

# Corn for Grain and Silage

## Marketing

Corn grown in Kentucky is used mainly for livestock feed. It is produced for both on-farm use and off-farm sale. There are a variety of local and regional markets for field corn in Kentucky.

## Market outlook

The primary use of field corn for grain and silage in the United States is for livestock feed. Other uses are industrial (sweeteners) and energy (ethanol). U.S. producers face international competition in the livestock category; corn prices have decreased to low levels in recent years. Expanded corn markets, as well as the emergence of more uses for corn, may help prices regain strength in the 21<sup>st</sup> century.

## Production considerations

### *Site selection and planting*

Corn does well on a wide variety of soils but performs best on silt loam soils that are well drained, in good tilth and free from erosion. No-tillage techniques, pioneered by farmers and researchers in Kentucky, are now so widely used in-state that they dominate seeding methods for corn. No-till is best suited to soils that are moderately well-drained to well-drained. Avoiding droughty soils and following a good crop rotation program is recommended. Standard crop rotations often include corn-soybean or corn-wheat-soybean rotations. Optimum planting dates usually range from the first of

April to mid-May in Kentucky. Early-planted corn has fewer disease and insect problems and generally out-yields late-planted corn.



Seeding rates depend on the tillage system (conventional or no-till) and use (silage or grain). If there is uncertainty as to whether the crop will be harvested for grain or silage, the field should be seeded at the rate recommended for grain. Recommended seeding rates for grain corn are from 22,000 seeds per acre for low-yielding soils to 30,000 seeds per acre for high-yielding soils.

### *Pest management*

Major insect pests include flea beetles, cutworm, corn borer, and corn earworm. Scouting to monitor populations can help the grower determine when and how often insecticides should be applied. Potential disease problems include damping-off, gray leaf spot, stalk rots and viruses. Crop rotation, seed treatment and the use of resistant varieties can help reduce disease and insect problems. Fungicide sprays typically do not show justifiable economic returns for commercial corn production. Weed control can be achieved by a good crop rotation program and the use of herbicides.

### *Harvest and storage*

The best time to harvest corn for high quality silage is when the kernels are at 1/2 to 3/4



milk line. Crude protein and digestibility are higher at this point. Some farmers wait to chop corn for silage when the kernels have all dented and a black layer has formed near the base of the kernel. Chopping corn at black layer results in higher yields than chopping corn at 3/4 milk line, but crude protein and digestibility are lower. The silage should be chopped at a length of approximately 3/8 to 1/2 inch to ensure adequate packing. Excluding air is of major importance in making and preserving silage.

When the kernels reach black layer (also known as physiological maturity) corn kernels are at about 30 to 35 percent moisture. Harvesting corn for grain usually occurs after the kernel moisture is below 25 percent. Kernels need to be dried to 16 percent moisture within 24 hours after harvest and should be cooled to outside air temperatures within 48 hours after harvest for safe storage.

#### *Labor requirements*

Labor needs are approximately 2 to 4 hours per acre for production and harvest, depending on equipment size and production system. Silage production will require slightly more labor than grain production.

#### **Economic considerations**

Total 2001 costs for corn silage (no-till) are estimated at \$270 per acre. Harvest amounts can range from 12 to 20 tons per acre with prices between \$15 and \$30 per ton. A break-even price of \$11.35 per ton would be needed to cover variable costs of a 15-ton per acre harvest. Silage produced for on-farm use would have no

cash returns, making returns to land, capital and management negative \$270.

Costs of no-till corn for grain can total \$222 per acre. Presuming a harvest of 130 bushels per acre sold off-farm at \$2.35 per bushel, gross returns of \$306 can be expected. With this scenario, returns to land, capital and management would come to approximately \$61 per acre. A break-even price of \$1.36 per bushel would be needed to cover variable costs of a 130-bushel per acre yield.

#### **More information**

##### *Production*

- A Comprehensive Guide to Corn Management in Kentucky ID-139 (UK 2001)  
<http://www.ca.uky.edu/agc/pubs/id/id139/id139.htm>
- Kentucky Integrated Crop Management Manual for Corn (UK 1997)  
<http://www.uky.edu/Ag/IPM/manuals/ipm2corn.pdf>
- Kentucky Plant Disease Management Guide for Corn and Sorghum PPA-10a (UK, 1995)  
<http://www.ca.uky.edu/agc/pubs/ppa/ppa10a/ppa10a.pdf>

##### *Budgets*

- Field Crop Enterprise Cost and Return Estimates for Kentucky - (UK baled interactive budgets, 2001)  
<http://www.uky.edu/Agriculture/AgriculturalEconomics/data/baledcropbudgetins/tr495.html>