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**Origin Data:**

Source: USDA quick stats

<http://quickstats.nass.usda.gov>

Choose Program: census>Sector: crops>Group: field crops>commodity(crops of interest)>data item: corresponding acres harvested(total harvested acres) or corresponding irrigated-acres harvested (irrigated acres)>domain: total>Geographic level: county>Year:2012

leave the state and domain category being unchosen, all the counties in all states will be included in the file

Click ‘Get Data’

Click ‘Spreadsheet’ at upper right of the screen to save the csv. file

Crops of interests including barley (used as grain), corn(used as grain and silage), hay(alfalfa, small grain, other tame exclude alfalfa and small grain, wild hay), hay&halage (total), haylage (alfalfa, haylage exclude alfalfa), sorghum (used as grain, silage, syrup), soybean (total), wheat (total, winter wheat)

‘-‘ represents zero

‘(D)’ withheld to avoid disclosing data for individual farms

The origin data files including information of total harvested acres and irrigated harvested acres of crops which shown as follows:

Barley, corn (grain, silage), hay (alfalfa, small grain, other tame hay excludes alfalfa and small grain, other wild hay), sorghum (grain, silage, syrup), soybean, wheat (spring wheat durum, spring wheat excludes durum, winter wheat)

**Reorganization:**

For the purpose of using in the model, the data were **reorganized and calculated** so that **irrigated acres** data and **rainfed acres** data for crops could be obtained following the order as below:

Alfalfa (hay), Other hay (includes small grain, other tames, other wilds), Barley, Winter Barley (using 0 for all counties because lack of data), Maize (i.e. corn used as grain), Sorghum (i.e. used as grain), Soybean, Spring Wheat (includes spring wheat durum and spring wheat excludes durum), Winter Wheat

The calculations and reorganizations follows the rules:

1. ‘(D)’ values are replaced by ‘NA’ and acres for county without cultivating certain type of crops are replaced by ‘0’. It is worth noting that for certain type of crops, if some counties are not shown in the origin files meaning the county does not cultivate that crops.
2. **Total harvested acres = irrigated harvested acres + rainfed harvested acres.**

Irrigated harvested acres including fully irrigated area and the irrigated portion of the partial irrigated area. Since we only have total harvested acres and irrigated acres from USDA, the rainfed acres is calculated via applying the equation. This equation is validated using state level data (USDA provides rainfed data at state level).

1. Unlike other crops the data for other hay and wheat need to be recalculated.

**Otherhay irrigated acres (/total harvested acres)= total hay irrigated acres (/total harvested acres) – alfalfa irrigated acres (/total harvested acres)**

**Springwheat irrigated acres (/total harvested acres) = total wheat irrigated acres (/total harvested acres) – winter wheat irrigated acres (/total harvested acres)**

Similarly, the total harvested acres follow the rules. These equations are validated by county level data.

1. The FIPS value of county = State\_ANSI combined with County ANSI

Resultant site information files:

<https://github.com/AmericasWater/operational-problem/tree/master/data/agriculture/rainfedareas.csv>

<https://github.com/AmericasWater/operational-problem/tree/master/data/agriculture/data/irrigatedareas.csv>

Values (irrigated acres or rainfed acres, unit: acre) in these files contains 10 columns following the order below:

FIPS, Alfalfa, Otherhay, Barley, Barley.Winter, Maize, Sorghum, Soybeans, Wheat, Wheat.Winter

Reference information can be found on the following site:

http://www.agcensus.usda.gov/Publications/2012/Full\_Report/Volume\_1,\_Chapter\_1\_US/usv1.pdf