Penn State lists stages of corn growth

UNIVERSITY PARK — Observant corn growers know that certain problems often appear at specific stages during the growing season. It is easier to anticipate these problems by understanding the stages of corn-plant development.

It's useful to think of the corn-growing season as consisting of six stages: pre-emergence to knee-high; knee-high to tasseling; silking to maturity; maturity to harvest; storage.

The old rule of thumb - corn should be knee-high by the Fourth of July has lost its usefulness as farmers have advanced planting dates to make better use of the growing season.

A consequence of early planting is slow early growth caused by soils too cool, dry or too wet for best growth. The slow growth of second-stage corn can make the plants more susceptible to damage from insects such as cutworms, wireworms and armyworms. Dry soil also can hinder root development, decreasing nutrient uptake causing plant deficiencies. Excessive soil moisture can have the same effect, as can extremes in soil pH and poor soil fertility.

Single symptoms may have several causes. An example: yellowing between leaf veins may indicate a shortage of manganese, iron, or boron. Corn in this stage usually will grow out of such problems as growing conditions improve. Yields are not normally reduced by temporary problems during stage two.

Stage three is a period of rapid corn growth. It begins when the stem of the plant (which can be seen only by removing the leaves in knee-high corn) begins to lengthen rapidly. During this period, new leaves emerge at the rate of one every two or three days.

This rapid growth requires large amounts of energy and soil-supplied nutrients. If the leaf area or root size is reduced by insects during this stage, damage can be serious. Rootworms feeding on roots may cause plants to fall over. Stalk breakage, on the other hand, may result from damage by European corn borers or stalk borers.

The requirement for mineral nutrients during stage three may outstrip the ability of the roots to supply essential elements. This problem can be worse if roots are damaged by insects or cultivation, or if soils are very wet or flooded. Also, cloudy weather can slow growth by reducing the energy supply in the plant. As in stage two, plants often grow out of those symptoms once the cause is corrected.

The end of stage three and the beginning of stage four represent the most critical period in the development of the corn crop. This is the time of kernel initiation, pollen formation and shedding, and fertilization. These are intricate processes. Poor conditions during this period can be devastating.

By the time the tassel emerges and the ear shoot can be seen, the plant is beginning to slow its rate of vegetative growth and is in the final stages of preparation for pollen shed and kernel set. Most of the energy in the plant at this time is directed toward producing pollen and the ear structure. Therefore, nutrient or drought stress, especially during the 10 to 14 days before silking, can reduce kernel number. the one- to two-week pollination period usually occurs from mid-July to early August, which is often the hottest, driest part of the summer.

Rapid grain-filling begins two to three weeks after silking and continues up to maturity. Photosynthetic energy supply dictates the amount of grain-filling, so anything that reduces active leaf area will reduce yields during this period. Insects and leaf diseases both reduce green leaf area, and should be monitored carefully.

Stalk-quality problems often can develop during the grain-filling period. Second-brood European corn borer can cause stalk lodging and ear drop. Stalk rot diseases also can cause serious lodging problems.

Corn reaches physiological maturity - the end of stage four and beginning of stage five - about eight to nine weeks after silking. Kernels at this time usually contain 30 to 35 percent moisture, and some field drying is usually necessary before harvest. The rate of drydown depends on both the weather and the hybrid.

At this point in the season, extra yield may far outweigh the cost of artificial drying, so drydown rate, while an important consideration, should not be unduly favored over yielding ability of a hybrid.

By the time stage six (storage) is reached, a producer may feel that the battle is over. Many hard-won gains can be lost within a few days if growers fail to protect against storage problems.

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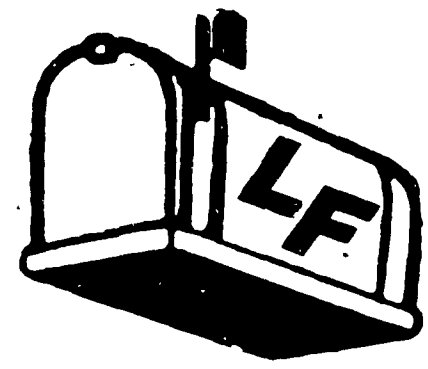

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