

Thank you for your interest in “Maps of the Distribution of Cropland in China”. A detailed description of the generation of these datasets can be obtained in two refereed journal articles:

Frolking, S., J. Qiu, S. Boles, X. Xiao, J. Liu, Y. Zhuang, C. Li, and X. Qin. 2002. Combining remote sensing and ground census data to develop new maps of the distribution of rice agriculture in China, *Global Biogeochemical Cycles*, 16(4), 1091, doi:10.1029/2001GB001425.

Qiu, J., S. Frolking, S. Boles, X. Xiao, J. Liu, Y. Zhuang, C. Li, X. Qin, H. Tang. 2002. Mapping single-, double-, and triple-crop agriculture in China at 0.5°x0.5° by combining county-scale census data with a remote sensing-derived land cover map, *Geocarto International* (*in press*).

### **Overview**

Large-scale assessments of the potential for food production and its impact on biogeochemical cycling require the best possible information on the distribution of cropland. This information can come from ground-based agricultural census data sets and/or spaceborne remote sensing products, both with strengths and weaknesses. Official cropland statistics for China contain much information on the distribution of crop types, but are known to significantly underestimate total cropland areas and are generally at coarse spatial resolution. Remote sensing products can provide moderate to fine spatial resolution estimates of cropland location and extent, but supply little information on crop type or management.

We combined county-scale agricultural census statistics on total cropland area and sown area of 17 major crops in 1990 with a fine-resolution (100 meter) land-cover map derived from 1995–1996 optical remote sensing (Landsat) data to generate 0.5° resolution maps of the distribution of rice agriculture in mainland China. Agricultural census data were used to determine the fraction of crop area in each 0.5° grid cell that was in each of 47 different single- and multi-crop rotations in mainland China (see listing below).

We estimated that, of 1.3-million km<sup>2</sup> of cropland, approximately 60% was single-cropped, 30% was double-cropped, and 10% was triple-cropped. Total sown or planted area was 2.0-million km<sup>2</sup>. Specific to rice, we estimated that there were 0.30 million km<sup>2</sup> of paddy rice cropland; 75% of this paddy land was multi-cropped, and 56% had two rice plantings per year. Total sown area for paddy rice was 0.47 million km<sup>2</sup>. Paddy rice agriculture occurred on 23% of all cultivated land in China.

Two products are available to be downloaded from the website – ASCII data files at 0.5° spatial resolution, and JPEG image files of selected crop rotations.

### **ASCII Data Files**

All ASCII data files have been prepared at 0.5° spatial resolution. Header information is included in the first 6 lines of each ASCII file: number of rows and columns, lower left corner coordinates, cell size, NODATA value. In each file, cells with the value –9999 lie outside of China’s borders, and cells with the value –8888 indicate the island of Taiwan (which was excluded from our analysis). Individual data values represent the area within the particular grid

cell occupied by the particular crop rotation (in square kilometers). Total area of the particular crop rotation can be determined by summing all non-negative values.

To download ASCII files, right click on the “ASCII” link and select the option “Save Link Target As”.

ASCII data files are available for all 47 crop rotations (single, double and triple cropping systems inclusive) that were analyzed. Additionally, 11 files of summary variables that were presented in the journal articles are provided, including:

- All double cropping systems with one rice rotation (rice / other crop)
- All triple cropping systems with two rice rotations (rice / rice / other crop)
- All areas (single, double, and triple cropping systems) utilized for production of six major crop types (wheat, maize, rice, rapeseed, soybean, potato)
- All areas with a single crop system
- All areas with a double crop system
- All areas with a triple crop system

### **JPEG Image Files**

JPEG image files have been provided for the rice rotations and summary variables that were presented in the two journal articles. To download JPEG files, right click on the “JPEG” link and select the option “Save Link Target As”.

### **Cropland areas in China**

NOTE: all areas are rounded to two significant figures, so totals may equal added rotations

Total land area in all rotations = 1,300,000 km<sup>2</sup>

Total sown area in all rotations = 2,000,000 km<sup>2</sup>

<b><u>Triple Cropping</u></b>	<b><u>Area (km<sup>2</sup>)</u></b>
rice/rice/alfalfa	50,000
rice/rice/rapeseed	42,000
rice/rice/vegetable	11,000
rice/rice/wheat	20,000
vegetable/vegetable/potato	19,000
<u>vegetable/vegetable/vegetable</u>	<u>1,700</u>
TOTAL LAND AREA	140,000
TOTAL SOWN AREA	430,000

<b><u>Double Cropping</u></b>	<b><u>Area (km<sup>2</sup>)</u></b>
corn/corn	1,200
corn/soybean	10,000
potato/corn	14,000
potato/potato	8,900
potato/soybean	3,600

rapeseed/corn	3,900
rapeseed/cotton	1,400
rapeseed/soybean	460
rapeseed/vegetable	1,300
rice/oat	22,000
rice/rapeseed	4,000
rice/rice	45,000
rice/soybean	1,600
rice/vegetable	3,900
rice/wheat	27,000
soybean/non-legume hay	0.1
soybean/oat	830
vegetable/corn	2,100
wheat/corn	110,000
wheat/cotton	6,000
wheat/potato	7,500
wheat/rapeseed	66,000
wheat/soybean	16,000
wheat/vegetable	3,300
TOTAL LAND AREA	360,000
TOTAL SOWN AREA	730,000

<b><u>Single Cropping</u></b>	<b><u>Area (km<sup>2</sup>)</u></b>
alfalfa	5700
beets	10,000
corn	150,000
cotton	57,000
millet	33,000
non-legume hay	8
oats	83,000
potato	65,000
rapeseed	35,000
rice	77,000
sorghum	21,000
soybean	76,000
sugarcane	12,000
sunflower	6,000
tobacco	14
vegetable	23,000
wheat	130,000
Fallow	33,000
TOTAL LAND AREA	820,000
TOTAL SOWN AREA	790,000