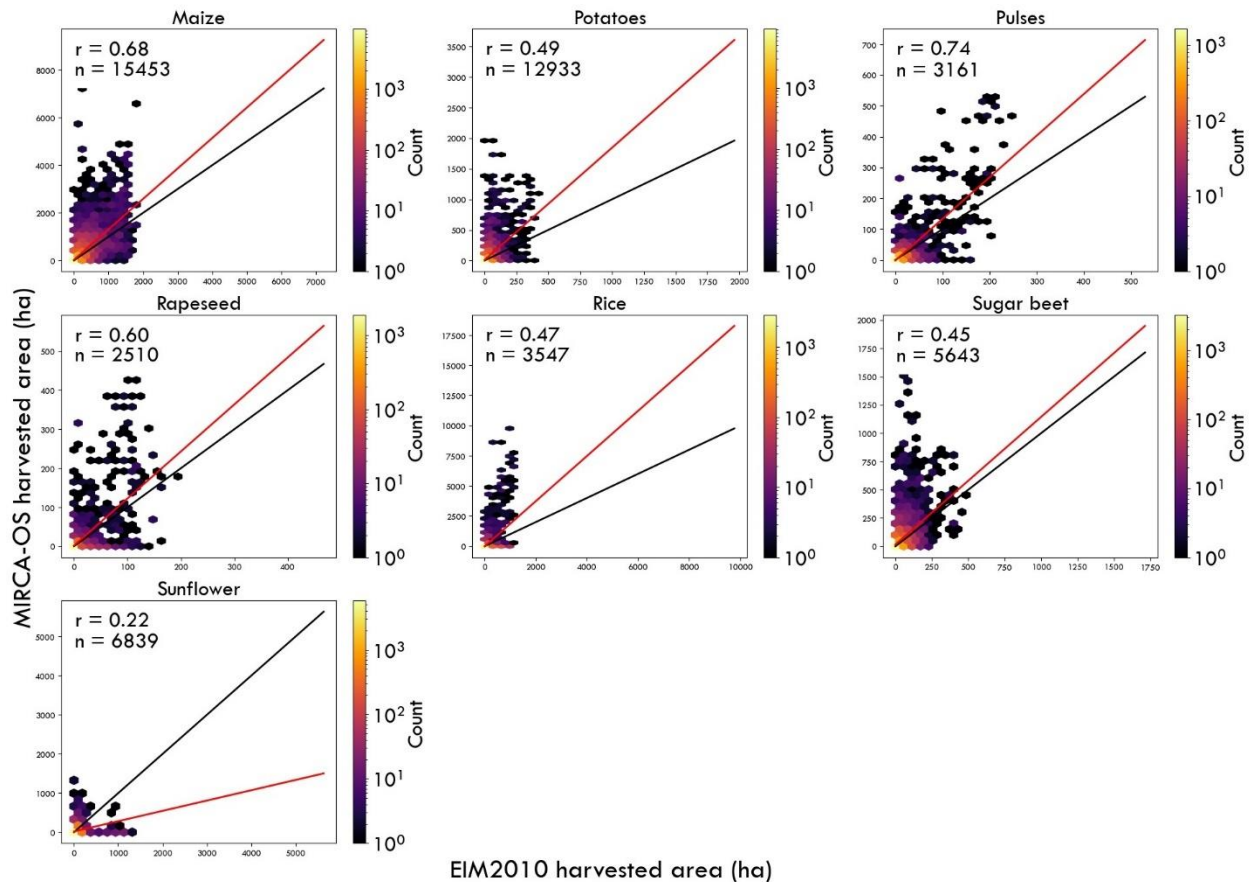


Figure 18. Hexagonal analysis of irrigated harvested areas in MIRCA-OS and EIM2010. The color bar indicates the number of grids within each hexagon. 'r' and 'n' represent the Pearson coefficient and the number of grid cells analyzed, respectively. The black line indicates the 1-to-1 line (i.e., no difference), while the red line represents the fitted linear regression.

Country-level Comparisons

United States

We also validated MIRCA-OS against remote sensing products (combining remotely sensed irrigation maps with remotely sensed maps of crop type) where possible. In the United States, we compared MIRCA-OS with a combination of the Irrigated Agriculture Dataset for the United States^{10,34} (MIRAD-US) (250m resolution) and the United States Department of Agriculture's CropScape cropland data layer (30m resolution). The latest version of MIRAD provides a comprehensive irrigated area dataset for 2002, 2007, 2012, and 2017. To ensure that the data falls within our period of analysis, we first temporally interpolate the MIRAD maps of 2007 and 2012 to produce an irrigated area map for 2010. This was repeated for the year 2012 and 2017 MIRAD maps to produce the year 2015 irrigated area map. As an example, for the soybean crop type map from CropScape for the year 2010, any pixels that spatially overlapped with the MIRAD irrigated area for 2010 were defined as irrigated soybean. Then the number of irrigated soybean pixels (30m) falling within a 5-arcminute pixel was summed and then multiplied by 0.09 to calculate the irrigated soybean area in hectares for that 5-arcminute pixel (i.e., the same resolution as MIRCA-OS). This

was repeated for all crops and for all year 2015 maps. We then performed a pixel-level comparison of estimated hectares with MIRCA-OS (Figure 19 and Figure 20).

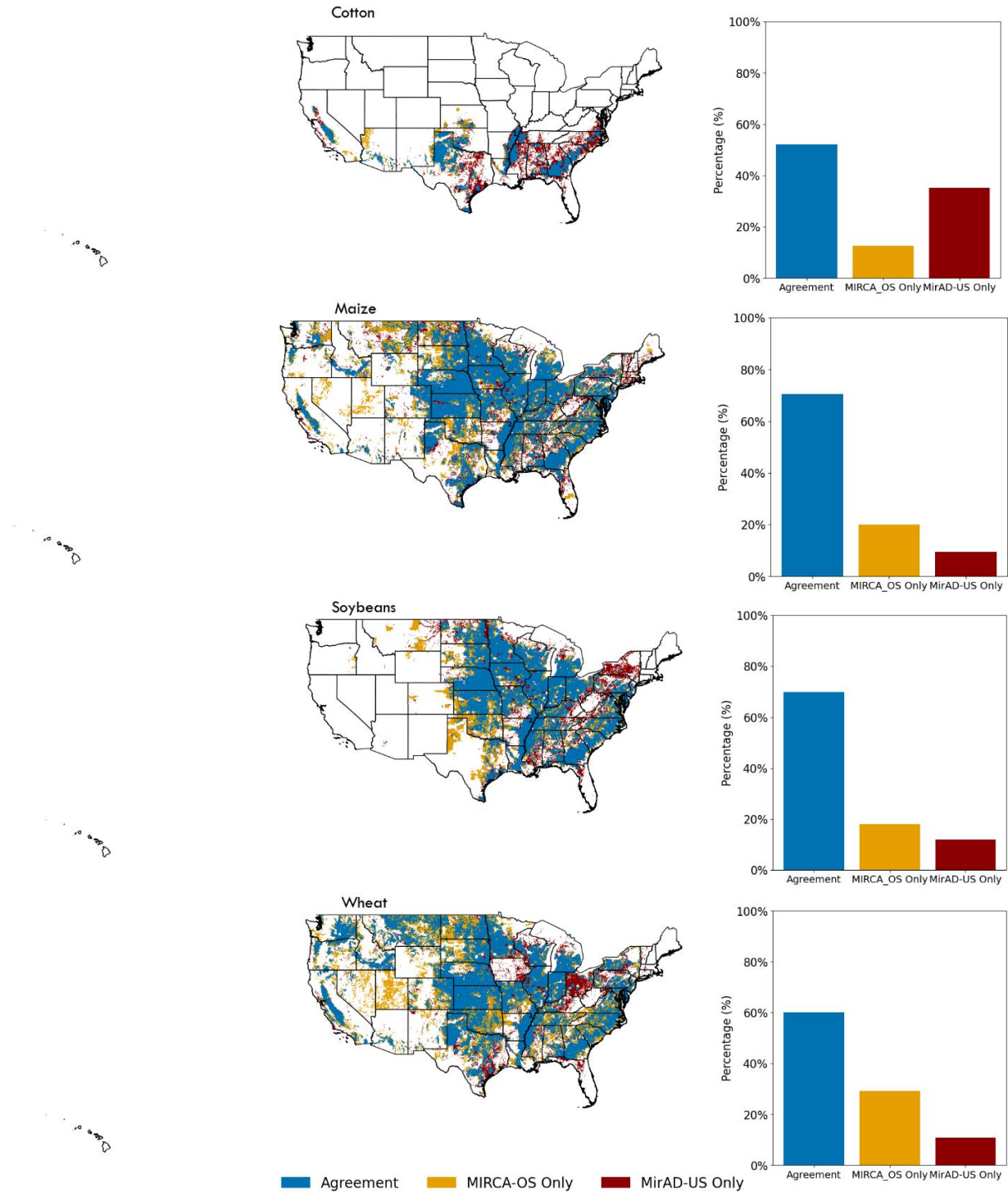


Figure 19. Pixel-level spatial agreement on irrigation presence between MIRCA-OS and MirAD-Cropscape for the year 2015. Locations of agreement (depicted in Light blue) or disagreement (depicted in orange and red) are shown for the irrigated extent of four primary crops— cotton, maize, soybeans,

and wheat. The bar chart on the right side shows the percentage levels of agreement and disagreement between the two datasets.

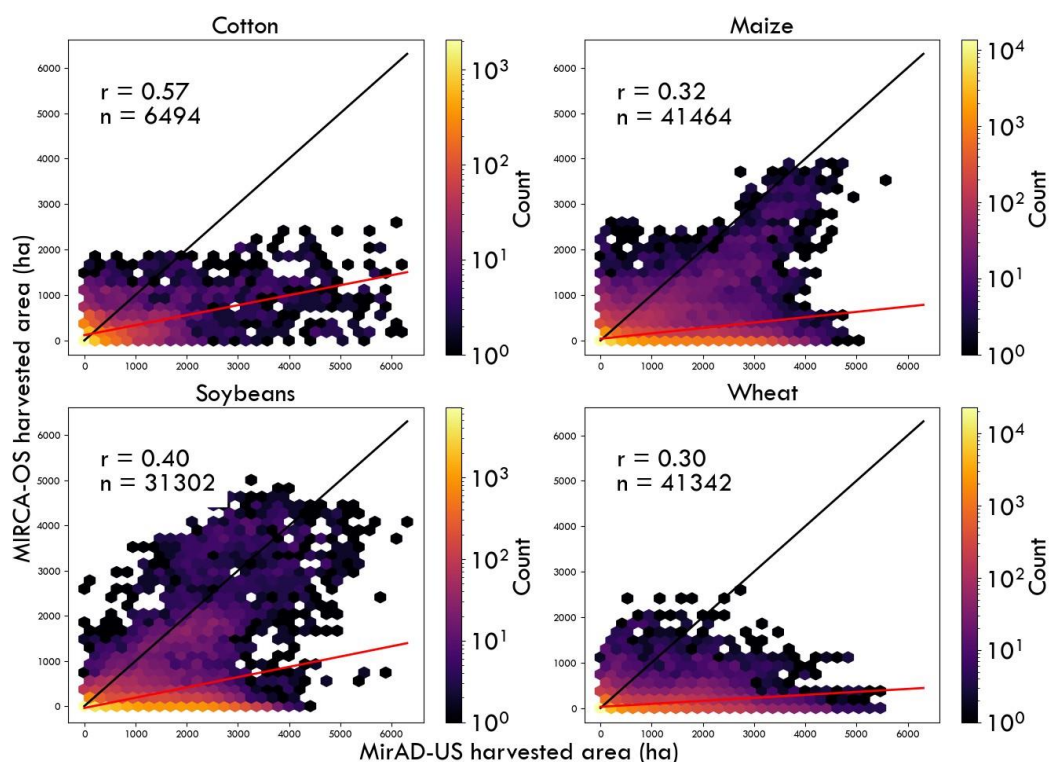


Figure 20. Hexagonal analysis of irrigated harvested areas in MIRCA-OS and MirAD-Cropscape for 2015. The color bar indicates the number of grids within each hexagon. 'r' and 'n' represent the Pearson coefficient and the number of grid cells analyzed, respectively. The black line indicates the 1-to-1 line (i.e., no difference), while the red line represents the fitted linear regression.

While all the spatial presence maps revealed good agreement between MIRCA-OS and MirAD-Cropscape products (Figure 19 and Figure 20), with variations between crops, the hexagonal analysis showed a lower Pearson coefficient for all crops except cotton. For instance, maize, wheat, and soybeans showed a high IoU score and high spatial agreement, but a lower Pearson coefficient indicates that even though both datasets have shown a similar spatial distribution, the pixel-level irrigated area (value) significantly differs between the two datasets. We also found that the IoU scores improved between 2010 and 2015 and that these scores tended to positively correlate with levels of production, with maize, soybean, and wheat showing the highest spatial agreements. The hexagonal analysis highlighted that our MirAD-Cropscape dataset often showed higher pixel values for certain crops compared to MIRCA-OS. Because previous work has shown that the AEI product used in our analysis has a very high level of agreement with the MirAD product, the main source of differences for the crop-specific comparisons is likely attributable to the combined pixel-level accuracy of the Cropscape and MirAD products – both of which are independently consistent with US county-level harvested area and total irrigated area statistics, respectively. Thus, the limitations of the data fusion that we perform (based on a method of MirAD-Cropscape spatial overlap) mean that such a comparison with MIRCA-OS (while the best possible at present) should be viewed with caution.

Table 6. IoU scores of spatial agreement between MIRCA-OS and MirAD-Cropscape irrigated crops for the years 2010 and 2015. A score of 0 indicates no spatial overlap, and a score of 1 indicates perfect spatial agreement. Cassava, cocoa, coffee, millet, and oil palm are not cultivated in the US.

Crop	IoU score	
	2010	2015
Barley	0.429	0.404
Cotton	0.501	0.567
Fodder	0.574	0.659
Groundnuts	0.509	0.425
Maize	0.569	0.768
Other annuals	0.493	0.476
Other perennials	0.429	0.511
Potatoes	0.384	0.451
Pulses	0.373	0.366
Rapeseed	0.100	0.185
Rice	0.209	0.219
Rye	0.183	0.294
Sorghum	0.416	0.535
Soybeans	0.593	0.750
Sugar beet	0.309	0.334
Sugar cane	0.361	0.325
Sunflower	0.146	0.243
Wheat	0.550	0.669

Brazil

We also performed similar comparisons for selected crops and countries where remotely sensed irrigation products could be intersected with remotely sensed crop-type maps¹⁰. For soybean in Brazil, we used remotely sensed annual maps of soybean extent (2001-2015; 0.00025° or approximately 27 meters) from the University of Maryland’s Global Land Analysis and Discovery (GLAD) Laboratory³⁶. We aggregated this data to a 5-arc-minute resolution for the years 2001, 2005, 2010, and 2015. We interpolated the MIRCA-OS soybeans annual harvested area map for the year 2001 using the 2000 and 2005 maps. To compare to

the aggregated GLAD soybean product, we then summed the MIRCA-OS irrigated and rainfed harvested areas for soybeans. The resulting presence-absence map revealed substantial disparities between the two datasets, with MIRCA-OS having a larger cultivated extent, particularly in the provinces of Bahia, Paul, Maranhão, and Para (Figure 16). However, MIRCA-OS only includes diffuse soybean areas in these places and that it captures the core soybean regions well and in good agreement with GLAD.

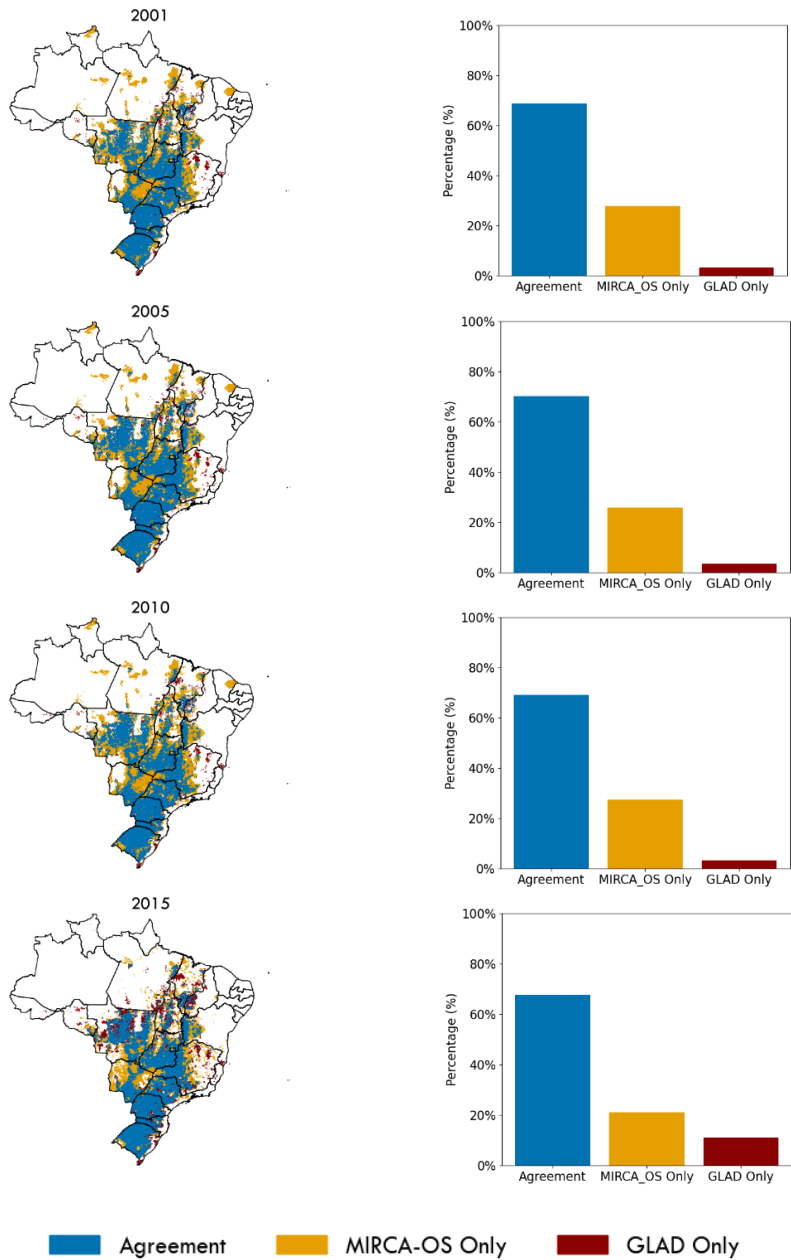


Figure 21. Pixel-level spatial agreement on soybean presence between MIRCA-OS and GLAD for the years 2001 to 2015. Locations of agreement (depicted in Light blue) or disagreement (depicted in orange and red) are shown for the extent of soybeans. The bar chart on the right side shows the percentage levels of agreement and disagreement between the two datasets.

Usage Notes

We expect that MIRCA-OS can enable a suite of spatially refined assessments of changes in global cropping patterns and that our products will directly benefit numerous international development and research initiatives. Given the potential for broad usage, it is essential to note the key limitations of these products to ensure their proper use and to prevent their over-extension beyond what they can reasonably show.

One of the main uncertainties of our products relates to the input datasets, including the agricultural statistics and gridded maps. In particular, there is a lack of consistent and spatially disaggregated crop-specific irrigated harvested areas in many countries²¹. While we utilized sub-national agricultural statistics to the greatest extent available, there is a significant scarcity of such data in many parts of Asia, South America, Africa, and small island nations at national and sub-national levels. For these data-scarce regions, we used national-level statistics from AQUASTAT. For other countries (such as Brazil, Argentina, and Russia), subnational statistics on total harvested areas were available, but information on crop-specific irrigated areas was limited. The granularity of these underlying agricultural statistics is fundamental to the accuracy of global gridded products (including MIRCA-OS), and a comprehensive country-by-country description of all data collection, processing, and harmonization is available in the Supplementary Information. In regions where harvested area statistics are only available at coarser spatial scales, users are cautioned that evaluations of fine-scale changes in irrigated areas may not be reliable and should be verified by independent sources of information to the greatest extent possible. As we ensure that allocated harvested areas are consistent within a spatial unit, it is recommended to interpret the spatial and temporal trends of our products aggregated to the appropriate administration levels.

With these considerations in mind, the MIRCA-OS data products represent an important advance in the ability to evaluate crop-specific changes in irrigated and rainfed areas through time. MIRCA-OS can serve as an improved underpinning for a suite of global assessments related to agriculture, food security, water sustainability, environmental burdens, and climate resilience.

Code Availability

All code used to prepare the MIRCA-OS monthly irrigated and rainfed cropped area dataset is freely available on GitHub: https://github.com/MIRCA-OS/MIRCA-OS_Code.

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Author contributions

KFD and SS conceived the idea. EAK led the study. KFD coordinated the study. EAK, SS, KFD, PM, SH, DR, TA, and WX collected the necessary input data. JJ prepared the crop-specific calendar for irrigated and rainfed crops. EAK and KO wrote the code. EAK, KFD, and SS conducted the analysis and prepared the data products. EAK and KFD drafted the initial manuscript. All authors provided revisions to the manuscript.

Competing interests

The authors declare no competing interests.

Additional information

Supplementary information is available for this paper at HydroShare²⁷.

Correspondence and requests for materials should be addressed to EAK or KFD.

Data and code availability

All input statistics, code, and output data products are freely available online at HydroShare²⁷.

Supplementary Information

A global open-source dataset of monthly irrigated and rainfed cropped areas (MIRCA-OS) for the 21st century

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Table S1: Country-Level Data Sources. A detailed description of each census or survey report title, the temporal coverage of the data, the administrative level at which the data is available, the official name of the data source, and the web link to access the data source.

Country	Title of the Report	Coverage Period	Administrative Level	Data Source	Source Links
Afghanistan	Sown Area of Major Crops	2011-2015	1	FAO CountrySTAT	https://www.fao.org/in-action/countrystat/national-countrystat-sites/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Albania	Census of Agriculture 2012	2012	0	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Albania in Figures 2013	2010-2013	0	Institute of Statistics	http://www.instat.gov.al/en/publications
	Agricultural Statistics	2015-2015	0	Institute of Statistics	https://fscluster.org/sites/default/files/documents/apr_2019_report_english_version.pdf
	Statistical yearbook	2010-2015	0	Institute of Statistics	http://www.instat.gov.al/en/publications
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Eurostat: Irrigated Area Data by Provinces	2000-2015	1	Institute of Statistics	http://databaza.instat.gov.al/pxweb/en/DST/START_BU_AM/BU01/
Algeria	Census of Agriculture 2001	2001	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Algeria Yearbook	2012	1	National Statistics Office	https://www.ons.dz/spip.php?rubrique2
	Algeria Yearbook	2015	1	National Statistics Office	https://www.ons.dz/spip.php?rubrique3
	Algeria Yearbook	2017	1	National Statistics Office	https://www.ons.dz/spip.php?rubrique4
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	La Production Agricole (Agricultural Production)	2016-2015	0	National Statistics Office	https://www.ons.dz/spip.php?rubrique2
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
American Samoa	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Angola	Census of Agriculture 2019	2019	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	FAO CountrySTAT	2000-2014	1	CountrySTAT	http://angola.countrystat.org/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Antigua and Barbuda	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Argentina	Agricultural Estimates	2000-2015	1	National Directorate of Agriculture - Directorate of Agricultural Estimates	https://datosestimaciones.magyp.gob.ar/reportes.php?reporte=Estimaciones
	Census of Agriculture 2002	2002	1	National Statistical and Census Office	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-8-88
	Census of Agriculture 2007	2007	1	National Statistical and Census Office	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-8-87
	Census of Agriculture 2018	2017/18	1	National Statistical and Census Office	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-8-87
	Agricultural Survey 2005 and 2007	2005-2007	0	National Statistical and Census Office	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-8-88
	FAOSTAT Crop Harvested Area Database	2000-2015	0	National Statistical and Census Office	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	National Statistical and Census Office	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-8-88
	Agricultural Commodities, Australia	2000/01	1	Bureau of Statistics	https://www.abs.gov.au/statistics/industry/agriculture/agricultural-commodities-australia/2020-21
	Agricultural Commodities, Australia	2010/11	1	Bureau of Statistics	https://www.abs.gov.au/statistics/industry/agriculture/agricultural-commodities-australia/2020-22

Australia	Agricultural Commodities, Australia	2015/16	1	Bureau of Statistics	https://www.abs.gov.au/statistics/industry/agriculture/agricultural-commodities-australia/2020-23
	Yearbook of Australia series	2001-2012	1	Bureau of Statistics	https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/LookupAttach/1301.0Publication24.05.121/\$file/13010_2012.pdf
	Census of Agriculture 2001	2001	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2011	2011	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2015	2015	1	FAO (WCA2020)	https://www.fao.org/fileadmin/templates/ess/ess_test_folder/World_Census_Agriculture/WCA_2020/WCA_2020_new_doc/AUS_REP_ENG_2015_2016.pdf
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Water Use on Australian Farms, 2002-2015	2002-2007	1	Bureau of Statistics	https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4618.02006-07?OpenDocument
Austria	Agricultural Structure Survey 2010	2010	0	Statistics Austria	https://www.statistik.at/en/
	Agricultural Structure Survey 2016	2013-2015	0	Statistics Austria	https://www.statistik.at/en/
	Statistics of agriculture 2018	2014-2015	0	Statistics Austria	https://www.statistik.at/en/
	Census of Agriculture 2000	2000	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/

	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2020	2020	1	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Crop Production on arable land	2019/2015	1	Statistics Austria	https://www.statistik.at/en/
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Eurostat: Irrigated Area Data by Province	1990-2015	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
Azerbaijan	The Agriculture of Azerbaijan	2003-2015	0	The State Statistical Committee	https://stat.gov.az/menu/6/?lang=en
	Census of Agriculture 2005	2005	2	The State Statistical Committee	https://stat.gov.az/menu/6/?lang=en
	Province Level of Total Sown Area	2000-2015	2	The State Statistical Committee	https://stat.gov.az/menu/6/?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2007-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Bahamas	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Bahrain	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Bangladesh	Minor crop area in Acres	2016-2015	0	Bureau of Statistics	http://www.bbs.gov.bd/site/page/453af260-6aea-4331-b4a5-7b66fe63ba61/-
	Major crops statistics	2000-2015	1	Bureau of Statistics	http://www.bbs.gov.bd/site/page/453af260-6aea-4331-b4a5-7b66fe63ba61/-
	Yearbook of Agricultural Statistics	2013-2015	2	Bureau of Statistics	http://www.bbs.gov.bd/site/page/3e838eb6-30a2-4709-be85-40484b0c16c6/Yearbook-of-Agricultural-Statistics
	Census of Agriculture 2005	2005	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2019	2015	1	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Statistical yearbook (Irrigated area)	2012-2015	1	Bureau of Statistics	http://www.bbs.gov.bd/site/page/3e838eb6-30a2-4709-be85-40484b0c16c6/Yearbook-of-Agricultural-Statistics
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Barbados	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Belarus	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Yearbook of Agricultural Statistics	2014-2015	0	National Statistical Committee	https://www.belstat.gov.by/en/ofitsialnaya-statistika/publications/catalogues-of-statistical-publications/statistical-yearbook-of-the-republic-of-belarus/
	Yearbook of Agricultural Statistics (Irrigated area)	2014-2015	0	National Statistical Committee	https://www.belstat.gov.by/en/ofitsialnaya-statistika/publications/catalogues-of-statistical-publications/statistical-yearbook-of-the-republic-of-belarus/
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Belgium	Census of Agriculture 2000	2000	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Agricultural Figures	2000-2015	1	STATBEL	https://statbel.fgov.be/en/themes/agriculture-fishery/farm-and-horticultural-holdings#figures
	Farm Structure Survey	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Belgium
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Belize	Agriculture harvested area Data	2000-2015	0	Ministry of Agriculture, Food Security and Enterprise	https://www.agriculture.gov.bz/2018-belize-national-agriculture-census/#:~:text=BELIZE%20AGRICULTURE%20CENSUS%202018%20%E2%80%93%20Agriculture&text=The%20agriculture%20and%20food%20sector,17.9%25%20of%20the%20Belizean%20population.
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Benin	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Bhutan	Census of Agriculture 2009	2009	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries/2010/en/
	Census of Agriculture 2019	2019	1	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries/2020/en/

	Agricultural Statistics	2004-2015	1	National Statistical Bureau	https://www.nsb.gov.bt/agriculture-statistics-reports/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Bolivia	Census of Agriculture 2008	2008	1	National Institute of Statistics	https://www.ine.gob.bo/index.php/estadisticas-economicas/agropecuaria/agricultura-introduccion/
	Census of Agriculture 2013	2013	1	National Institute of Statistics	https://www.ine.gob.bo/index.php/estadisticas-economicas/agropecuaria/agricultura-introduccion/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Bosnia and Herzegovina	Crop specific area	2000-2015	0	Statistics Agency	https://bhas.gov.ba/Calendar/Category/18
	Annual crop production statistics	2006	0	Statistics Agency	https://bhas.gov.ba/Calendar/Category/18
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Botswana	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Brazil	PAM - Municipal Agricultural Production	2000-2015	1	Institute of Geography and Statistics	https://www.ibge.gov.br/en/statistics/economic/agriculture-forestry-and-fishing/16773-municipal-agricultural-production-temporary-and-permanent-crops.html?=&t=downloads
	Agricultural Statistics 1995/96	1994-1996	1	Institute of Geography and Statistics	https://www.ibge.gov.br/en/statistics/economic/agriculture-forestry-and-fishing/20763-1995-1996-censoagro-en.html?=&t=destaques
	Census of Agriculture 2006	2006	1	Institute of Geography and Statistics	https://www.ibge.gov.br/en/statistics/economic/agriculture-forestry-and-fishing/17234-census-of-agriculture.html?edicao=17237&t=destaques
	Census of Agriculture 2017	2017	1	Institute of Geography and Statistics	https://censoagro2017.ibge.gov.br/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Brunei Darussalam	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT
FAO AQUASTAT Irrigated Cropped Area Database		2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Bulgaria	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en

	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Bulgaria&oldid=379538
	Agricultural Report	2011-2015	0	Ministry of Agriculture	https://www.mzh.government.bg/en/policies-and-programs/reports/agricultural-report/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
Burkina Faso	FEWS total harvested area (few crops only)	2000-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Statistical Yearbook per region	2006-2015	1	Institute of Statistics and demography	http://www.insd.bf/index.php/publications?id=38
	Census of Agriculture 2006	2006	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Burundi	FEWS total harvested area (few crops only)	2000-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Cambodia	Census of Agriculture 2013	2013	0	National Institute of Statistics	https://microdata.nis.gov.kh/index.php/catalog/29
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Cameroon	Harvested areas of major crops	2000-2011	0	FAO CountrySTAT	http://cameroon.countrystat.org/search-and-visualize-data/en/
	Cameroon Agriculture Sheet	2013	0	Cameroon Data Portal	https://cameroon.opendataforafrica.org/hxycnxc/cameroon-agriculture-sheet
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Canada	Selected crops, Census of Agriculture historical data	2001-2015 (every 5 years)	0	Statistics Canada	https://doi.org/10.25318/3210015401-eng
	Archived - Field crops and hay, Census of Agriculture, 2011 and 2016, inactive	2011/2016	2	Statistics Canada	https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210041601
	Archived - Fruit crops and vegetables Census of	2011/2016	2	Statistics Canada	https://doi.org/10.25318/3210041701-eng
	Selected crops, Census of Agriculture historical data	2001-2021(Evry 5 years)	1	Statistics Canada	https://doi.org/10.25318/3210015401-eng

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Irrigated area	2010-2016 (every 2 years)	1	Statistics Canada	https://doi.org/10.25318/3810024101-eng
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Cape Verde	Census of Agriculture 2004	2004	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Central African Republic	FEWS total harvested area (few crops only)	2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	1997-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Chad	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2002-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Chile	Census of Agriculture 1997	1997	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Agri census 2007	2007	1	National Statsics Institute	https://www.ine.cl/estadisticas/economia/agricultura-agroindustria-y-pesca/censos-agropecuarios
	Harvested area of annual crops	2011-2015	1	National Statistics Institute	https://www.ine.cl/estadisticas/economia/agricultura-agroindustria-y-pesca/cosecha#
	Irrigated data on agricultural holdings	2006-2007	1	National Statistics Institute	https://www.ine.cl/estadisticas/economia/agricultura-agroindustria-y-pesca/cosecha#
China	Sown area of farm crops	2000-2015	1	National Bureau of Statistics	https://www.stats.gov.cn/english/Statisticaldata/yearbook/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Colombia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Comoros	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Congo	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Cook Islands	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Costa Rica	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2013-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Côte d'Ivoire	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Croatia	Crop production in EU standard humidity by NUTS 2 regions	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3417253/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Cuba	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Cyprus	Agricultural statistics	2013-2015	1	Statistical Service	https://www.cystat.gov.cy/en/PublicationList?s=28
	Census of Agriculture 2003	2003	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	2	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop production in EU standard humidity by NUTS 2 regions	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3417253/default/table?lang=en
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
Czech Republic	Czech agriculture through the eyes of statistics - 2000-2017	2000-2015	0	Czech Statistical Office	https://www.czso.cz/csu/czso/ceske-zemedelstvi-ocima-statistiky-1918-2017
	Agrocensus 2010 - Farm Structure Survey	2010	1	Czech Statistical Office	https://www.czso.cz/documents/10180/20567009/212712k08_en.pdf/20fffc73-aa13-430e-a8ff-55d02683f830?version=1.0
	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Trends in areas, per hectare yields and harvests of crops	2009-2015	0	Czech Statistical Office	https://vdb.czso.cz/vdbvo2/faces/en/index.jsf?page=vystup-objekt-parametry&z=T&f=TABULKA&sp=A&skupId=386&katalog=30840&pvo=ZEM02R&evo=v1442_!_ZEM02G-plocha_1
	Trends in areas, per hectare yields and harvests of crops	2014-2015	1	Czech Statistical Office	https://vdb.czso.cz/vdbvo2/faces/en/index.jsf?page=vystup-objekt-parametry&z=T&f=TABULKA&sp=A&skupId=386&katalog=30840&pvo=ZEM02R&evo=v1442_!_ZEM02G-plocha_1

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Democratic People's Republic of Korea	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Democratic Republic of the Congo	FEWS total harvested area (few crops only)	2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Denmark	Cultivated area by unit, region, crop, and time	2006-2015	1	Statistics Denmark	https://www.statbank.dk/AFG5
	Farm Structure Survey	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Denmark&oldid=146850
	Crop production in EU standard humidity by NUTS 2 regions	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3417253/default/table?lang=en

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Irrigated Area by province	2006-2015	1	Statistics Denmark	https://www.statbank.dk/AFG6
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Djibouti	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Dominica	Agricultural Statistics 2011	2007-2011	0	Central Statistical Office	https://stats.gov.dm/wp-content/uploads/2019/06/Agricultural_Statistics_2011.pdf
	Agricultural Statistics 2009	2007-2009	0	Central Statistical Office	https://stats.gov.dm/wp-content/uploads/2019/06/Agricultural_Report_2009.pdf
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Dominican Republic	National Agricultural Pre Census	2015	1	National Statistics Office	https://www.one.gob.do/datos-y-estadisticas/temas/censos/agropecuario/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Ecuador	Census of Agriculture 2000	2000	0	National Institute of Statistics and Census	https://www.ecuadorencifras.gob.ec//documentos/web-inec/Estadisticas_agropecuarias/CNA/Tomo_CNA.pdf
	Production Area Survey	2014-2015	0	National Institute of Statistics and Census	https://www.ecuadorencifras.gob.ec/estadisticas/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Egypt	Annual Bulletin of Statistics Crop Area and Plant Production	2000-2015	0	Central Agency for Public Mobilization and Statistics	https://www.capmas.gov.eg/Pages/Publications.aspx?page_id=5104&Year=23541
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Annual Bulletin of Irrigation and Water Resources	2000-2015	0	Central Agency for Public Mobilization and Statistics	https://www.capmas.gov.eg/Pages/Publications.aspx?page_id=5104&Year=23557
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
El Salvador	IV Census of Agriculture 2007-08	2006/07	1	Department of Statistics and Census	https://bd.sica.int/index.php/catalog/66/related_materials https://www.mag.gob.sv/censos-agropecuarios/

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Equatorial Guinea	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Eritrea	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Estonia	County level harvested area	2000-2015	0	Statsics Estonia	https://andmed.stat.ee/et/stat/majandus_pellumajandus_pellumajandussaaduste-tootmine_taimekasvatussaaduste-tootmine/PM0281/table/tableViewLayout2
	Census of Agriculture 2010	2010	0	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries/2010/en/
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Eswatini	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Ethiopia	Area and Production for Major Crops	2000-2015	2	Ethiopian Stastics Service	https://www.statsethiopia.gov.et/our-survey-reports/
	FAO CountrySTAT	2001-2012	1	CountrySTAT	http://ethiopia.countrystat.org/home/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Faeroe Islands	Domestic land utilization (crop area)	2000-2015	0	Statistics Faeroe Islands	https://statbank.hagstova.fo/pxweb/fo/H2/H2_UO_UO04/Tilfar_rokn.px/table/tableViewLayout2/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Fiji	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Finland	Major crops harvested area	2000-2015	1	Natural Resource Institute Finland	https://statdb.luke.fi/PXWeb/pxweb/en/LUKE/LUKE_02%20Maatalous_04%20Tuotanto_14%20Satotilasto/01_Viljelykasvien_sato.px/table/tableViewLayout2/
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Total irrigated area per province	2013/2016/2020	1	Natural Resource Institute Finland	https://statdb.luke.fi/PXWeb/pxweb/en/LUKE/LUKE__02%20Maatalous__02%20Rakenne__12%20Viljelysmaan%20hoito%20ja%20kastelu/01_Kasteltavissa_oleva_pelto_puutarha_ala_alue.px/table/tableViewLayout2/
France	Crops by area and by municipality	2000/2010	1	The Ministerial Statistical Service for Agriculture	https://www.agreste.agriculture.gouv.fr/agreste-web/disaron/G_2012/detail/
	Crops and irrigation according to the technical-economic orientation	2000/2011	1	The Ministerial Statistical Service for Agriculture	https://www.agreste.agriculture.gouv.fr/agreste-web/disaron/G_0051/detail/
	Census of Agriculture 2000 result summary	2000	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO	
	Farm Structure Survey in France	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_France#Publications
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowse/r/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
French Guiana	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
French Polynesia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Gabon	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Gambia	FAOSTAT Crop Harvested Area Database	2000-2015	1	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Georgia	Agriculture of Georgia	2012-2015	1	National Statistics Office	https://www.geostat.ge/en/single-categories/102/agriculture-of-georgia
	Census of Agriculture 2004	2004	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2014	2014	1	National Statistics Office	https://www.geostat.ge/en/modules/categories/750/2014-agricultural-census-results
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Census of Agriculture 2014 (Irrigation)	2014	1	National Statistics Office	https://www.geostat.ge/en/modules/categories/750/2014-agricultural-census-results
Germany	Area Under Cultivation	2000-2009	0	Federal Statistics Office	https://www-genesis.destatis.de/genesis//online?operation=table&code=41241-0001&bypass=true&levelindex=0&levelid=1718946905915#abreadcrumb
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	Farm Structure Survey	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_France#Publications
	Census of Agriculture 2020	2020	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Ghana	Cultivated Area, Production, and Yield For Major Crops	2013,2015	1	Ministry of Food and Agriculture	https://www.statsghana.gov.gh/nationalaccount_macros.php?Stats=MjM3NTIyNzgzM y44ODU=/webstats/985rp49861
	Census of Agriculture 2018	2018/19	0	FAO	https://www.fao.org/fileadmin/templates/ess/ess_test_folder/World_Census_Agricul

					ture/WCA_2020/WCA_2020_new_doc/GH A REP ENG 2018_2019_F.pdf
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Greece	Census of Agriculture 2000 and 2009	2000/2009	1	Hellenic Statistical Authority	https://www.statistics.gr/en/statistics/-/publication/SPG31/-
	Farm Structure Survey 2016	2016	1	Hellenic Statistical Authority	https://www.statistics.gr/en/statistics/-/publication/SPG32/-
	Annual Agricultural Statistical Survey	2010-2015	1	Hellenic Statistical Authority	https://www.statistics.gr/en/statistics/-/publication/SPG32/-
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Grenada	FAOSTAT Crop Harvested Area Database	2000-2015	1	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2008-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Guadeloupe	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Guam	Census of Agriculture 2007	2007	1	USDA	https://www.fao.org/fileadmin/templates/ess/ess_test_folder/World_Census_Agriculture/Country_info_2010/Reports/GUA_EN_G_REP_2007.pdf
	Census of Agriculture 2017	2017	1	USDA	https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Outlying_Areas/guam.pdf
Guatemala	Census of Agriculture 2003	2003	0	National Institute of Statistics	https://www.ine.gob.gt/ine/censo-agropecuario/
	Cultivated Area of Grain Crops	2013-2018	0	National Institute of Statistics	https://www.ine.gob.gt/ine/encuesta-nacional-agropecuaria/
	National Agricultural Survey	2013-2020	0	National Institute of Statistics	https://www.ine.gob.gt/ine/encuesta-nacional-agropecuaria/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Guinea	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2001-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Guinea-Bissau	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Guyana	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Haiti	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Honduras	Area, Production and Yield of major crops	2000-2015	0	National Institute of Statistics	https://www.ine.gob.hn/publicaciones/anuarios%20sen/Anuariosen2015-2019/3SectoresEconomicos.html
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Hungary	Census of Agriculture 2000 result summary	2000	0	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2020	2020	1	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Farm Structure Survey	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Hungary&oldid=197886

	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Iceland	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
India	Census of Agriculture 2005/06	2005/06	2	Department of Agriculture and Farmers Welfare	https://agcensus.nic.in/docragc.html
	Census of Agriculture 2010/11	2010/11	2	Department of Agriculture and Farmers Welfare	https://agcensus.nic.in/docragc.html
	Census of Agriculture 2015/16	2015/16	2	Department of Agriculture and Farmers Welfare	https://agcensus.nic.in/docragc.html
	Area Under Crop in Each District	2000-2015	2	Department of Agriculture & Farmers Welfare	https://agcensus1.da.gov.in/DistCharacteristic.aspx

	Area Irrigated and Crops Irrigated in Each District	2000-2015	2	Web-Based Land Use Statistics Information System	https://aps.dac.gov.in/LUS/Public/Reports.aspx
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Indonesia	Rice Field Area	2003-2015	0	Statistics Indonesia	https://www.bps.go.id/indicator/53/179/5/luas-lahan-sawah.html
	Plantation area by provinces	2012-2021	1	Statistics Indonesia	https://www.bps.go.id/indicator/54/131/1/luas-tanaman-perkebunan-menurut-provinsi.html
	Large Plantation Plant Area by Plant Type	2000-2021	0	Statistics Indonesia	https://www.bps.go.id/indicator/54/1847/8/luas-tanaman-perkebunan-besar-menurut-jenis-tanaman.html
	Census of Agriculture 2003 result summary	2003	0	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2013	2013	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Iran, Islamic Republic of	Census of Agriculture 2003 result summary	2000	0	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2014	2014	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Statistical Yearbook	2009-2015	1	Iran Data Portal	https://irandataportal.syr.edu/socio-economic-data/statistical-yearbook

	Cultivated Area of Annual crops	2003	1	Iran Data Portal	https://irandataportal.syr.edu/holdings
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Irrigated Crop Land	2003	1	Iran Data Portal	https://irandataportal.syr.edu/holdings
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Iraq	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Ireland	Area under crops	2000-2015	0	Department of Agriculture, Environment & Rural Affairs	https://www.daera-ni.gov.uk/publications/historical-crop-data-1847-date
	Area by crop groups by district	2010-2015	1	Department of Agriculture, Environment & Rural Affairs	https://www.daera-ni.gov.uk/publications/district-council-area-statistics-1992-and-2014
	Area under crops	2000-2015	0	Department of Agriculture, Environment & Rural Affairs	https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2021/chapter-7-crops
	Farm Structure Survey	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_France#Publications
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en

	Census of Agriculture 2000	2000	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Israel	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Italy	Census of Agriculture 2000	2000	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Jamaica	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Japan	Census of Agriculture 2000 Summary Results	2000	0	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2020	2020	0	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Statistical Yearbook of Japan	2011-2015	1	Statistics Bureau of Japan	https://www.stat.go.jp/english/data/nenkann/index.html
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Jordan	Census of Agriculture 2017	2017	0	FAO (WCA2020)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Planted Areas of Irrigated and Non-Irrigated Crops	2000-2015	1	Department of Statistics	https://jorinfo.dos.gov.jo/Databank/pxweb/en/DOS_Database/START__08/AGR_AREA/
	Irrigated, non-irrigated area	2007	0	Department of Statistics	http://www.dos.gov.jo/dos_home_e/main/agriculture/census/tables/tab6_1.pdf

	Harvested Area by Crop and Province	2000-2015	1	Department of Statistics	https://jorinfo.dos.gov.jo:443/Databank/api/v1/en/DOS_Database/START/08/AGR_AR EAPRO
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Kazakhstan	Harvested area by crop	2000-2015	0	Agency of Statistics of the Republic of Kazakstan	https://stat.gov.kz/official/industry/14/statistic/8
	Census of Agriculture 2007	2007	0	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Kenya	FEWS total harvested area (few crops only)	2000-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Kiribati	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Kuwait	Agricultural Statistics	2004-2015	1	Central Statsics Bureau	https://www.csb.gov.kw/Pages/Statistics_en?ID=42&ParentCatID=4

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Kyrgyzstan	Agriculture of the Kyrgyz Republic	2015	1	National Statistical Committee	http://www.stat.kg/en/publications/sbornik-selskoe-hozyajstvo-kyrgyzskoj-respubliki/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Lao People's Democratic Republic	Crop Specific harvested area for major crops	2010-2020	0	Lao Stastics Bureau	https://laosis.lsb.gov.la/tblInfo/TblInfoList.do
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Latvia	Census of Agriculture 2010	2010	0	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Latvia
	Crop-Specific Harvested Area for Major Crops	2000-2022	0	Official Statistics of Latvia	https://data.stat.gov.lv/pxweb/en/OSP_PUB/START__NOZ__LA__LAG/LAG020
	Farm Structure Survey 2010	2010	0	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Latvia

	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Lebanon	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Lesotho	FEWS total harvested area (few crops only)	2000-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2009	2009	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2019	2019	1	FAO (WCA2019)	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Agricultural Crop Production Survey	2017-2020	1	Bureau of Statistics	https://www.bos.gov.ls/Publications.htm
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Liberia	FEWS total harvested area (few crops only)	2010	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Libya	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Lithuania	Crop-Specific Harvested Area	2000-2015	2	Statistics Lithuania	https://osp.stat.gov.lt/statistiniu-rodikliu-analize?hash=19cb4be5-1238-4fba-9030-192fedd069b1#/
	Census of Agriculture 2003	2003	1	FAO (WCA2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Luxembourg	Census of Agriculture 2010	2010	0	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
Madagascar	FEWS total harvested area (few crops only)	2001-2010	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2004/2005	2005	0	National Institute of Statistics	https://www.instat.mg/p/ra-enquetes-connexes-campagne-agricole-2004-2005
	Harvested area by crop by district	2007-2010	0	Agricultural Statistics Service	http://www.maep.gov.mg/communication/wp-content/uploads/sites/2/2014/06/ANNUAIRE-2010-PDF-final.pdf
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Malawi	FEWS total harvested area (few crops only)	2010	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Malaysia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Maldives	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Mali	FEWS total harvested area (few crops only)	2010	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Malta	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Marshall Islands	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Martinique	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
Mauritania	FEWS total harvested area (few crops only)	2001-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Mauritius	Census of Agriculture 2014	2014	0	Statistics Mauritius	https://statsmauritius.govmu.org/Pages/Censuses%20and%20Surveys/CA/2014-CA.aspx
	Archive Publications for Agriculture	2000-2015	0	Statistics Mauritius	https://statsmauritius.govmu.org/Pages/Statistics/By_Subject/Agriculture/Arch_Agriculture.aspx
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Mayotte	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
Mexico	Census of Agriculture 2007	2007	1	National Institute of Statistics and Geography	https://www.inegi.org.mx/programas/cagf/2007/
	Census of Agriculture 2016	2016	1	National Institute of Statistics and Geography	https://www.inegi.org.mx/programas/amca/2016/
	Agricultural Production Statistics	2000-2015	1	National Institute of Statistics and Geography	http://infosiap.siap.gob.mx/gobmx/datosAbiertos.php
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Micronesia, Federated States of	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Mongolia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Montenegro	Census of Agriculture 2010	2010	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Morocco	Cultivated area of major crop class	2000-2021	0	High Commission for Planning	http://bds.hcp.ma/indicators/19
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Mozambique	FEWS total harvested area (few crops only)	2001-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2000	2000	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database		2000-2015	0	AQUASTAT
Myanmar	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Namibia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Nauru	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Nepal	Statistical Yearbook	2013-2021	0	Central Bureau of Statistics	https://cbs.gov.np/publications/
	Agriculture Monograph	2001/02	0	Central Bureau of Statistics	https://cbs.gov.np/agriculture-monograph-preface-and-contents/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Netherlands	Arable crops; production, to region	2000-2021	0	Statistics Netherlands	https://opendata.cbs.nl/statline/#/CBS/en/dataset/7100eng/table?ts=1666142402759
	Census of Agriculture 2010	2010	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_the_Netherlands
	Farm Structure Survey 2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_the_Netherlands
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowse/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
New Caledonia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
New Zealand	Harvested area of major crops	2000-2021	0	Stat New Zealand	https://infoshare.stats.govt.nz/SelectVariables.aspx?pxID=4f4cf839-edaa-4382-a8de-55870d75f552
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Nicaragua	Statistical Yearbook	2005-2020	1	National Institute of Statistics	https://www.inide.gob.ni/Home/Anuarios
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Niger	Stastical Year Bulletin	2008-2012	0	National Institute of Statistics	https://www.stat-niger.org/?page_id=500
	Census of Agriculture 2004/08	2004/08	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Regional Annual Stastics Bulletin	2015-2018	1	National Institute of Statistics	https://www.stat-niger.org/?page_id=200

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Nigeria	FEWS total harvested area (few crops only)	2001-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Integrated Survey on Agriculture	2015/16 & 2019	0	National Bureau of Statistics	https://nigerianstat.gov.ng/elibrary
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Niue	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Norway	Census of Agriculture 1999	1999	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey 2003/2005/2007	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Norway
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Holdings and area with irrigation by region	1999-2020 (every 10 years)	1	Statistics Norway	https://www.ssb.no/en/statbank/table/13364/tableViewLayout1/
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
North Macedonia	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Oman	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Pakistan	Census of Agriculture 2000	2000	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/

	Regional Census of Agriculture 2020	2020	1	Bureau of Statistics	https://www.pbs.gov.pk/agriculture-census-publications
	Crop Area and Production (by districts)	1981-2009	1	Bureau of Statistics	https://www.pbs.gov.pk/publication/crops-area-and-production-districts-1981-82-2008-09-0
	Agricultural Statistics of Pakistan 2010/11	1993/1994-2010/2011	1	Bureau of Statistics	https://www.pbs.gov.pk/publication/agriculture-statistics-pakistan-2010-11-0
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Land use area irrigated by sources	1993-2011	1	Bureau of Statistics	https://www.pbs.gov.pk/publication/agriculture-statistics-pakistan-2010-11-0
	Area Irrigated by Different Sources	2010-2020	1	Bureau of Statistics	https://www.pbs.gov.pk/sites/default/files/tables/agriculture_statistics/table_4_area_irrigated_by_different_sources.pdf
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Palestine (State of)	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Panama	Census of Agriculture 2011	2011	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Planted Area and Harvest of Major Crops	2000-2015	0	National Institute of Statistics and Sensor	https://www.inec.gob.pa/publicaciones/Default.aspx?ID_CATEGORIA=4&ID_SUBCATEGORIA=11
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Papua New Guinea	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Paraguay	Harvested Area of Major Crops	2014-2020	0	National Institute of Statistics	https://www.ine.gov.py/default.php?publicacion=16
	Statistical Yearbook	2000-2015	0	National Institute of Statistics	https://www.ine.gov.py/default.php?publicacion=16
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2008-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Peru	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Philippines	Selected Statistics on Agriculture	2000-2015	0	Statistics Authority	https://psa.gov.ph/content/selected-statistics-agriculture?page=1
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Poland	Census of Agriculture 2002	2002	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/

	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey 2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Poland
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Portugal	Census of Agriculture 1999	1999	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2009	2009	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2019	2019	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2020/countries2020/en/
	Farm Structure Survey 2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Portugal
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Puerto Rico	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Qatar	Agricultural Statistics	2012-2021	0	Planning and Statsics Authority	https://www.psa.gov.qa/en/statistics1/pages/topicslisting.aspx?parent=Economic&child=Agriculture
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Republic of Korea	Agricultural Survey 2010-2020	2010-2020	1	Statistics Korea	http://kostat.go.kr/portal/eng/pressReleases/2/2/index.board?bmode=list&bSeq=&aSeq=&pageNo=6&rowNum=10&navCount=10&currPg=&searchInfo=&sTarget=title&sTxt=
	Cultivated Area of Major crops	2010-2020	1	Statistics Korea	http://kostat.go.kr/portal/eng/pressReleases/2/2/index.board?bmode=list&bSeq=&aSeq=&pageNo=6&rowNum=10&navCount=10&currPg=&searchInfo=&sTarget=title&sTxt=

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Republic of Moldova	Crop Specific Sown area	2007-2020	2	National Bureau of Statistics	https://statbank.statistica.md/PxWeb/pxweb/en/40%20Statistica%20economica/40%20Statistica%20economica__16%20AGR__AGR020/AGR020100.px/table/tableViewLayout1/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Réunion	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Romania	Statistical Yearbook	2006-2015	1	National Institute of Statistics	https://insse.ro/cms/en/content/statistical-yearbooks-romania
	Census of Agriculture 2002	2002	1	National Institute of Statistics	https://insse.ro/cms/files/GAC/index.htm
	Census of Agriculture 2010	2010	1	National Institute of Statistics	https://insse.ro/cms/files/RGA2010/Rezultate%20definitive%20RGA%202010/rezultate%20definitive%20RGA%202010.htm
	Farm Structure Survey 2002/2005/2007	2002/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Agricultural_census_in_Romania&oldid=347719
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR__custom_3300731/default/table?lang=en

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Russian Federation	Census of Agriculture 2006	2006	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Agriculture 2016	2016	2	FAO	https://www.fao.org/fileadmin/templates/ess/ess_test_folder/World_Census_Agriculture/WCA_2020/WCA2020_TMRs/TMR_Russia_2016.pdf
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Rwanda	FEWS total harvested area (few crops only)	2010	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2008	2008	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Saint Kitts and Nevis	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Saint Lucia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Saint Vincent and the Grenadines	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Samoa	Agricultural Survey 2005 & 2015	2005 & 2015	1	Samoa Bureau of Statistics	https://www.sbs.gov.ws/economics
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Sao Tome and Principe	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Saudi Arabia	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Senegal	FEWS total harvested area (few crops only)	2001-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Serbia	Statistical Yearbook	2012-2022	1	Statistics of the Republic of Serbia	https://www.stat.gov.rs/en-us/oblasti/poljoprivreda-sumarstvo-i-ribarstvo/biljna-proizvodnja/
	FAOSTAT Crop Harvested Area Database	2003-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Irrigated Area Under Different Crops	2018	1	Statistics of the Republic of Serbia	https://data.stat.gov.rs/Home/Result/1300020301?languageCode=en-US
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Seychelles	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Sierra Leone	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Singapore	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

Slovakia	Census of Agriculture 2010	2010	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey 2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Slovakia&oldid=379563
	Crop Production in EU Standard Humidity	2000-2015	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	0	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
Slovenia	Census of Agriculture 2000	2000	1	FAO (WCA 2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Census of Horticulture 2000/2006	2000/2006	1	Statistics Office	https://www.stat.si/StatWeb/File/DocSysFile/1166/rr_765-01.pdf
	Farm Structure Surv2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Slovenia&oldid=407586
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR__custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Solomon Islands	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Somalia	FEWS total harvested area (few crops only)	2010-2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
South Africa	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
South Sudan	FAOSTAT Crop Harvested Area Database	2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Spain	Crop Surfaces and Productions	2009-2020	1	National Institute of Statistics	https://www.mapa.gob.es/es/estadistica/temas/estadisticas-agrarias/agricultura/superficies-producciones-anuales-cultivos/

	Census of Agriculture 2020	2020	1	National Institute of Statistics	https://www.ine.es/jaxi/Datos.htm?tpx=51261
	Census of Agriculture 1999	1999	1	National Institute of Statistics	https://www.ine.es/dynt3/inebase/en/index.htm?padre=2176&capsel=2178
	Census of Agriculture 2009	2009	1	National Institute of Statistics	https://www.ine.es/dynt3/inebase/en/index.htm?padre=2156&capsel=2160
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Irrigated area (Census of Agriculture 2009 and 2020)	2009/2020	0	National Institute of Statistics	https://www.ine.es/jaxi/Datos.htm?tpx=51261
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Sri Lanka	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
	Crop Harvested Area	2001-2022	0	Department of Census and Statistics	http://www.statistics.gov.lk/HIES/HIES2006_07Website/
Sudan	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Suriname	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Sweden	Arable Land, Hectares by Region, Crop, and Year	2000-2007	2	Statistics Sweden	https://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__JO__JO0104/AkerArealGrodaL/table/tableViewLayout1/
	Census of Agriculture 2010	2010	1	FAO (WCA 2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey 2005/2007	2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_Sweden
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Switzerland	Statistical Yearbook (Agriculture)	2005-2015	1	Federal Statistics Office	https://www.bfs.admin.ch/bfs/en/home/statistics/catalogues-databases/publications.html?dyn_prodimas=900104&dyn_pageIndex=1

	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	EUROSTAT	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Syrian Arab Republic	Major Crops Cultivated Area	2006-2008	0	Central Bureau of Statistics	http://cbssyr.sy/index-EN.htm
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Tajikistan	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Thailand	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

	Statistics of Economic Crops Cultivation by Type of Crops	2021	0	National Statistics Office	http://statbbi.nso.go.th/analytics/saw.dll?PortalPages
Timor-Leste	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Togo	Cultivated Area of Major Crops	2000-2016	1	Togo Data Portal	https://togo.opendataforafrica.org/aevgmb/fili%C3%A8re-vivri%C3%A8re-niveau-region
	Statistical Yearbook of Togo and its Regions	2000-2015	1	National Institute of Statistics and Economic and Demographic Studies	https://inseed.tg/annuaire/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Tokelau	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Tonga	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Census of Agriculture 2015	2015	0	Tonga Statistics Department	https://tongastats.gov.to/census/agriculture-census/
Trinidad and Tobago	Temporary Food Crops Planted Under Traditional	2000-2015	0	Central Statistics Office	https://cso.gov.tt/subjects/agriculture/#production-sales-and-price-statistics-43fdc7cd-058a-4032-8223-b8d7a89d3848

	Cultivation, Trinidad only				
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Tunisia	Census of Agriculture 2005	2005	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Harvested areas of major crops	2000-2014	0	Statistics Tunisia	http://dataportal.ins.tn/en/DataAnalysis?DRllk3Kak0irBSijS5Jkg
	Statistical Yearbook and Tunisia in Figures	2005-2015	0	Statistics Tunisia	http://www.ins.tn/en/statistiques/46#
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Türkiye	Crop Products Balance Sheets	2008-2021	0	Turkish Statistical Institute	https://data.tuik.gov.tr/Bulten/Index?p=Crop-Production-Statistics-2021-37249
	Crop Harvested area	2004-2021	1	Turkish Statistical Institute	https://biruni.tuik.gov.tr/medas/?kn=104&locale=en
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Turkmenistan	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Tuvalu	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Uganda	Census of Agriculture 2002	2002	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2008	2008	0	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Crop-Specific Harvested Area	2015-2020	0	Uganda Bureau of Statistics	https://www.ubos.org/explore-statistics/2/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Ukraine	Crop-Specific Harvested Area of Major Crops	1991-2021	0	State Statistics Service of Ukraine	https://ukrstat.gov.ua/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

United Arab Emirates	Crop-Specific Harvested Area	2006-2015	0	Federal Competitiveness and Statistics Center	https://fcsc.gov.ae/en-us/Pages/Statistics/Statistics-by-Subject.aspx#/%3Ffolder=Agriculture%20Environment%20and%20Energy/Agriculture/Agriculture%20Areas%20and%20Crops&subject=Agriculture%20Environment%20and%20Energy
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
United Kingdom	Census of Agriculture 2000	2000	1	FAO (WCA 2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2010	2010	1	FAO (WCA 2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Farm Structure Survey 2003/2005/2007	2003/2005/2007	1	Eurostat	https://ec.europa.eu/Eurostat/statistics-explained/index.php?title=Archive:Agricultural_census_in_the_United_Kingdom&oldid=379569
	Crop Production in EU Standard Humidity	2000-2015	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/APRO_CPSHR_custom_3300731/default/table?lang=en
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	Eurostat: Irrigated Area Data by Province	2000-2013	1	Eurostat	https://ec.europa.eu/Eurostat/databrowser/view/AEI_EF_IR_custom_3340839/settings_1/table?lang=en

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
United Republic of Tanzania	FEWS total harvested area (few crops only)	2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2003	2003	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2007	2007	1	FAO	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
United States of America	Census of Agriculture 2002/2007/2012/2017	2002/2007/2012/2017	2	USDA NASS Quick Stats	https://quickstats.nass.usda.gov/
	Census Based Crop Specific Irrigated and Rainfed Areas	2002/2007/2012/2017	2	USDA NASS Quick Stats	https://quickstats.nass.usda.gov/
	HarvestGRID: High-resolution harvested crop areas of the United States from 1981 to 2019	2000 to 2015	2	EARTHARXIV	https://eartharxiv.org/repository/view/7138/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

Uruguay	Census of Agriculture 2000	2000	0	FAO (WCA 2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2011	2011	0	FAO (WCA 2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Statistical Yearbook (Chapter on Agriculture)	2020-2022	0	National Institute of Statistics	https://www.ine.gub.uy/web/guest/anuario-estadistico-nacional
	Agricultural Survey 2020	2020	0	Ministry of Agriculture, Livestock and Fishing	https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/datos-y-estadisticas/estadisticas/dia-presenta-resultados-encuesta-agricola-primavera-2020
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Uzbekistan	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Vanuatu	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
Venezuela (Bolivarian Republic of)	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL

	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Viet Nam	Census of Agriculture 2001	2001	0	FAO (WCA 2000)	https://www.fao.org/world-census-agriculture/wcarounds/wca2000/wca2000-country0/en/
	Census of Agriculture 2011	2011	0	FAO (WCA 2010)	https://www.fao.org/world-census-agriculture/wcarounds/wca2010/countries2010/en/
	Planted area by crop by province	2000-2015	0	General Statistics Office	https://www.gso.gov.vn/en/statistical-data/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Yemen	FEWS total harvested area (few crops only)	2001 to 2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Statistical Yearbook	2013-2015	0	Central Statistical Organization	https://www.cso-yemen.com/content.php?lng=english&cid=131
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Zambia	FEWS total harvested area (few crops only)	2001 to 2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	Census of Agriculture 2000	2000	0	FAO	https://zambia.opendataforafrica.org/etqmqgf/agriculture-statistics-2017
	Planted area for Major Crops	2000-2017	1	Zambia Data Portal	

	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2015	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html
Zimbabwe	FEWS total harvested area (few crops only)	2015	1	FEWS NET Data Center	https://fdw.fews.net/data-explorer/
	FAOSTAT Crop Harvested Area Database	2000-2015	0	FAOSTAT	https://www.fao.org/faostat/en/#data/QCL
	FAO AQUASTAT Irrigated Cropped Area Database	2000-2018	0	AQUASTAT	https://www.fao.org/aquastat/statistics/query/index.html

1 **Table S2: Data Quality Indicators:** This table summarizes the quality assessment of harvested area
 2 statistics for each country using five criteria:

3 This table presents the quality assessment of harvested area statistics for each country using the following
 4 criteria:

- 5
- 6 ➤ Availability of subnational data (assessing resolution from county to national level)
 - 7 ➤ Temporal consistency (evaluating consistent data availability throughout the study period)
 - 8 ➤ Synchrony (measuring data collection timing relevance to the study period)
 - 9 ➤ Spatial consistency (determining coverage of the entire target area)
 - 10 ➤ Availability of segregated irrigated and rainfed areas (separate data availability for these
 - 11 categories)

12 Each criterion was scored from 0 to 1 for each crop and country, with total scores indicating data quality
 13 (lower scores represent poorer quality, higher scores represent higher quality).

14

Criteria	Points
Criteria 1: Availability of Subnational Data	1
County-level data only	1
Provine level data only	0.5
National-level data only	0
Criteria2: Consistency	
Criteria 2.1: Temporal Consistency	1
>=3 years	1
2 years	0.5
1 year	0
Criteria 2.2: Spatial consistency	1
Census data aligns with the study year	1
Cover part of the census area	0
Criteria 3: Synchrony (Timing Accuracy)	1
Exact Match	1
Close Match	0.75
Partial match	0.5
No Match	0
Criteria 4: Data Availability (Segregation of Irrigated and Rainfed Areas)	1
Availability of both irrigated and Rainfed Areas	1
Availability of Total Harvested Areas Only	0

15

16

17

18 **Supplementary Note1: Description of the downscaling approach**

19 We adopted an improved methodology that builds on that developed for the MIRCA200024 (monthly
20 irrigated and rainfed cropped areas for the year 2000) dataset. Each administrative 'unit's crop-specific
21 irrigated and rainfed harvested area were downscaled to each eligible five-arcminute grid cell falling
22 within the administrative unit, with limits on eligible area determined by data on the gridded crop-specific
23 harvested area (HA), cropland extent (CE), and area equipped for irrigation (AEI). While downscaling, the
24 highest priority was given to ensure the sum of a crop-specific irrigated area at each grid cell is lower than
25 or equal to the AEI. For any amounts of harvested area that remained to be allocated within the
26 administration unit after meeting this highest priority, we then spatially distributed these harvested areas
27 to maximize the consistency of each grid's crop-specific irrigated and rainfed areas with CE and HA.

28 The downscaling procedure was sequential and iterative, consisting of seven distinct steps: four to assign
29 irrigated areas and three more to assign rainfed areas. After each step, the sum of downscaled grid cell
30 harvested areas were compared with the total crop-specific harvested area of the CCC; if all of a 'crop's
31 harvested area was not distributed after completing a step, then we proceeded to the subsequent step.

32

33 **Step 1:** All irrigated crops were ranked based on their irrigated harvested area within each administrative
34 unit (starting with the crop with the largest harvested area) and the corresponding crop category. While
35 assigning ranks, perennial crops (sugar cane, oil palm, cocoa, and coffee) were processed first, followed
36 by other perennials and fodder crops. Annual crops (barley, cassava, cotton, fodder, groundnuts, maize,
37 millet, potatoes, pulses, rapeseed, rice, sorghum, soybeans, sunflower, and wheat) were then processed,
38 followed by the other annuals crop classes. Following their rank, crop-specific irrigated areas for crop c in
39 grid cell g ($IA_{c,g}$) were determined as the product of the crop's HA and a fraction of the grid cell AEI.

$$40 \quad IA(c, g) = \frac{HA(c,g)}{s_i(c)} \times \frac{AEI(g)}{a(g)} \quad (1)$$

41 Where $HA(c,g)$ was the total crop-specific harvested area of crop c in grid cell g , $AEI(g)$ was the area
42 equipped for irrigation in grid cell g , $s_i(c)$ was the number of sub-crops for crop c (i.e., the number of
43 growing seasons for crop c) and $a(g)$ was the area of grid cell g in hectares.

44 After completing step 1, we calculated the total irrigated area assigned by cumulatively summing them
45 up in order of their rank, considering their harvested area. Then, we allocated this area across the growing
46 season months for each target crop.

47

48 Steps 2 through 4 were computed for each crop reported in an administrative unit iteratively based on
49 their rank, starting from the top-ranked crop, and then these steps were repeated iteratively for each
50 subsequent crop, accounting for the remaining AEI and CE.

51 **Step 2:** This step was performed only if the crop irrigated harvested area per spatial unit had not yet been
52 fully allocated in the previous step. The maximum cumulative irrigated area assigned for all preceding
53 crops was determined by selecting the maximum total irrigated area assigned during the growing months
54 of the processed crop. The irrigated area still available after completing step 1 (AEI_{free2}) was estimated
55 as the difference between the cell-specific area equipped for irrigation (AEI) and the maximum cumulative

56 irrigated area assigned (Equation 2). The total harvested area available after Step 1 was also estimated as
 57 the difference between the HA in grid cell g and the total area allocated in Step 1 (Equation 3).

$$58 \quad AEI_{free2}(g) = AEI(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGi_{distributed\ m_e}\right) \quad (2)$$

$$59 \quad HA_{free2}(c, g) = \begin{cases} c_i * HA(c, g) - AG_i(c, g) & \text{if } c_i * HA(c, g) > AG_i(c, g) \\ 0 & \text{else} \end{cases} \quad (3)$$

$$60 \quad c_i = \frac{1}{\text{number_of_subcrops}_i(c)} \quad (4)$$

61
 62 where $AEI(g)$ is the total area equipped for irrigation per each grid cell in ha, $AEI_{free2}(g)$ was the cell-
 63 specific area equipped for irrigation still available after the previous step, $AGi_{distributed\ m_s}$ and
 64 $AGi_{distributed\ m_e}$ are the total harvested area that was already distributed to all higher-ranked crops
 65 growing between the growing season of the processed crop. $HA_{free2}(c, g)$ was the cell-specific total
 66 harvested area still available after the previous step in ha. c_i is a scaling coefficient that considers multiple
 67 cropping.

68
 69 Determining $AEI_{free}(cell)$ at each step after assigning the irrigated area in the previous step guaranteed
 70 that the cumulative monthly harvested area for the irrigated crops did not exceed the area equipped for
 71 irrigation in any grid cell. Similarly, the procedure for determining $HA_{free}(cell, crop)$ ensured that the
 72 harvested area for a specific irrigated crop is within the bounds of the highest potential GAEZ crop-specific
 73 total harvested area, including both irrigated and rainfed harvested area.

74
 75 After completing each step, we compared the assigned irrigated area for each spatial unit against the
 76 irrigated area in the CCC to determine whether the entire available area had been spatially downscaled
 77 or whether more area remained to be assigned ($AGi_{to_distribute}$) (Equation 5).

78 For each spatial unit s , crop c in grid cell g , the potential area to be distributed in step 2 (AGi_{pot2}) was
 79 computed as the minimum of the total harvested area still available for allocation (HA_{free2}) and the
 80 remaining irrigated area after the preceding step (AEI_{free2}) (Equations 6 and 7).

$$81 \quad AGi_{to_distribute}(s, c) = AGi(s, c) - AGi_{distributed}(s, c) \quad (5)$$

$$82 \quad AGi_{pot2}(s, c) = \sum_g AGi_{pot2}(c, g) \quad (6)$$

$$83 \quad AGi_{pot2}(c, g) = \min(AEI_{free2}(g), AH_{free2}(c, g)) \quad (7)$$

84
 85 In this context, $AGi_{to_distribute}(s, c)$ refers to the remaining harvested area for each crop and spatial
 86 unit to be allocated following the preceding step (ha). $AGi(s, c)$ represents the total irrigated area of
 87 each crop and spatial unit according to the condensed crop calendar for irrigated crops (ha).
 88 $AGi_{distributed}(s, c)$ denotes the aggregate irrigated harvested area for each crop and spatial unit

89 that has already been apportioned to the grid cell during the prior step. Lastly, $AGi_pot2(s, c)$ indicates
 90 the total harvested area potentially available for allocation for each crop and spatial unit.

91 The area to be distributed in Step 2 (Equation 7) was assigned to each crop and grid cell, provided it did
 92 not surpass the remaining harvested area pending allocation from the previous step. If the potential
 93 area to be distributed in Step 2 (Equation 6) was greater than the total irrigated area yet to be allocated
 94 after Step 1, we introduced a scaling factor ($f2$), detailed in Equations 8 and 9, to prevent over-allocating
 95 the harvested area.

$$96 \quad AGi_pot2 = f2(s,c) \times AGi_pot2(c,g) \quad (8)$$

$$97 \quad f2(s, c) = \frac{AGi_to_distribute2(s, c)}{AGi_pot2(c,g)} \quad (9)$$

98 **Step 3:** This step was performed only if the crop irrigated harvested area per spatial unit had not yet
 99 been fully allocated in the previous steps. In this step, the irrigated area still available after completing
 100 the preceding steps (AEI_{free3}) was estimated as the difference between the cell-specific area equipped
 101 for irrigation (AEI) and the maximum cumulative irrigated area assigned if the cell-specific cropland
 102 extent is greater than zero (Equation 10).

$$103 \quad AEI_{free3}(g) = \begin{cases} AEI(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGi_{distributed\ m_e}\right) & \text{if } CE > 0 \\ 0 & \text{else} \end{cases} \quad (10)$$

104 The available area equipped for irrigation (AEI) after Steps 1 and 2 was assigned as the potential area to
 105 be distributed in Step 3 (AGi_pot3), only for grid cells with a CE value greater than 0 (as per Equations
 106 11 to 14).

$$107 \quad AGi_pot3(s, c) = \sum_{cells} AGi_pot3(c, g) \quad (11)$$

$$108 \quad AGi_pot3(c, g) = AEI_{free3}(g) \quad (12)$$

109 The area to be distributed in Step 3 (AGi_pot3) was allocated to each crop and grid cell, provided it did
 110 not exceed the remaining harvested area yet to be allocated. If AGi_pot3 exceeded the remaining area
 111 to be allocated, a scaling factor ($f3$) was introduced, as described in Equations 13 and 14.

$$112 \quad AGi_pot3(c,g) = f3(s,c) \times AGi_pot3(c, g) \quad (13)$$

$$113 \quad f3(s, c) = \frac{AGi_to_distribute(s, c)}{AGi_pot3(c,g)} \quad (14)$$

114 **Step 4:** This step was performed only if the sub-crop irrigated harvested area per spatial unit was not
 115 fully allocated in the previous steps. In this step, the irrigated area still available after completing the
 116 preceding steps (AEI_{free4}) was estimated as the difference between the cell-specific area equipped for
 117 irrigation (AEI) and the maximum cumulative irrigated area assigned if the cell-specific cropland extent
 118 is zero (Equation 16).

$$119 \quad AEI_{free4}(g) = \begin{cases} AEI(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGIi_{distributed\ m_e}\right) & \text{if CE} = 0 \\ 0 & \text{else} \end{cases} \quad (15)$$

120 The available area equipped for irrigation (AEI) after Steps 1 to 3 was assigned as the potential area to
 121 be distributed in Step 4 (AGi_{pot4}), only for grid cells with a CE value equal to 0 (as per Equations 17 to
 122 20).

$$123 \quad AGi_{pot4}(s, c) = \sum_{\text{cells}} AGi_{pot4}(c, g) \quad (16)$$

$$124 \quad AGi_{pot4}(c, g) = AEI_{free4}(g) \quad (17)$$

125 The area to be distributed in Step 4 (AGi_{pot4}) was allocated to each crop and grid cell, provided it did
 126 not exceed the remaining harvested area yet to be allocated. If AGi_{pot4} exceeded the remaining area
 127 to be allocated, a scaling factor ($f4$) was introduced, as described in Equations 20 and 21.

$$128 \quad AGi_{pot4}(c, g) = f4(s, c) \times AGi_{pot4}(c, g) \quad (18)$$

$$129 \quad f4(s, c) = \frac{AGi_{to_distribute}(s, c)}{AGi_{pot4}(c, g)} \quad (19)$$

130

131 In Step 5 the main differentiation between crop classes was that annual crops could be allocated to grid
 132 cells with remaining AEI if irrigated crops have not already fully occupied these areas, while perennial
 133 crops can only be allocated to grid cells not occupied by AEI. In Steps 6 and 7, we permitted the distribution
 134 of rainfed area beyond the cropland extent, taking into account the available area constrained to AEI and
 135 95% of the grid cell area²⁰. We utilize only 95% of the cell area to account for other land uses (e.g., roads
 136 and settlements).

137 **Step 5:** After assigning the irrigated areas (Steps 1 to 4), the remaining cropland extent was determined
 138 as the difference between the cell-specific CE and the total assigned irrigated area from steps 1 to 4
 139 (Equations 22 and 23).

140 For annual rainfed crops:

$$141 \quad CE_{free5}(g) = CE(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGIi_{distributed\ m_e}\right) \quad (20)$$

142

143 For perennial rainfed crops:

$$144 \quad CE_{free5}(g) = \begin{cases} CE(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGIi_{distributed\ m_e}\right) & \text{if CE} > AEI \\ 0 & \text{else} \end{cases} \quad (21)$$

145

146 where $CE_{free5}(\text{cell})$ is the available crop land extent after assigning the irrigated area from Steps 1 to 4.

147 The available cropland extent (CE_{free5}) was assigned as the potential area to be distributed in Step 5
 148 (AGi_{pot5}), considering only grid cells with CE greater than zero for annual crops and CE greater than
 149 AEI for perennial crops (as per Equations 24 to 25).

$$150 \quad AGi_{pot5}(s, c) = \sum_{\text{cells}} AGi_{pot5}(c, g) \quad (22)$$

$$151 \quad AGi_{pot5}(c, g) = CE_{free5}(gcell) \quad (23)$$

152 The area to be distributed in Step 5 (AGi_{pot5}) was allocated to each crop and grid cell, provided it did
 153 not exceed the remaining harvested area yet to be allocated. If AGi_{pot5} exceeded the remaining area
 154 to be allocated, a scaling factor ($f5$) was introduced, as described in Equations 25 and 26.

$$155 \quad AGi_{pot5}(c, g) = f5(s, c) \times AGi_{pot5}(c, g) \quad (24)$$

$$156 \quad f5(s, c) = \frac{AGi_{to_distribute}(s, c)}{AGi_{pot5}(c, g)} \quad (25)$$

157 **Step 6:** This step was performed only if the crop rainfed harvested area for a spatial unit was not fully
 158 allocated in the previous steps. In this step, the remaining cropland extent and grid cell area after
 159 assigning irrigated and rainfed areas from Steps 1 to 5 was determined as the difference between the
 160 cell-specific CE or cell area and the maximum cumulative harvested area assigned in the previous steps
 161 (Equations 27 and 28).

162 For annual rainfed crops:

$$163 \quad CE_{free6}(g) = \begin{cases} CE(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGI_{distributed\ m_e}\right) & \text{if } CE > 0 \\ 0 & \text{else} \end{cases} \quad (26)$$

164 For perennial rainfed crops:

$$165 \quad 95\% \text{ cell area}(g) \\ 166 \quad = \begin{cases} 95\% \text{ cell area}(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGI_{distributed\ m_e}\right) & \text{if } CE > AEI \\ 0 & \text{else} \end{cases} \quad (27)$$

167 The available cropland extent (for annual rainfed crops) and 95% of the grid cell area (for perennial
 168 rainfed crops) were assigned as the potential area to be distributed in Step 6 (AGi_{pot6}) (as per
 169 Equations 29 to 30).

$$170 \quad AGi_{pot6}(s, c) \\ 171 \quad = \sum_g AGi_{pot6}(c, g) \quad (28)$$

172 For annual rainfed crops:

$$173 \quad AGi_{pot6}(c, g) = CE_{free6}(g) \quad (29)$$

174 For perennial rainfed crops:

$$175 \quad AGi_{pot6}(c, g) = 95\% \text{ cell area}(g) \quad (30)$$

176

177 The area to be distributed in Step 6 (*AGi_pot6*) was allocated to each crop and grid cell, provided it did
178 not exceed the remaining harvested area yet to be allocated. If *AGi_pot6* exceeded the remaining area
179 to be allocated, a scaling factor (*f6*) was introduced, as described in Equations 32 and 33.

180
$$AGi_pot6(c, g) = f6(s, c) \times AGi_pot6(c, g) \tag{31}$$

181
$$f6(s, c) = \frac{AGi_to_distribute(s, c)}{AGi_pot6(c, g)} \tag{32}$$

182 **Step 7:** This step was performed only if the sub-crop rainfed harvested area for a spatial unit was not
183 fully allocated in the previous steps. In this step, for both annual and perennial crops, the remaining grid
184 cell area after assigning irrigated and rainfed areas from Steps 1 to 6 was determined as the difference
185 between the cell area and the maximum cumulative harvested area assigned in the previous steps
186 (Equations 34).

187 95% cell area(*g*) =
188
$$= \begin{cases} 95\% \text{ cell area}(g) - \max\left(\sum_c AGi_{distributed\ m_s}, \dots, \sum_c AGI_{distributed\ m_e}\right) & \text{if CE or AEI} > 0 \\ 0 & \text{else} \end{cases} \tag{33}$$

189 The available area from 95% of the cell area was assigned as the potential area to be distributed in step
190 7 (*AGi_pot7*) (as per Equations 34 to 35).

191
$$AGi_pot7(s, c) = \sum_g AGi_pot7(c, g) \tag{34}$$

192
$$AGi_pot7(c, g) = 95\% \text{ cell area}(g) \tag{35}$$

193 The area to be distributed in Step 7 (*AGi_pot7*) was allocated to each crop and grid cell, provided it did
194 not exceed the remaining harvested area yet to be allocated. If *AGi_pot7* exceeded the remaining area
195 to be allocated, a scaling factor (*f7*) was introduced, as described in Equations 37 and 38.

196
$$AGi_pot7(c, g) = f7(s, c) \times AGi_pot7(c, g) \tag{36}$$

197
$$f7(s, c) = \frac{AGi_to_distribute(s, c)}{AGi_pot7(c, g)} \tag{37}$$

198

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200

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204 **Supplementary Note2: Documentation of sources of harvested area statistics by continent, by country**
205 **name**

206 **Africa**

207 **Algeria**

208 We used the 2001 Census of Agriculture, which provides total harvested and irrigated areas of major crop
209 classes such as cereals, vegetables, fruits, and dates for the year 2001 at the ways or province levels. Since
210 no other subnational statistics were available after 2001, we assumed that the proportion of each
211 province for these crop classes remained constant throughout the study period.

212 The national-level irrigated area data from AQUASTAT and the total harvested area data from FAOSTAT
213 from 2000 to 2015 were used. Using the proportion of each province according to the 2001 Census, as
214 well as province-level Area Equipped for Irrigation (AEI) and Cropland Extent (CLE), we proportionally
215 assigned the national-level irrigated and total harvested areas for the years 2000 to 2015. When assigning
216 the irrigated and total harvested areas to each province, we ensured that they did not surpass the
217 province's total AEI and CLE.

218 **Angola**

219 Province-level total harvested areas of major crops from 2000 to 2014 were collected from the
220 CountrySTAT profile. A maximum number of crops were reported after 2010, while 2001 and 2005 only
221 included cassava, groundnuts, pulses, potatoes, maize, millet, and rice. For other crop classes, we used
222 the proportion of the total harvested area and proportionally assigned the national-level crop-specific
223 harvested area statistics from FAOSTAT to each province. The 2015 harvested area of these major crops
224 was extrapolated. We used a national-level irrigated harvested area from AQUASTAT and distributed this
225 area to each province, considering the proportion of provinces according to the total harvested area and
226 an area equipped for irrigation.

227 **Burkina Faso**

228 A province-level harvested area of cotton, groundnuts, maize, millet, pulses, rice, sorghum, and soybeans
229 was collected from the FEWS NET data explorer. The national-level irrigated area for these crops was
230 proportionally assigned to each province following their total harvested area and AEI proportion. For
231 other crop classes, national-level total harvested area data was collected from FAOSTAT, while the
232 irrigated area of other crop classes was collected from AQUASTAT.

233 **Benin**

234 Province-level total harvested areas of major crops were collected from national survey reports from 2000
235 to 2010. The 2015 harvested area was determined using the province proportion of the total harvested
236 area from the 2010 CC and the national-level total harvested area from FAOSTAT. We used a national-
237 level irrigated harvested area from AQUASTAT. We distributed this area to each province, considering the
238 proportion of provinces according to the total harvested area and an area equipped for irrigation.

239 **Burundi**

240 Province-level total harvested areas of major crops, including cassava, groundnuts, maize, millet,
241 potatoes, pulses, rice, sorghum, soybeans, sunflower, and wheat for the year 2015 were collected from
242 the FEWS NET data portal. For other years, national-level total and irrigated harvested areas from 2000,
243 2005, and 2010 were collected from FAOSTAT and AQUASTAT. Assuming their provincial proportions
244 remained constant throughout our study period, we proportionally assigned the national-level harvested
245 area to each province. For other crop classes, national-level total harvested and irrigated area data from
246 FAOSTAT and AQUASTAT were used.

247 **Cameron**

248 A national-level total and irrigated harvested area of crops were collected from FAOSTAT and AQUASTAT
249 for the years 2000 to 2015.

250 **Cape Verde**

251 The total harvested area of major crops was collected from the FAOSTAT for 2000 to 2015. The crop-
252 specific irrigated areas at the national-level from AQUASTAT for the years for the years 2000 to 2015.

253 **Central African Republic**

254 A total harvested area of cassava, maize, and rice was collected from the FEWS NET data explorer for only
255 2015. For the other years, a total harvested area from FAOSTAT was used to assign the national-level
256 harvested area of each crop to each province, assuming their regional proportion remains constant
257 throughout the study period. The irrigated area of these crops for all the study years came from
258 AQUASTAT. It was proportionally assigned to each province, following the proportion of the total
259 harvested area and AEI. For the other crop classes, we used national-level total and irrigated harvested
260 areas from FAOSTAT and AQUASTAT.

261 **Chad**

262 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
263 The crop-specific irrigated areas at the national-level from AQUASTAT for 2005 to 2015. The irrigated area
264 of the year 2000 was, according to the national level, the irrigated area of MIRCA2000 crop cleaner (CC).

265 **Comoros**

266 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
267 No crop-specific irrigated area was reported at national and sub-national levels, assuming all harvested
268 areas were rainfed.

269 **Congo**

270 The total harvested area of major crops was collected from the FAOSTAT for the years 2000 to 2015. The
271 crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

272 **Côte d'Ivoire**

273 The total harvested area of major crops was collected from the FAOSTAT for the years 2000 to 2015. The
274 crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015

275 **Democratic Republic of the Congo**

276 A total harvested area of cassava, maize, and rice was collected from the FEWS NET data explorer for only
277 2015. For the other years, a total harvested area from FAOSTAT was used to assign the national-level
278 harvested area of each crop to each province, assuming their regional proportion remains constant
279 throughout the study period. The total harvested area of maize for the provinces of Bas-Uele and Haut-
280 Katanga of rice was too exaggerated, so we removed and proportionally estimated. The irrigated area of
281 these crops for all the study years was obtained from AQUASTAT and proportionally assigned to each
282 province following their proportion of total harvested area and AEI. For the other crop classes, we used
283 national-level total and irrigated harvested areas from FAOSTAT and AQUASTAT.

284 **Djibouti**

285 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
286 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

287 **Egypt**

288 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
289 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

290 **Equatorial Guinea**

291 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
292 No crop-specific irrigated area was reported at national and sub-national levels, assuming all harvested
293 areas were rainfed.

294 **Eritrea**

295 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
296 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

297 **Eswatini**

298 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
299 The crop-specific irrigated areas at the national-level from AQUASTAT from 2000 to 2015.

300 **Ethiopia**

301 A province-level total harvested area was collected from the annual national agricultural survey report
302 from 2000 to 2015. A national-level irrigated area was collected from AQUASTAT. The national-level

303 irrigated areas were distributed to each province according to the proportion of total harvested area and
304 area equipped for irrigation.

305 **Gabon**

306 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
307 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

308 **Gambia**

309 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
310 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

311 **Ghana**

312 A district-level harvest of major crops (maize, rice, soybeans, cassava, and pulses) for 2013 and 2015 was
313 garnered from national survey reports. We used the 2013 proportion of each province to repast the 2010
314 harvested area data. The proportion of each province of the major crops was assumed to be kept from
315 2000 to 2005. Then, we used the total national-level total harvested area from FAOSTAT to proportionally
316 assign the national-level harvested area to each province. A national-level irrigated harvested area was
317 collected from AQUASTAT and distributed proportionally to each province, following the total harvested
318 area proportion and the area equipped for irrigation. For the other crop classes, we used national-level
319 total and irrigated harvested areas from FAOSTAT and AQUASTAT.

320 **Guinea**

321 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
322 The crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015

323 **Guinea-Bissau**

324 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
325 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

326

327 **Kenya**

328 A province-level total harvested area of barley, cotton, cassava, groundnuts, maize, millet, potatoes,
329 pulses, rice, sorghum, soybeans, and wheat was collected from the FEWS NET data explorer for the years
330 2000 to 2015. The national-level irrigated area for these crops was proportionally assigned to each
331 province following their total harvested area and AEI proportion. For the other crop classes, national-level
332 total harvested area data was collected from FAOSTAT, while the irrigated area of other crop classes was
333 collected from AQUASTAT.

334

335 **Lesotho**

336 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
337 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
338 barley, maize, pulses, sorghum, and wheat, a subnational-level total harvested area was collected from
339 the FEWS NET data explorer from 2001 to 2015. For the year 2000, we used the FAOSTAT national-level
340 total harvested area and used the proportion for the 2001 subnational statistics. The national irrigated
341 area of barley, maize, pulses, sorghum, and wheat was assigned to each province using the total harvested
342 area and AEI proportion. For the other crop classes, national-level harvested area data was collected from
343 FAOSTAT, while the irrigated area of other crop classes was collected from AQUASTAT.

344 **Liberia**

345 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
346 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For cassava and
347 rice crops, a total subnational-level of harvested area was collected from the FEWS NET data explorer for
348 the year 2010. For the other years, a total harvested area from FAOSTAT was used to assign the national-
349 level harvested area of each crop to each province, assuming their regional proportion remains constant
350 throughout the study period.

351 **Libya**

352 A national-level total harvested area of major crops was collected from the FAOSTAT for the years 2000
353 to 2015. The crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015.

354 **Madagascar**

355 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
356 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
357 cassava, coffee, groundnuts, maize, potatoes, pulses, rice, and sugarcane, a subnational-level total
358 harvested area was collected from the FEWS NET data explorer for the years 2001, 2005, and 2010. We
359 used the subnational proportions of 2001 and 2010 to assign the national-level harvested area of 2000
360 and 2015 to each province and crop. The irrigated area from the national-level from AQUASTAT was also
361 proportionally assigned to each province, considering the proportion of each province of the total
362 harvested area and AEI.

363 **Malawi**

364 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
365 The crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015. For
366 crops of cassava, cotton, groundnuts, maize, millet, potatoes, pulses, rice, soybeans, and wheat, a
367 subnational-level irrigated and rainfed harvested area was collected from the FEWS NET data explorer for
368 the years 2005, 2010, and 2015. We used the subnational proportions of 2005 to assign the national-level
369 harvested area of 2000 to each province.

370 **Mali**

371 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
372 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For cotton,
373 groundnuts, maize, millet, pulses, sorghum, soybeans, and wheat crops, a subnational-level total
374 harvested area was collected from the FEWS NET data explorer for the years 2001, 2005, 2010, and 2015.
375 The irrigated area from the national-level from AQUASTAT was also proportionally assigned to each
376 province, considering the portion of each province of the total harvested area and AEI.

377 **Mayotte**

378 No total and irrigated harvested area data was available from either FAOSTAT or AQUASTAT. However,
379 the total harvested area data was available from Eurostat from 2000 to 2015. We assumed that all the
380 irrigated areas were rainfed.

381 **Morocco**

382 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
383 The crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015.

384 **Mozambique**

385 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
386 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
387 Cassava, cotton, maize, millet, potatoes, rice sorghum, soybeans, and wheat, a subnational-level total
388 harvested area was collected from the FEWS NET data explorer for the years 2001 to 2015. The national-
389 level irrigated area from AQUASTAT was also proportionally assigned to each province, considering the
390 portion of each province of the total harvested area and AEI.

391 **Namibia**

392 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
393 The crop-specific irrigated areas at the national-level from AQUASTAT for the years 2000 to 2015.

394 **Niger**

395 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
396 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
397 Cassava, cotton, groundnuts, maize, millet, rice, and sorghum, the subnational-level total harvested area
398 was collected from the FEWS NET data explorer from 2001 to 2015. The national-level irrigated area from
399 AQUASTAT was also proportionally assigned to each province, considering the portion of each province
400 of the total harvested area and AEI.

401

402

403 **Nigeria**

404 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
405 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
406 Cassava, cotton, groundnuts, maize, millet, rice, sorghum, soybean, and wheat, the subnational-level total
407 harvested area was collected from the FEWS NET data explorer from 2001 to 2015. The national-level
408 irrigated area from AQUASTAT was also proportionally assigned to each province, considering the portion
409 of each province of the total harvested area and AEI.

410 **Somalia**

411 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
412 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For groundnuts,
413 maize, rice, and sorghum crops, a subnational-level total harvested area was collected from the FEWS NET
414 data explorer from 2010 to 2015. We assumed the 2010 province proportions were the same for 2000
415 and 2005. The national-level irrigated area from AQUASTAT was also proportionally assigned to each
416 province, considering the portion of each province of the total harvested area and AEI.

417 **South Sudan**

418 It was considered a part of Sudan in 2000, 2005, and 2010. For the year 2015, national-level data was
419 collected. The total harvested area of major crops was collected from FAOSTAT, and crop-specific irrigated
420 areas at the national-level were collected from AQUASTAT.

421 **South Africa**

422 A national-level total harvested area of major crops was collected from the FAOSTAT for 2000, 2005, 2010,
423 and 2015. The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

424 **Sudan**

425 A national-level total harvested area was collected from FAOSTAT for the years 2000 to 2015. The national-
426 level crop-specific irrigated area was available from 2012 onwards from AQUASTAT; for the year 2000,
427 the irrigated area was according to the MIRCA2000 CC, and for the years 2005 and 2010, we interpolated
428 the crop-specific irrigated area using the 2000 and 2012 data.

429 **Réunion**

430 The total harvested area of major crops was collected from the FAOSTAT for the years from 2000 to 2015.
431 There was no crop-specific irrigated area reported at both national and sub-national levels, assuming all
432 harvested areas were rainfed.

433 **Rwanda**

434 The total harvested area of major crops was collected from the FAOSTAT for the years from 2000 to 2015.
435 The crop-specific irrigated areas at the national-level from AQUASTAT are available from 2007 onward.

436 For 2000, we used the MIRCA2000 CC and compared 2005 with 2000 and 2007. For crops of Cassava,
437 cotton, maize, potatoes, pulses, rice sorghum, soybeans, and wheat, a subnational-level total harvested
438 area was collected from the FEWS NET data explorer for the year 2010. The irrigated area from the
439 national-level from AQUASTAT was also proportionally assigned to each province, considering the
440 proportion of each province of total harvested area and AEI.

441 **Sao Tome and Principe**

442 A national-level total harvested area of major crops was collected from the FAOSTAT for the years from
443 2000 to 2015. The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

444 **Seychelles**

445 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
446 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

447 **Sierra Leone**

448 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
449 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

450 **United Republic of Tanzania**

451 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
452 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For crops of
453 cassava, coffee, cotton, groundnuts, maize, millet, potatoes, pulses, rice sorghum, sugarcane, sunflower,
454 and wheat, a subnational-level total harvested area was collected from the FEWS NET data explorer for
455 the years 2015. The irrigated area from the national-level from AQUASTAT was also proportionally
456 assigned to each province, considering the proportion of each province of the total harvested area and
457 AEI.

458 **Zambia**

459 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
460 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For barley, cotton,
461 maize, millet, potatoes, pulses, and sorghum crops, a subnational-level total harvested area was collected
462 from the FEWS NET data explorer for the years 2001, 2010 and 2015. The year 200 was interpolated using
463 the 2001 and 2010 data. The irrigated area from the national-level from AQUASTAT was also
464 proportionally assigned to each province, considering the proportion of each province of total agricultural
465 area and AEI.

466 **Zimbabwe**

467 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
468 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. For cassava,

469 groundnuts, maize, millet, rice, sorghum, and sunflower crops, a subnational-level total harvested area
470 was collected from the FEWS NET data explorer for the year 2015. The irrigated area from the national-
471 level from AQUASTAT was also proportionally assigned to each province, considering the proportion of
472 each province of total agricultural area and AEI.

473 **Asia**

474 **Afghanistan:**

475 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
476 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The AQUASTAT
477 irrigated area data is available for major crops, but there was a lack of specified crop classes for 2000 and
478 2005. Using the 2010 and 2015 data, the irrigated areas of crops were extrapolated for the years 2000
479 and 2005, considering the trend of the area equipped for irrigation. Subnational total harvested area data
480 for barley, cotton, maize, rice, and wheat were collected from the Famine Early Warning System Network
481 (FEWS) database from 2008 to 2015. For these crop classes, we utilized subnational analysis, assigning the
482 irrigated areas of each province according to their proportion of total harvested area and area equipped
483 for irrigation. We used the proportion of the 2008 total harvested area and the national-level total
484 harvested and irrigated area from FAOSTAT and AQUASTAT; we assigned the total harvested and irrigated
485 area of those crops for each province for the years 2000 and 2005.

486 **Armenia**

487 The national Census report for the year 2014 served as the foundation for determining the proportion of
488 each crop in each province. It was assumed that that the subnational total and proportion of irrigated
489 harvested area remained historically unchanged, as there have been no significant alterations in
490 administrative divisions since 2000. Utilizing the proportion of each crop per province, the total harvested
491 and irrigated areas at the national-level were gathered from FAOSTAT and AQUASTAT from 2000 to 2015
492 using data. Although AQUASTAT provides information for major crops, specific crop classes were lacking.
493 Therefore, these crop classes were disaggregated based on their respective proportions of the total
494 harvested area from FAOSTAT data. Other root and tuber areas were allocated to potatoes and other
495 annual crops based on their harvested area ratios from FAOSTAT. The irrigated area for other cereals was
496 designated as Rye. Irrigated potato area data is available from 2010 onwards. For 2000 and 2005, the
497 irrigated potato area was estimated using extrapolation based on harvested area data from 2010 and
498 2015.

499 **Azerbaijan**

500 Crop-specific total harvested area data for major crops were collected from the State Statistics Committee
501 from 2000 to 2015. However, district-level crop-specific irrigated area data were not available. National-
502 level irrigated data was obtained from AQUASTAT. The national-level irrigated area was assigned based
503 on the proportion of each province's total harvested area and area equipped for irrigation.

504

505 **Bangladesh**

506 For selected Districts, 23 out of 64 crop-specific irrigated area data for rice, wheat, potatoes, sugarcane,
507 and cotton were available for 2010 from the Bangladesh Bureau of Statistics Annual reports. For 2015, a
508 district-level irrigated area a district level irrigated was available for rice, wheat, potatoes, sugarcane, and
509 cotton, and a total harvested area was available for most crops taken from the 45-year statistics summary
510 and annual agricultural statistics report. We used the 2015 province proportions of irrigated areas of each
511 crop and each district and used a national-level of irrigated area proportionally assigned for each district.
512 For the other crops, the irrigated areas were collected from AQUASTAT, and we used the proportion of
513 each district's total harvested area and AEI proportions to assign the national-level crop-specific irrigated
514 area to each province. For the years 2000 and 2005, we used the national-level AQUASTAT and FAOSTAT
515 statistics of irrigated and total harvested area data to proportionally assign to each province, assuming
516 the area proportion of each province stayed the same between 2000 to 2010. The irrigated area is
517 sometimes higher than the total harvested area; for that instance, we keep the irrigated area and assume
518 the rainfed as zero.

519 **Belarus**

520 The crop-specific total harvested and irrigated areas were collected from FAOSTAT and AQUASTAT. The
521 AQUASTAT data is available for major crops, but there was a lack of specified crop classes. This cluster of
522 crop classes has been disaggregated based on their total harvested area proportion from the FAOSTAT
523 data. The leguminous crop classes (for irrigated areas from AQUASTAT) were assigned proportionally. For
524 the other crops (such as Barley, Rye, and Wheat), there was no irrigated area from either the national
525 Census or AQUASTAT. Due to that, we just took the MIRCA2000 CC and made a proportional assumption
526 of that area yearly from 2005 to 2015. The total harvested area of forage crops from 2000 to 2015 was
527 collected from the Ministry of Agriculture Annual report.

528 **Bhutan**

529 A province-level total harvested area was collected from the National Statistical Bureau's annual statistics
530 report from 2004 to 2015. For 2000, we used the national-level harvested area from FAOSTAT and the
531 proportion of the 2004 total harvested area proportion to assign the total area to each province. For the
532 irrigated areas, the AQUASTAT data provides an irrigated area of Rice and Potatoes, while it is reported in
533 the original MIRCA2000 that there is irrigated Wheat and Barley in the country. We took that value and
534 extrapolated it from 2005 to 2015.

535 **Cambodia**

536 The total harvested and irrigated crop-specific areas were collected from FAOSTAT and AQUASTAT. The
537 AQUASTAT data is available for major crops, but there was a lack of specified crop classes. This cluster of
538 crop classes has been disaggregated based on their total harvested area proportion from the FAOSTAT
539 data. Only rice-irrigated areas were available from AQUASTAT, and a sugarcane-irrigated area reported
540 from MIRCA2000 was available.

541

542 **China**

543 A province or regional-level total harvested area of major crops was collected from the National Bureau
544 of Statistics. The national-level irrigated area was collected from AQUASTAT (from 2006 and onwards).
545 However, the irrigated area remained constant between 2006 and 2015. 2000, we used the MIRCA2000
546 CC, and for 2005, we interpolated using the 2000 and 2006 data. For each crop, the national-level irrigated
547 area was assigned proportionally to each province, following their total harvested area proportion and
548 AEI.

549 **Indonesia**

550 A national-level crop-specific total irrigated and harvested area was collected from FAOSTAT and
551 AQUASTAT for 2000 and 2005. For 2010 and 2015, province-level data of rice, sugar cane, cocoa, coffee,
552 and oil palm crops from the statistics of Indonesia. The national-level total and irrigated harvested area
553 data from AQUASTAT were used for the other crops. When there are some inconsistencies between the
554 irrigated and total harvested area, we take the irrigated area as it is, while the rainfed area estimated
555 between the total and the irrigated area becomes below zero, we take it as zero.

556 **Iran**

557 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
558 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. A crop-specific
559 total harvested area of a few crops (barley, rice, and wheat) for provinces was collected from the Statistical
560 Centre of Iran for the year 2003.

561 **Iraq**

562 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
563 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The AQUASTAT
564 reports irrigated harvested area only for a few crops between 2000 and 2010, while there are a few
565 additional crops in 2015. For pulses, maize, potatoes, and sunflowers irrigated area, we took the irrigated
566 area from the original MIRCA2000 CC.

567 **India**

568 A district-level irrigated and rainfed harvested area of all crops was collected from the Agricultural Census
569 portal of the Department of Agriculture & Farmers Welfare. Two different types of administrative
570 boundaries were used. The first one represented district boundaries of India from 2000 to 2010, and the
571 second one used the 2015 shapefile boundary for 2015. Due to this, some splitting and aggregation of
572 districts was necessary. For districts bifurcated from parent districts, their proportion of harvested area
573 was collected for the years after the districts were split, and this proportion was used to assign the
574 irrigated and rainfed harvested area to each district.

575 For Maharashtra, there was no Census of Agriculture report for the year 2005. We used the 2000 and
576 2010 Census reports to interpolate the data for 2005 for each district and crop. For the states of Jharkhand

577 and Bihar, there were no Census reports of harvested area for the years 2000 and 2005. To address this
 578 and other missing data for some other districts, we used the data from the Crop Production Statistics
 579 Information System provided by the Special Data Dissemination Standard Division, Directorate of
 580 Economics & Statistics, Ministry of Agriculture and Farmers Welfare, Government of India.

581 **Table S3: List of new districts in India formed by bifurcation from parent districts**

State	Current Name of the District	Bifurcated from
Arunachal Pradesh	Kurung Kumey	Lower Subansiri
Arunachal Pradesh	Anjaw	Lohit
Arunachal Pradesh	Lower Dibang Valley	Dibang Valley
Assam	Dima Hasao	North Cachar Hills
Assam	Baksa	Barpeta
Assam	Chirang	Bongaigaon
Assam	Kamrup Metropolitan	Kamrup
Assam	Udalguri	Darrang
Bihar	Arwal	Jehanabad
Chhattisgarh	Bijapur	Dakshin Bastar Dantewada
Chhattisgarh	Narayanpur	Bastar
Chhattisgarh	Uttar Bastar Kanker	Bastar
Chhattisgarh	Kabirdham	Durg
Chhattisgarh	Koriya	Surguja
Gujarat	Tapi	Surat
Haryana	Palwal	Faridabad
Haryana	Mewat	Gurgaon
Jharkhand	Khunti	Ranchi
Jharkhand	Ramgarh	Hazaribagh
Jammu and Kashmir	Kishtwar	Doda
Jammu and Kashmir	Kulgam	Anantnag
Karnataka	Ramanagara	Bangalore Rural
Karnataka	Chikballapura	Kolar
Karnataka	Yadgir	Gulbarga
Madhya Pradesh	Alirajpur	Jhabua

Madhya Pradesh	Anuppur	Shahdol
Madhya Pradesh	Ashoknagar	Guna
Madhya Pradesh	Burhanpur	Khandwa
Madhya Pradesh	Singrauli	Sidhi
Nagaland	Kiphire	Tuensang
Nagaland	Peren	Kohima
Punjab	Barnala	Sangrur
Punjab	Tarn Taran	Amritsar
Rajasthan	Pratapgarh	Chittaurgarh
Tamil Nadu	Ariyalur	Perambalur
Tamil Nadu	Krishnagiri	Dharmapuri
Tamil Nadu	Tiruppur	Coimbatore
Uttar Pradesh	Mahamaya Nagar	Aligarh
Uttar Pradesh	Jyotiba Phule Nagar	Moradabad
Uttar Pradesh	Kasganj	Etah
Uttar Pradesh	Kanpur Dehat	Ramabai Nagar
Uttar Pradesh	Auraiya	Etawah

582 **Israel**

583 The AQUASTAT database provided irrigated area data (2000 to 2015) for Israel only for crop groups such
584 as total temporary and permanent crops, other crops, flowers, and vegetables, rather than specific crop
585 harvested areas. We used the original MIRCA2000 irrigated area as a baseline and, using the FAOSTAT
586 total harvested area, assumed that the irrigated harvested area would increase linearly with the total
587 harvested area.

588 **Japan**

589 A province-level total harvested area for paddy, soybeans, and wheat (2010 to 2015) was extracted from
590 the statistics department crop survey reports. Some of the aggregated crop classes, such as wheat and
591 barley, were split according to their proportions at the national-level of the total harvested area. For the
592 years 2000 and 2005, a national-level total harvested area was used. AQUASTAT reports only a few crop
593 classes' harvested areas, including rice, barley, wheat, and leguminous plants. We used the original
594 MIRCA2000 irrigated data for the other crops and assumed it to be increasing linearly with the area
595 equipped for irrigation trend.

596

597 **Jordan**

598 A province-level total harvested area of major crops was collected from the National Bureau of Statistics
599 reports for the years 2000 to 2015. The irrigated area was collected at a national-level from AQUASTAT
600 and assigned proportionally to each province according to their total harvested area proportion. The latest
601 admin boundaries from the GADM database were used. Accordingly, the harvested area needed to be
602 allocated to their corresponding provinces. The areas of Barn, North Barn, and South Deir Alla were
603 assigned to the Balqa Governorate. The area of Ghor Safi was assigned to Karak Governorates.

604 **Kazakhstan**

605 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
606 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The broader crop
607 classes from AQUASTAT such as the other cereals distributed to millet, sorghum and rye according to their
608 irrigated proportion from the original MIRCA2000. As there is a separate fodder crop class from the
609 AQUASTAT data, the leguminous harvested area is distributed to pulses.

610 **Kuwait**

611 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
612 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The AQUASTAT
613 is available for major crops, but there was a lack of specified crop classes. This cluster of crop classes has
614 been disaggregated based on their total harvested area proportion from the FAOSTAT data.

615 **Lao People's Democratic Republic**

616 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
617 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

618 **Lebanon**

619 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
620 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The AQUASTAT
621 is available for major crops, but there was a lack of specified crop classes. This cluster of crop classes has
622 been disaggregated based on their total harvested area proportion from the FAOSTAT data.

623 **Malaysia**

624 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
625 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The original
626 MIRCA2000 showed there is an irrigated area of other perennial crop classes. We took that harvested area
627 for 2000 and assumed a linear relationship with the total harvested area reported from FAOSTAT from
628 2005 to 2015. The AQUASTAT irrigated area did not change over time, so we took the AEI at national levels
629 and assumed that all irrigated crops would increase linearly following the AEI trend.

630 **Maldives**

631 There was no record of irrigated area at either the sub-national or national-level from 2000 to 2015. The
632 total harvested area of some major crop classes was extracted from FAOSTAT. These total harvested areas
633 were assumed to be rainfed.

634 **Mongolia**

635 The total national harvested area of major crops was collected from FAOSTAT. A national-level crop-
636 specific irrigated area for wheat, fodder, potatoes, other perennials, and other annual classes was
637 collected from AQUASTAT for the years 2000 to 2015. There was no fodder crop class in FAOSTAT,
638 although the irrigated area is reported in AQUASTAT. We took the rainfed harvested area of fodder from
639 MIRCA2000 and assumed it would change linearly with the change in other annual crop classes.

640 **Myanmar**

641 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
642 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The AQUASTAT
643 irrigated harvested area wasn't updated after 2010; we assumed a linear change of a crop-specific
644 irrigated area with the total AEI.

645 **Nepal**

646 A national-level total harvested area of major crops was collected from FAOSTAT. Crop-specific irrigated
647 area data from AQUASTAT has been available since 2006. For 2000, we used the original MIRCA2000
648 dataset. We interpolated the 2005 data using the 2000 and 2006 data. The irrigated area did not change
649 after 2006, so we assumed the crop-specific area was linearly proportional to the trends of the area
650 equipped for irrigation changes between 2005 and 2015.

651 **Oman**

652 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
653 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

654 **Pakistan**

655 A province-level total harvested area available till 2010 for all crop classes was collected from the
656 Statistics Bureau's annual statistics reports. The 2015 total harvested area was calculated based on the
657 proportion of each province according to the 2010 statistics. The province-level crop-specific irrigated
658 area is only available for wheat. A national-level crop-specific irrigated area from AQUASTAT was scaled
659 to each province for the other crops, following their total harvested area proportion. The AQUASTAT data
660 is only available from 2008 to 2015. We used the MIRCA2000 irrigated CC for the 2000 national-level
661 irrigated area and interpolated for 2005 using the AQUASTAT irrigated area for the years 2000 and 2010.
662 This national-level irrigated area was assigned to each province following their total harvested area
663 proportions and AEI.

664 **Palestine**

665 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
666 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

667 **Philippines**

668 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
669 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The irrigated area
670 from AQUASTAT wasn't updated after 2010, so in 2015, we assume the irrigated harvested area will
671 change linearly with the area equipped for irrigation.

672 **Republic of Korea**

673 A province-level total harvested area of rice, barley, maize, sorghum, rye, millet, soybean, wheat, pulses,
674 and potatoes was collected from the national statistics of Korea for the years 2000 to 2015. For other
675 crops, the total harvested area was extracted from FAOSTAT. Crop-specific irrigated area data is available
676 in AQUASTAT starting from 2006 onwards. Therefore, for the year 2000, the original MIRCA2000 data
677 were used. For the year 2005, an interpolation of the 2000 and 2010 irrigated area statistics was used.
678 This national-level irrigated area was assigned to each province based on their total harvested area
679 proportions.

680 **Saudi Arabia**

681 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
682 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The irrigated area
683 for other cereals was assigned to millet and sorghum according to their percentage share from the original
684 MIRCA2000 condensed crop calendar.

685 **Qatar**

686 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
687 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

688 **Syria**

689 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
690 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. The irrigated area
691 didn't update after 2000, so we assumed each crop irrigated area changed linearly with the total area
692 equipped with irrigation.

693 **Tajikistan**

694 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
695 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

696 **Thailand**

697 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
698 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015. There are only
699 two irrigated crop classes: total annual crops harvested areas for 2000 and 2005. For 2000, the harvested
700 areas of rice, sugarcane, and other annual and perennial classes were taken from the original MIRCA2000
701 CC.

702 **Timor-Leste**

703 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
704 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

705 **Türkiye**

706 For 2010 and 2015, the total harvested area data at the NUTS 2 level was gathered from Eurostat. A
707 national-level total harvested area for 2000 to 2005 was collected from FAOSTAT and scaled to each NUTS
708 2 province based on the proportion of the 2010 total harvested area. However, there was no total
709 harvested area data for groundnuts. Therefore, we used statistics from FAOSTAT and MIRCA2000 CCC and
710 distributed them proportionally according to their plant family. The crop-specific irrigated areas were
711 collected from AQUASTAT for the years 2000 to 2015 and were proportionally assigned to each NUTS 2
712 province based on their total harvested area proportion.

713 **United Arab Emirates**

714 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
715 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

716 **Uzbekistan**

717 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
718 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

719 **Yemen**

720 A national-level total harvested area of major crops was collected from FAOSTAT for the years 2000 to
721 2015. Crop-specific irrigated areas at the national-level were obtained from AQUASTAT for the same
722 period. For crops such as cotton, maize, millet, potatoes, pulses, sorghum, and wheat, sub-national-level
723 total harvested areas were collected from the FEWS NET data explorer for the years 2000 to 2015. The
724 national-level irrigated area from AQUASTAT was proportionally assigned to each province, considering
725 the proportion of each province's total harvested area and Area Equipped for Irrigation (AEI).

726

727

728 **Europe**

729 **Albania**

730 A Nomenclature of Territorial Units for Statistics (NUTS) 2 administrative regions level total harvested area
731 of major crops data was collected from the Albania Institute of Statistics for 2004 to 2015. The national-
732 level harvested area for 2000 was proportionally estimated based on the 2004 NUTS 2 regions data. These
733 data did not include the harvested area of cotton and other perennials. The total national-level harvested
734 area of cotton and other perennials from FAOSTAT was assigned to each region according to the
735 percentage fractions of related crop types. The irrigated area from AQUASTAT covers from 2006 onwards.
736 Based on the percentage changes of the AEI from 2000 to 2006, the total national-level irrigated area for
737 2000 was estimated. This area was further assigned to each region based on the assumption that the
738 irrigated area and total harvested area have the same proportion.

739 **Andora**

740 The total harvested area of fodder crop classes, potatoes, and other annuals was collected from the
741 government statistical data portal. There were no irrigated areas reported in either AQUASTAT or the
742 national statistics. Therefore, we assume that these crops are fully rainfed

743 **Austria**

744 NUTS 2 levels of total harvested area and irrigated area of major crops were extracted from the Eurostat
745 data portal for the years 2000 to 2015. For Austria, the irrigated area data is available only for 2010. We
746 estimated the proportion of each province according to the 2010 irrigated area data. The national-level
747 crop-specific irrigated area data was taken from AQUASTAT. This national-level irrigated area was then
748 proportionally assigned to each province according to their fractions of the total harvested area and AEI.
749 The irrigated crop class of millet was estimated from the crop class of other cereals by considering its total
750 harvested area from FAOSTAT.

751 **Belgium**

752 A NUTS 2-level total harvested area of major crops was extracted from the Eurostat data portal for 2000
753 to 2015. While there is only total irrigated area data for most years, crop-specific subnational irrigated
754 area data is available for 2003 and 2010. We interpolated the crop-specific irrigated area of each province
755 for the year 2005. Using the proportions of each province according to the 2003 and 2010 irrigated data,
756 we assigned each crop class area accordingly based on their national-level irrigated harvested area data
757 from AQUASTAT for the years 2000 and 2015.

758 **Bosnia and Herzegovina**

759 The total harvested area of major crops was collected from the government statistical data portal. No
760 irrigated areas were reported in either AQUASTAT or the national statistics. However, irrigated areas for
761 maize, potatoes, and other annual crop classes were available from MIRCA2000. We used the data for
762 2000 and assumed that the irrigated areas would change linearly with the AEI.

763 **Bulgaria**

764 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
765 data portal for 2007 to 2015. The total harvested area data starts from 2007 to 2015. The 2010 harvested
766 area was estimated using the 2007 and 2015 harvested area data. The 2000 harvested area was estimated
767 using the proportion of the nearest year data and a national-level total harvested area according to
768 FAOSTAT. There is only a total irrigated area, and crop-specific irrigated area data for maize, sunflower,
769 potatoes, and other perennial crop classes are available only for 2003 and 2010. We interpolated the
770 irrigated area for 2000, 2005, and 2015 using the 2003 and 2010 data. For rice, fodder, and pulses, data
771 is only available for 2010, so we assumed this proportion would remain unchanged for the study period.

772 **Croatia**

773 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
774 data portal for 2007 to 2015. The total harvested area data starts from 2007 to 2015. The 2000 and 2005
775 harvested areas were estimated using the proportion of the nearest year data and a national-level total
776 harvested area according to FAOSTAT. There is only a total irrigated area, and crop-specific irrigated area
777 data is available only for 2013. We took the proportion of each province according to the 2013 irrigated
778 data and assigned each crop class area accordingly based on the AQUASTAT irrigated area data.

779 **Czechia**

780 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
781 data portal from 2000 to 2015. The total harvested area for potatoes was only available for 2000. Based
782 on the proportion of each province, the potato area was assigned to each NUTS 2 region using the
783 national-level harvested area data from FAOSTAT. There is only a total irrigated area, and crop-specific
784 irrigated area data is only available for 2010. Based on the proportion of each province's 2010 irrigated
785 area we assigned, then national-level irrigated area data from AQUASTAT to each province.

786 **Denmark**

787 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
788 data portal for 2006 to 2015. The total harvested area data starts from 2006 to 2015. The 2000 and 2005
789 harvested areas were estimated using the proportion of the nearest year's data and the national-level
790 total harvested area according to FAOSTAT. There is only a total irrigated area, and crop-specific irrigated
791 area data is available only for 2010. We took the proportion of each province according to the 2010
792 irrigated area and assigned each crop class area accordingly based on the AQUASTAT data.

793 **Estonia**

794 The total harvested area was collected from the Eurostat data portal. There was no irrigated area data
795 available from AQUASTAT for 2000 and 2005, and it was not updated after 2010. We used the original
796 MIRCA2000 irrigated area and assumed it changed linearly with the area equipped for irrigation.

797

798 **Faroe Islands**

799 The total harvested area of fodder crops, potatoes, and other annuals was collected from the government
800 statistical data portal. No irrigated areas were reported either by AQUASTAT or the national census
801 reports. Therefore, we assume these crops to be fully rainfed.

802 **France**

803 A NUTS 2 level dataset of total harvested area and irrigated area of major crops was extracted from the
804 Eurostat data portal for 2000 to 2015. Crop-specific irrigated area data is available only for 2000, 2003,
805 and 2010, while total irrigated area data is available for the entire period. The 2005 irrigated area was
806 interpolated using the 2003 and 2010 data. We took the proportion of each province according to the
807 2010 irrigated data and assigned each crop class area accordingly, based on the AQUASTAT data for the
808 year 2015.

809 **Georgia**

810 Agricultural Census reports from 2004 and 2014 were used for province-level total harvested areas of
811 major crops for 2005 and 2015. For 2000 and 2010, we used the proportion of each province according to
812 the nearest Census (2005/2015) and used the national-level total harvested area from FAOSTAT to
813 distribute it proportionally. The irrigated area data from AQUASTAT starts from 2006 onwards. For 2000,
814 we used the original MIRCA2000 irrigated area and distributed it proportionally for each province

815 **Germany**

816 Total harvested and irrigated areas of major crops at the NUTS 2 level were extracted from the Eurostat
817 data portal for the years 2000 to 2015. Crop-specific irrigated area data is available only for 2010. We
818 used the 2010 proportions of irrigated areas for each province to assign crop-specific irrigated areas based
819 on the AQUASTAT data.

820 **Greece**

821 NUTS 2 level data on the total harvested area and irrigated area of major crops were extracted from the
822 Eurostat data portal for the years 2000 to 2015. Crop-specific irrigated area data are available only for
823 2000, 2003, and 2010. 2010. The irrigated areas for 2005 and 2015 were interpolated using the available
824 data.

825 **Greenland**

826 No data is available at both national and sub-national levels.

827

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830 **Hungary**

831 NUTS 2 levels of total harvested area and irrigated area of major crops were extracted from the Eurostat
832 data portal from 2000 to 2015. There is only a total irrigated area and crop-specific irrigated area data for
833 maize, potatoes, sugar beet, and sunflower for 2003 and 2010. The 2000 and 2005 irrigated areas were
834 interpolated based on the available data. A national-level irrigated area for 2015 was assigned to each
835 region proportionally using the 2010 data. The irrigated areas for pulses, rice, and rapeseed were available
836 only for 2010. These proportions were used to allocate national-level irrigated areas for rice, pulses, and
837 rapeseed to each region for 2000, 2005, and 2015.

838 **Iceland**

839 No irrigated area data were collected for both national and sub-national level. The total harvested area
840 from FAOSTAT for 2000 to 2015 were used and assigned as a rainfed area.

841 **Ireland**

842 NUTS 2 levels of total harvested area and irrigated area of major crops were extracted from the Eurostat
843 data portal for the years 2000 to 2015. There is no sub-national irrigated area data available. We used the
844 national AQUASTAT irrigated area data and assigned it to each province based on the proportion of the
845 total harvested area.

846 **Italy**

847 NUTS 2 level total harvested and irrigated areas of major crops were extracted from the Eurostat data
848 portal for the years 2000 to 2015. Crop-specific irrigated area data is available for the years 2000, 2003,
849 and 2010. The irrigated areas for 2005 and 2015 were interpolated using the available data.

850 **Latvia**

851 A national-level total harvested area and area equipped for irrigation were collected from the Eurostat
852 data portal. There were no crop-specific irrigated areas at the sub-national-level except for 2010. We used
853 the proportions from 2010 and, using the total irrigated area, we proportionally assigned the crop-specific
854 irrigated areas.

855 **Liechtenstein**

856 No data is available at both national and sub-national levels.

857 **Lithuania**

858 NUTS 2 level data for total harvested area and irrigated area of major crops were extracted from the
859 Eurostat data portal for 2000 to 2015. Crop-specific irrigated area data is only available for 2013. We used
860 the proportion of each province's irrigated area from 2013 to assign each crop class area accordingly based
861 on the AQUASTAT data.

862 **Luxembourg**

863 A national-level total harvested area was extracted from the Eurostat data portal. There was no crop-
864 specific irrigated area available at either the sub-national or national level. It is assumed that all the
865 harvested areas were rainfed.

866 **Malta**

867 A national-level total harvested area was extracted from the Eurostat data portal. The crop-specific
868 irrigated area was obtained from AQUASTAT for the years 2000 to 2015.

869 **Republic of Moldova**

870 A national-level total harvested area was extracted from the National Bureau of statistics reports from
871 2000 to 2015. The crop-specific irrigated area reported in AQUASTAT is much less than the area equipped
872 for irrigation reported. Considering this, we used the crop-specific irrigated area from the original
873 MIRCA2000 condensed crop calendar. We assumed that the crop-specific irrigated area had changed
874 linearly for all crops with the area equipped for irrigation.

875 **Montenegro**

876 The total harvested area from FAOSTAT for Montenegro is available as an aggregated area with Serbia
877 and Montenegro for 2000 and 2005. We considered the harvested area for Serbia and Montenegro as
878 aggregated for both 2000 and 2005. For 2010 and 2015, the FAOSTAT total harvested area was used. The
879 irrigated area from FAO AQUASTAT is available from 2010 onwards. The irrigated area from FAO
880 AQUASTAT is available from 2010 and onwards; we used the original MIRCA2000 data for 2000 and 2005
881 (the irrigated and rainfed areas of Serbia, including Kosovo). For 2010, a national-level crop-specific
882 irrigated area is available from Eurostat. As the total irrigated area in both the AQUASTAT and AEI reports
883 remains the same for 2010 and 2015, a similar irrigated area was assigned for 2010 and 2015.

884 **Netherlands (the Kingdom)**

885 NUTS 2 level data for total harvested area and irrigated area of major crops were extracted from the
886 Eurostat data portal for the years 2000 to 2015. Crop-specific irrigated area data is available for 2003 (at
887 the NUTS 1 level) and for 2010 (NUTS 2 level). We used the NUTS 2 level data for 2010 and the proportions
888 of each region, along with the NUTS 1 level and AQUASTAT data, to assign the crop-specific irrigated area
889 for the years 2000 to 2015.

890 **North Macedonia**

891 A national-level total harvested area was collected from the Eurostat data portal for the years 2000 to
892 2015. There were no sub-national statistics for irrigated areas, so the national-level crop-specific irrigated
893 areas were distributed accordingly for each crop.

894

895 **Norway**

896 As the NUTS 2 level total harvested area for most crops is available only from 2015 and onwards, we
897 collected the NUTS 2 level total harvested area from Statistics Norway for 2000 to 2015. The NUTS 2 level
898 irrigated area was available from Eurostat only for 2010. We used the proportion of each region according
899 to the 2010 data, and the national-level irrigated area from AQUASTAT was assigned to each region
900 according to their proportion for 2000, 2005, and 2015.

901 **Poland**

902 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
903 data portal for 2000 to 2015. Crop-specific irrigated area data is only available for 2010. We took the
904 proportion of each province according to the 2010 irrigated data and assigned each crop class area
905 accordingly based on the AQUASTAT data.

906 **Portugal**

907 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
908 data portal for 2000 to 2015. There is only a total irrigated area available, and crop-specific irrigated area
909 data is only available for 2003 and 2010. The 2000 and 2005 irrigated areas were interpolated for each
910 crop class between 2003 and 2010. The 2015 irrigated areas were estimated for each crop class based on
911 the proportion of each region as per the 2010 data, using the total irrigated area from AQUASTAT.

912 **Russia**

913 An oblast-level total harvested area of major crop classes was gathered according to the 2006 and 2016
914 agricultural Census. The 2010 total harvested area was interpolated using the 2006 and 2016 data. We
915 used the province proportion from the 2006 Census report and the 2005 national-level total harvested
916 area, and proportionally scaled it to each oblast. There was no crop-specific irrigated area data from those
917 Census reports. The AQUASTAT irrigated areas start from 2006 onwards. We used the MIRCA2000
918 irrigated crop calendar (CC) for the year 2000. For the year 2005, we interpolated a national-level irrigated
919 area between 2000 and 2006. This national-level irrigated area was assigned to each province following
920 their total harvested area and AEI proportions.

921 **Serbia**

922 The total harvested area from FAOSTAT for Serbia is available as an aggregated area of Serbia and
923 Montenegro for 2000 and 2005. We considered Serbia and Montenegro's harvested area as aggregated
924 for both 2000 and 2005. For 2010 and 2015, the FAOSTAT total harvested area was used. The irrigated
925 area from FAO AQUASTAT is available from 2010 onwards. We used the original MIRCA2000 dataset for
926 2000 and 2005 (which includes the irrigated and rainfed areas of Serbia, including Kosovo). For 2010, a
927 national-level crop-specific irrigated area is available from Eurostat. Since the total irrigated area reported
928 by both AQUASTAT and AEI remains the same for 2010 and 2015, a similar irrigated area was used for
929 both years.

930 **Slovakia**

931 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
932 data portal for 2000 to 2015. There is only a total irrigated area available, and crop-specific irrigated area
933 data is only available for 2003 and 2010. The 2000 and 2005 irrigated areas were interpolated for each
934 crop class between 2003 and 2010. The 2015 irrigated area was estimated for each crop class based on
935 the proportion of each region according to the 2010 data, using the total irrigated area from AQUASTAT.

936 **Slovenia**

937 NUTS 2 level data for total harvested area and irrigated area of major crops were extracted from the
938 Eurostat data portal for the years 2000 to 2015. Crop-specific irrigated area data is only available for 2003
939 and 2010. The irrigated areas for 2000 and 2005 were interpolated for each crop class between 2003 and
940 2010. The 2015 irrigated areas were estimated for each crop class based on the proportion of each region
941 as per the 2010 data, using the total irrigated area from AQUASTAT.

942 **Spain**

943 Total harvested area and irrigated area of major crops at the NUTS 2 level were extracted from the
944 Eurostat data portal for the years 2000 to 2015. There is only a total irrigated area, and crop-specific
945 irrigated area data is available only for 2000, 2003, and 2010. The 2005 irrigated area was interpolated
946 using the 2003 and 2010 data. We took the proportion of each province's irrigated area according to the
947 2010 data and assigned each crop class area accordingly based on the AQUASTAT data for the year 2015.

948 **Sweden**

949 Total harvested area and irrigated area of major crops at the NUTS 2 level were extracted from the
950 Eurostat data portal for the years 2000 to 2015. Crop-specific irrigated area data is available only for 2010.
951 We used the proportions of each province's irrigated area from 2010 to assign crop-specific areas
952 accordingly, based on the national-level irrigated area data from AQUASTAT.

953 **Switzerland**

954 Total harvested and irrigated areas of major crops at the NUTS 2 level were extracted from the Eurostat
955 data portal for the years 2000 to 2015. Detailed crop-specific irrigated area data is only available for 2010.
956 We used the 2010 proportions of irrigated areas for each province to assign irrigated areas to each crop
957 class based on AQUASTAT data.

958 **Ukraine**

959 A national-level total harvested area for the years 2000 to 2015 was collected from FAOSTAT. Crop-specific
960 irrigated area data was collected from AQUASTAT starting from 2003 onwards. For the year 2000, we used
961 data from MIRCA2000CC.

962

963 **United Kingdom**

964 A NUTS 2 level total harvested area and irrigated area of major crops were extracted from the Eurostat
965 data portal for the years 2000 to 2015. There is only a total irrigated area, and crop-specific irrigated area
966 data is only available for 2010. We used the proportions of each province's irrigated area from 2010 to
967 assign the irrigated area for each crop class accordingly, based on the AQUASTAT data.

968 **Oceania**

969 **Australia**

970 A province-level total and irrigated harvested area of major crop classes for 2000, 2005, 2010, and 2015
971 were gathered from the Australian Bureau of Statistics Water Use on Australian Farm's annual report. The
972 total irrigated area of cereals was proportionally distributed to maize, rice, sorghum, and wheat according
973 to their respective total harvested areas. The total harvested area of major crops was gathered from the
974 annual Agricultural Commodities report.

975 **Fiji**

976 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
977 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
978 assuming all harvested areas to be rainfed.

979 **French Polynesia**

980 The national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
981 2015. There were no irrigated harvested area statistics available, so it was assumed that all harvested
982 areas were rainfed.

983 **Kiribati**

984 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
985 2015. There were no crop-specific irrigated areas reported at both national and sub-national levels,
986 assuming all harvested areas to be rainfed.

987 **Marshall Islands**

988 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
989 2015. There were no crop-specific irrigated areas reported at both national and sub-national levels,
990 assuming all harvested areas to be rainfed.

991 **Micronesia, Federated States of**

992 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
993 2015. There were no crop-specific irrigated areas reported at both national and sub-national levels,
994 assuming all harvested areas to be rainfed.

995 **Nauru**

996 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
997 2015. There were no crop-specific irrigated areas reported at either the national or sub-national levels,
998 assuming all harvested areas to be rainfed..

999 **New Caledonia**

1000 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1001 2015. There was no crop-specific irrigated area reported at both national and sub-national levels,
1002 assuming all harvested areas to be rainfed.

1003 **New Zealand**

1004 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1005 2015. The crop-specific irrigated area data from AQUASTAT is available from 2007 onwards. The irrigated
1006 area for 2000 was used directly from the MIRCA2000 condensed crop calendar. For 2005, the crop-specific
1007 irrigated area at the national-level was interpolated using the 2000 and 2007 harvested area data.

1008 **Niue**

1009 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1010 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1011 assuming all harvested areas to be rainfed.

1012 **Papua New Guinea**

1013 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1014 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1015 assuming all harvested areas to be rainfed.

1016

1017 **Solomon Islands**

1018 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1019 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1020 assuming all harvested areas to be rainfed.

1021 **Tokelau**

1022 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1023 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1024 assuming all harvested areas to be rainfed.

1025

1026 **Tuvalu**

1027 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1028 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1029 assuming all harvested areas to be rainfed.

1030 **Vanuatu**

1031 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1032 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1033 assuming all harvested areas to be rainfed.

1034 **South America**

1035 **Argentina**

1036 A national-level irrigated area from AQUASTAT is available from 2008 onwards. For the year 2000, we
1037 used the original MIRCA2000 irrigated area (province level), prepared by averaging the 1998 and 2002
1038 Census reports. For 2005, 2010, and 2015, a total harvested area was collected from the National Statistics
1039 Office, considering the 2002, 2008, and 2017 Census reports and agricultural estimates of harvested areas
1040 from the National Directorate of Agriculture - Directorate of Agricultural Estimates. A national-level crop-
1041 specific irrigated area for 2000 and 2008 was used to interpolate the data for 2005. The fodder area was
1042 extracted from the 2002, 2008, and 2017 Census reports. A national-level irrigated area extracted from
1043 AQUASTAT was proportionally assigned to each province, following the proportion of each province's total
1044 harvested area per crop according to MIRCA2000 and considering the 2002, 2008, and 2017 Census
1045 reports.

1046 **Bolivia**

1047 A province-level total harvested area was collected from the National Institute of Statistics for the years
1048 2000 to 2015. A national-level irrigated area from AQUASTAT is available from 2008 onwards. For 2000,
1049 we used the original MIRCA2000 dataset for irrigated areas, and for 2005, it was interpolated between
1050 the data from 2000 and 2008. The national-level irrigated area was distributed proportionally to each
1051 province.

1052 **Brazil**

1053 Province-level total harvested area data were extracted from the Institute of Geography and Statistics for
1054 the years 2000 to 2015. The irrigated area for 2000 was used directly from the MIRCA2000 condensed
1055 crop calendar. The AQUASTAT irrigated area data for Brazil before 2006 is available only for two crop
1056 classes, namely rice and vegetables. For 2005, the crop-specific irrigated area at the national-level was
1057 interpolated using the 2000 and 2006 harvested area data. The national-level crop-specific irrigated areas
1058 for 2005, 2010, and 2015 were assigned to each province following the same proportions used in the
1059 MIRCA2000 CC. The irrigated area data from AQUASTAT was not updated after 2010. For 2015, we

1060 assumed the crop-specific irrigated area of each crop changes linearly with the total area equal for
1061 irrigation.

1062 **Chile**

1063 A crop-specific province-level irrigated and total harvested area for 2006 and 2015 was collected from the
1064 National Statistics Office. For 2000, the proportion of each province according to the 2006 data was used,
1065 and the national-level irrigated and total harvested area collected from FAOSTAT and AQUASTAT was
1066 assigned proportionally. For 2010, the data was interpolated using the province-level irrigated and rainfed
1067 harvested area between 2006 and 2015.

1068 **Columbia**

1069 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
1070 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

1071 **Ecuador**

1072 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
1073 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

1074 **French Guiana**

1075 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1076 2015. There was no crop-specific irrigated area reported at either the national or sub-national level,
1077 assuming all harvested areas to be rainfed.

1078 **Guyana**

1079 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1080 2015. The national-level crop-specific irrigated area was available from 2010 onwards from AQUASTAT.
1081 For the year 2000, the irrigated area was based on MIRCA2000, and for the year 2005, we proportionally
1082 estimated the crop-specific irrigated area, assuming it has linear proportions with the total area equipped
1083 for irrigation.

1084 **Paraguay**

1085 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1086 2015. The crop-specific irrigated area data from AQUASTAT is available from 2008 onwards. The irrigated
1087 area for 2000 was used directly from the MIRCA2000 condensed crop calendar. For 2005, the crop-specific
1088 irrigated area at the national-level was interpolated using the 2000 and 2008 harvested area data.

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1091 **Peru**

1092 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
1093 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

1094 **Suriname**

1095 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1096 2015. The national-level crop-specific irrigated area was available from 2006 onwards from AQUASTAT.
1097 For the year 2000, the irrigated area was based on the MIRCA2000 crop calendar. For the year 2005, we
1098 proportionally estimated the crop-specific irrigated area linearly using the 2000 and 2006 data.

1099 **Uruguay**

1100 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1101 2015. Crop-specific irrigated areas at the national-level were collected from AQUASTAT for the same
1102 years..

1103 **Venezuela**

1104 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1105 2015. The national-level crop-specific irrigated area was available from 2008 onwards from AQUASTAT.
1106 For the year 2000, the irrigated area was based on the MIRCA2000 crop calendar. For the year 2005, we
1107 proportionally estimated the crop-specific irrigated area linearly using the 2000 and 2008 data.

1108 **North America**

1109 **American Samoa**

1110 A national-level total harvested area was collected from FAOSTAT for the years 2000 to 2015. There were
1111 no irrigated harvested area statistics available, so it was assumed that all harvested area statistics are
1112 rainfed. No irrigated harvested area was reported in both FAOSTAT and NASS datasets. Total harvested
1113 area data was gathered from the Census reports of 2003, 2007, 2012, and 2017. All the reported harvested
1114 areas were considered as rainfed.

1115 **Antigua and Barbuda**

1116 A national-level total harvested area of major crops was collected from the FAOSTAT from 2000 to 2015.
1117 The crop-specific irrigated areas at the national-level from AQUASTAT for 2000 to 2015.

1118 **Bahamas**

1119 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1120 2015. There were no irrigated harvested area statistics available, so it was assumed that all harvested
1121 areas are rainfed.

1122 **Barbados**

1123 A national-level total harvested area was collected from FAOSTAT for the years 2000 to 2015. No irrigated
1124 harvested area statistics were available, so it was assumed that all harvested areas were rainfed.

1125 **Costa Rica**

1126 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1127 2015. The national-level crop-specific irrigated area was available from 2013 onwards from AQUASTAT.
1128 For the year 2000, the irrigated area was based on the MIRCA2000 data. For the years 2005 and 2010, we
1129 proportionally estimated the crop-specific irrigated area, assuming it has a linear relationship with the
1130 total area equipped for irrigation.

1131 **Canada**

1132 A province-level total harvested area was collected according to the 2001, 2006, 2011, and 2016 Census
1133 of Agriculture reports. The irrigated area is reported in more general crop classes such as field crops, fruits,
1134 vegetables, and hay and pasture. The irrigated areas of hay were considered as a fodder crop class. For
1135 the other crop classes, national irrigated area data were collected from AQUASTAT. Using the proportions
1136 of these crop classes, the irrigated area was proportionally assigned to each province. AQUASTAT irrigated
1137 area data is available from 2010 onwards. For the year 2000, the national-level crop-specific irrigated area
1138 data were collected from MIRCA2000 CCC and scaled accordingly for each province.

1139 **Cuba**

1140 A national level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1141 2015. The national-level crop-specific irrigated area data was available from 2013 onwards from
1142 AQUASTAT. For the years 2000 and 2005, the total irrigated area of annual and perennial crops was
1143 reported without segregation by crop class. We used the MIRCA2000 crop calendar proportions to
1144 distribute the total irrigated area among each crop class.

1145 **Dominica**

1146 A national level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1147 2015. There was no crop-specific irrigated area reported at either the national or sub-national level, so it
1148 was assumed that all cropped areas are rainfed.

1149 **Dominican Republic**

1150 A national level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1151 2015. The national-level crop-specific irrigated area was available from 2004 onwards from AQUASTAT.
1152 For the year 2000, we used the MIRCA2000 Crop Calendar of irrigated harvested area data.

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1155 **El Salvador**

1156 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1157 2015. The crop-specific irrigated areas at the national level were obtained from AQUASTAT for the years
1158 2000, 2005, 2010, and 2015.

1159 **Grenada**

1160 A national level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1161 2015. The national-level crop-specific irrigated area was available from 2008 onwards from AQUASTAT.
1162 For the year 2000, the irrigated area was based on the MIRCA2000 Crop Calendar. For the years 2005, we
1163 estimated the crop-specific irrigated area linearly using data from 2000 and 2008.

1164 **Guadeloupe**

1165 A national-level total harvested area was collected from FAOSTAT for the years 2000 to 2015. No irrigated
1166 harvested area statistics were available, so it was assumed that all harvested areas were rainfed.

1167 **Guatemala**

1168 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1169 2015. The national-level crop-specific irrigated area was available from 2007 onwards from AQUASTAT.
1170 For the year 2000, the irrigated area was derived from the MIRCA2000 Crop Calendar. For the years 2005,
1171 we estimated the crop-specific irrigated area linearly using data from 2000 and 2007.

1172 **Haiti**

1173 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1174 2015. The national-level crop-specific irrigated area was available from 2009 onwards from AQUASTAT;
1175 for the year 2000, the irrigated area was according to MIRCA2000, and for the year 2005, we
1176 proportionally estimated the crop-specific irrigated area assuming linear proportions with the total area
1177 equipped for irrigation.

1178 **Honduras**

1179 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1180 2015. The national-level crop-specific irrigated area was available from 2006 onwards from AQUASTAT.
1181 For the year 2000, the irrigated area was according to the MIRCA2000 Crop Calendar. For the years 2005,
1182 we linearly estimated the crop-specific irrigated area using data from 2000 and 2006.

1183 **Jamaica**

1184 The national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1185 2015. The crop-specific irrigated area at the national level was available for the years 2000, 2005, 2010,
1186 and 2015.

1187 **Mexico**

1188 A province-level total and irrigated harvested area was obtained from the Agri-food and Fisheries
1189 Information Service for 2000, 2005, 2010, and 2015.

1190 **Panama**

1191 The total harvested area of major crops was collected from FAOSTAT for the years 2000, 2005, 2010, and
1192 2015. The crop-specific irrigated areas at the national level were obtained from AQUASTAT for the years
1193 2000, 2005, 2010, and 2015.

1194 **Puerto Rico**

1195 The national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1196 2015. Crop-specific irrigated area data at the national level were available from AQUASTAT starting in
1197 2007. For the year 2000, the irrigated area was determined using the MIRCA2000 Crop Calendar (CC). For
1198 the years 2005, we estimated the crop-specific irrigated area linearly based on data from 2000 and 2007.

1199 **Saint Kitts and Nevis**

1200 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1201 2015. The national-level crop-specific irrigated area was available from 2007 onwards from AQUASTAT.
1202 For the years 2000 and 2010, the irrigated area was based on the MIRCA2000 Crop Calendar. For the year
1203 2005, we linearly estimated the crop-specific irrigated area using data from 2000 and 2012.

1204 **Saint Lucia**

1205 A national-level total harvested area was collected from FAOSTAT for the years 2000, 2005, 2010, and
1206 2015. The national-level crop-specific irrigated area was available from 2007 onwards from AQUASTAT.
1207 For the years 2000 and 2010, the irrigated area was based on the MIRCA2000 Crop Calendar. For the year
1208 2005, we linearly estimated the crop-specific irrigated area using data from 2000 and 2012.

1209 **United States of America**

1210 County-level total harvested area and irrigated area data were collected from the United States
1211 Department of Agriculture NASS QuickSTAT database. The Census of Agriculture reports from 1997 and
1212 2002 were used to interpolate the year 2000 data for each crop. Data from 2002 and 2007 were utilized
1213 to interpolate total and irrigated harvested areas for each county and crop for 2005. Similarly, data from
1214 2007 and 2012 were interpolated to estimate total harvested and irrigated areas for 2010, and data from
1215 2012 and 2017 were used for the 2015 estimates. For counties where harvested area data were either
1216 unavailable or labeled as 'D' (Withheld to avoid disclosing data for individual operations), state-level
1217 harvested area data were proportionally distributed to each county based on historical data or harvested
1218 areas of similar crops. Additionally, total harvested and irrigated area data were obtained from the recent
1219 dataset 'HarvestGRID: High-resolution harvested crop areas of the United States from 1981 to 2019,'

1220 which was used to fill missing data. Grasses, legumes, hay, and silage crops were grouped as fodder crop
1221 classes. For maize and sorghum, both grain and silage were aggregated as maize and sorghum crops.

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