

# How USDA Forecasts Production and Supply/Demand

# Overview

- USDA publishes crop supply and demand estimates for the U.S. each month.
- Because of the comprehensive nature and objectivity of these reports, market participants regard them as the benchmark of the fundamental supply/demand situation in agricultural markets.
- Producers, merchandisers, processors, traders, and other market participants rely on the information in these reports when making their buying and selling decisions.
- Therefore, it is useful to know what is behind the reports, how they are developed, and what they really represent.

# Production Forecasts

- Production forecasts are generated by estimates of harvested acres and yield per acre.
- Forecasts are based on conditions as they exist when the survey is made and projections of normal conditions for the remainder of the season.
- That means it is assumed that rainfall and temperatures will occur at their historic averages for the rest of the season.

# Planted and Harvested Acres

- The largest survey of the year is the June Agricultural Survey.
- NASS surveys more than 125,000 farmers to get information on acres they have planted and intend to plant, acres they intend to harvest, and on farm grain stocks and livestock inventories.
- This survey uses two different samples, called frames. The first is the area frame, which is the land area of the United States. This ensures that the population of farmers is covered by the survey. The second frame is the list frame. This is a list of all known farmers and ranchers. The list frame is a more efficient data collection method because it uses people who are already known to be in the business.
- The area frame survey uses known data about land cultivation intensity, by state, to sample farmers. Land is broken up into segments, then the segments are chosen in which the farmers will be interviewed in person. About 10,000 area segments are used in the June survey.
- Approximately 75,000 farmers are chosen from the list of addresses to participate in the June survey. Before the survey, farms are classified by various characteristics, including size, to ensure that larger farms can be sampled at higher rates.
- The results from the list survey and the area survey are then combined and compared to prevent duplication. Planted and harvested acres are then forecast.

# Yield Forecasts

- A subset of the farmers surveyed for the acreage estimates are asked to help develop monthly crop yield projections.
- These farmers project what they expect their crops to yield and then provide actual yield information after harvest.
- Objective yield surveys are performed monthly in the largest producing states.
- The survey provide data for estimating yields from small plots in randomly selected fields using plant and fruit counts, measurements and weights.
- These fields are selected during the area frame survey. Plots from these fields are surveyed. The number of fruit and fruit weights then are used in statistical models based on historical observations to forecast yields.
- After harvest, the plots are again surveyed to measure harvest loss.
- The estimates of harvested acreage and yield are combined to generate the production estimate. Of course, ongoing weather events can and do change the estimates of harvested acres and yields.

# Table 1. Objective Yield Forecast Variables for Number of Fruit and Weight per Fruit

Crop	Component	Forecast Variable
Corn	Ears	-Stalks -Ears and ear shoots
	Ear weight	-Ears with kernels -Historic average -Length over husk -Kernel row length -Ear diameter
Soybeans	Plants Pods per plant	-Plants -Mainstream nodes -Lateral branches -Blooms, dried flowers and pods
	Pod weight	-Pods with beans -Historical average -Pods with beans
Cotton	Bolls	-Squares -Blooms -Small bolls -Large bolls -Open bolls
	Boll weight	-Historical average -Large boll weight
Wheat	Heads	-Stalks -Heads in boot
	Head weight	-Emerged heads -Historical average -Fertile spikelets -Grains per head
Source: NASS		

# Uses of Production Forecasts

- The NASS production estimates are used by USDA to estimate the supply of and use of U.S. agricultural commodities.
- A balance sheet is developed for each crop; it includes beginning stocks, production and imports to estimate total supply.
- Estimates of crop use (both domestic use and exports) are developed for each crop.

# Crop Progress Reports

- Every Monday morning during the growing season, NASS releases a report on crop progress and conditions.
- For the major commodities in major producing states, this report briefly details crop planting, percent of crops at various stages of maturity, and percent harvested.
- Estimates of crop conditions are made by classifying the percent of the crop in excellent, good, fair, and poor conditions.
- It is important to remember that the crop progress reports can change drastically from week to week. They often change in response to changing weather during planting, pollination and harvest seasons.
- These reports are often quoted in the media and used by analysts to forecast yields and production.



# Summary

- NASS uses large surveys of real farmers and fields to forecast crop production.
- It is a survey at a specific point in time, in which measurement and forecast errors can occur.
- The timing of weather and other events can affect the usefulness of the survey.
- If conditions change from one month to the next, the estimates also change.
- However, the market information is valuable and serves as the benchmark for many of the market participants' buying and selling decisions.
- For that reason, it is important for producers to understand how the information and reports are constructed, and what their correct uses are and are not.