Spring Silage Management

- Silage planning begins before planting, but is a yearlong process that is based on forage dry matter requirements.
- The optimum planting date for corn silage, when measured using milk/acre, is the same as it is for grain yield.
- Herbicide programs should be planned to prevent weed establishment during the first several weeks after planting.
- The best protection for the silage crop is to minimize the number and intensity of stresses on the plants with good agronomic practices and timely pest control.

Planning

A silage plan should be created before planting, but in reality planning for silage is a yearlong process. The silage plan should be based on forage dry matter requirements that consider agronomic factors. These considerations should be based on: field and product selections, field rotations, fertility, weed control programs, planting densities, harvest timing, and storage. In addition, consideration should be given to feeding requirements and whether or not silage will be produced for nutritional value, tonnage, or both.

A basic consideration for corn silage production is whether corn silage fields will be identified during planting or during the growing season. The decision to harvest a field for silage from the outset is common on farms where corn is grown only for silage or where particular fields are used only for silage production. The advantage of this strategy is that cultural practices such as product selection, plant populations, and fertilizer applications can be adjusted specifically for maximizing the potential of this crop for silage.

Delaying the decision on which fields to harvest for silage is a strategy that is used on farms where corn is grown for both silage and grain. The advantage of this strategy is that cultural practices such as product selection, plant populations, and fertilizer applications can be adjusted specifically for maximizing the potential of this crop for silage.

Delayed planting may cause reduced grain content and digestibility if it results in an immature crop killed by frost. The digestibility of stover and grain is different. Digestibility of stover is close to a flat line across a range of planting dates tested, but starch content decreases with later planting dates.

The optimum planting date for corn silage, when measured using milk/acre, is the same as it is for grain yield. The difference is that the planting date window is slightly longer for silage than it is for grain. Milk/acre starts to decline after May 15, in Wisconsin. By June 1, 279 pounds of milk/acre is lost with each planting day delay. By June 10 about half of the yield potential is lost for corn grown for grain. Similarly, about half of the yield and quality potential (milk/acre) for corn silage is lost by June 10.

In areas with longer growing seasons, corn planted for silage can often be planted into early summer, or double or triple cropped, and still produce profitable silage yields. Later plantings may experience increased insect, disease, and drought stress.

When to Switch Corn Products

Farmers selecting corn products for silage should consider planting the latest relative maturity of corn that will reach harvest maturity by frost. Higher yields of quality forage are produced with products that mature slightly later than those adapted for grain production. When planting is delayed beyond May 20, earlier maturity products should be planted to reach harvest maturity by frost. However there comes a point where planting is delayed to the extent that even shorter maturity products will not reach harvest maturity by frost. At this point, later maturity corn products should be planted so they reach pollination at frost, and allow drying time after frost to get the product to low enough moisture.
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content for ensiling. The recommendation to switch back to later maturity products for late planted corn silage is made because corn has two peaks in forage quality: one at pollination and one at harvest maturity. The early peak in forage quality at pollination is high in quality but too wet for ensiling unless frost can dry the crop down. For late planted corn, aiming for a product that will be at pollination at frost becomes a better choice than planting a short season product that will not reach harvest maturity.

Planting Density

Plant populations for corn silage are dependent upon productivity of the corn product and field characteristics. Corn silage yields usually increase more given higher plant populations than do corn grain yields. Increasing plant populations by 10 to 20% over those recommended for grain will often maximize silage yields. The effects of increased population on fiber content, digestibility, and protein concentration are generally small. An established plant population of 26,000 to 32,000 plants per acre is recommended on most soils. Higher plant populations in this range are best suited on the most productive soils. Research trials show that silage yields respond to plant populations up to 42,000 plants per acre, but the estimated milk yields/acre, considering both yield and whole plant digestibility were maximized at lower plant populations, because digestibility declined with higher populations.

Weed Control

Competition from weeds may reduce yield, digestibility, and protein content of silage. Control strategies for weeds and insects in corn for silage are similar to those used in corn for grain. Corn is sensitive to early weed competition and herbicide programs should be planned to prevent weed establishment during the first several weeks after planting. Weeds emerging prior to or with corn are the most competitive and weeds should be removed after planting before exceeding 4 inches in height to prevent a reduction in yield potential. Research at the Universities of Minnesota and Wisconsin shows an average of 3 bushel per day of yield potential is at risk for every day 3 to 4 inch weeds are left uncontrolled after V3 to V4 stage corn. Develop a herbicide plan that addresses the weeds species expected in each field, has multiple application timing options, incorporates herbicides with residual activity to help prevent weed competition and facilitates proper application timing, and considers crops following corn in the rotation.

Fertility

The key to developing plant nutrient recommendations is to soil test and to account for manure applications and for previous crops in the rotation. On soils with low-to-optimum soil test levels, fertilizer recommendations for corn grown for silage are 20, 30, and 115 lb/acre higher for N, P₂O₅, and K₂O, respectively, than for corn for grain with comparable yields. Consequently, the recommendation would be 180 lb/acre N, 115 lb/acre P₂O₅ and 260 lb/acre K₂O (25 ton silage).

Disease and Insect Management

Disease and insect infestations can affect corn stand establishment, crop vigor and uniformity, and compromise plant tolerance of stress. Silage yield potential and quality may be reduced by all of these factors. Selecting corn products with Genuity® SmartStax® RIB Complete® corn blend provides protection from black cutworm, corn rootworms, corn borers, corn earworm, western bean cutworm, and fall armyworm. Corn products with Acceleron® Corn Seed Treatment Products can provide control of soil and seedborne diseases, including Fusarium, Rhizoctonia, and Pythium, protection from early season pests, such as wireworm, seedcorn maggot, white grub, black cutworm, and grape colaspis, and protection against damage from a wide range of nematode species.

The silage management plan should also consider disease and insect control options around the early reproductive growth stages to protect leaf area, pollination, and kernel set.

Environmental Stress

Saturated soils, cool temperatures, wet weather, or dry conditions can delay corn emergence and seedling development. Cool conditions may predispose plant root systems to infection by seedling blight diseases. Corn can survive only 2 to 4 days under flooded conditions because prior to the V6 stage of growth the growing point is near or below the soil surface. Hail affects yield primarily by reducing stands and defoliating the plant. Defoliation causes most of the yield losses.

Water stress during vegetative development reduces stem and leaf cell expansion resulting in reduced plant height and less leaf area. Water stress around flowering and pollination delays silking, reduces silk elongation, and inhibits embryo development after pollination, potentially reducing corn grain yield by 3-8% for each day of stress. Water stress during grain-filling increases leaf dying, shortens the grain-filling period, increases lodging, and lowers kernel weight, potentially reducing yield potential by 2.5 to 5.8% with each day of stress.

The best protection for the silage crop is to minimize the number and intensity of stresses on the plants with good agronomic practices and timely pest control.

Sources:

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