

Four phases affect yield of corn, sorghum

DEKALB, Ill. — Corn and sorghum plants go through four distinct phases as they complete their life cycle. A relatively short seed germination and seedling emergence phase is followed by a longer vegetative growth stage. A short reproductive phase is next and, finally, a period of grain fill and maturation occurs. While the plants may remain alive after grain has matured, they are essentially non-productive prior to a killing frost.

During the vegetative stage, plants are building a grain production factory consisting of a full-grown plant with 12 to 18 or 20 full-sized leaves. Corn plants will initiate a tassel plus one or more ears and the potential kernels that may later develop. Sorghum will have a fully formed head with

numerous potential kernel sites. Most sorghum plants have a tendency to tiller so each may have more than one stalk that will produce a head.

The reproductive stage of plant growth is extremely important to grain-producing crops because it is the stage when pollination success determines how many kernels a plant will attempt to fill. With both corn and sorghum plants, the vegetative stage ends and the reproductive phase begins between 50 to 80 days after emergence, depending primarily on the maturity rating of the hybrid and the growing conditions—especially temperature.

It takes kernels, and lots of them, to produce yield. Everything that is done to help plants get the

greatest number of kernels started and matured will result in higher yield. That's why proper nutrition, moisture and pest control are so important to young, growing plants.

With corn, tassel appearance signals an end to vegetative growth and the beginning of reproduction. A tasseling corn plant actually has several ear shoots on each stalk. We usually find six in our examinations. Normally the topmost ear shoot will dominate and develop. The one below it may develop later, if growing conditions are favorable. The rest of the ear shoots, further down the stalk, usually fail.

Sorghum indicates onset of the reproductive phase by forcing the head upward and free of the enclosing flag leaf. It may take a day or two (depending in part on temperature) for the first yellow/orange anthers (pollen sacs) to appear near the up-

permost tip of the head. The blooming process may take several days, moving downward to the base of the head. Sorghum flowers are "complete," each having both male and female functions. Each flower, or floret, will become a kernel, if pollination is successful.

The success of pollination depends a great deal on weather, timing, insects and the hybrid. Usually, there is a great excess of pollen produced and released. If weather is very hot and dry, pollen may be killed before it is effective. With corn, poor pollination may result if the tassel sheds pollen, but stress conditions slow or prevent development of ear shoots so that there are few receptive silks when the pollen is flying. Stress tolerant hybrids are least affected and are characterized as being able to pollinate successfully even if growing conditions are less than perfect.

The maximum number of kernels that will develop is determined by the success of pollination. Later growing conditions determine how many of these will survive to mature and how heavy each kernel will be. What you haul from the field in the way of final yield is set by the number of mature kernels and the weight of each.

Heathy, vigorous plants plus favorable moisture and temperatures at pollination time go a long way toward determining final yield. Improved conditions after pollination can't completely make up for potential yield reduction due to poor seed set. One of the best ways to reduce risk of poor pollination is to plant hybrids of two or three different maturities so that an entire crop will not be in a vulnerable stage at any given time. Dealers representing full-line seed companies can recommend top-performing hybrids in a wide range of maturities.

3 Promoted At Lancaster Co. Extension

LANCASTER — Extension director Jay Irwin announced Thursday the promotion of three staff members of the Lancaster County Extension Service of the Penn State University.

Those promoted were: Arnold G. Lueck, from associate extension agent to extension agent; Jan Marie Allen, from assistant extension agent to associate extension agent; and Michelle A. Rodgers, from assistant extension agent to associate extension agent.

Lueck has been with the county extension service since 1961. A recognized area horticulturalist, Lueck has written over 1,000 advice columns and is responsible for providing information on horticulture and agronomy to homeowners and farmers.

Mrs. Allen joined the county extension staff in 1977 as a nutrition assistant and has had an active role in informing school age children about nutrition. She helped design an eight-week education program implemented through summer playgrounds and youth agencies such as 4-H.

Mrs. Rodgers, a home economist, joined the staff in 1980, and has provided informal education in the area of family relations. She coordinated the county fashion show and produced a number of local, county and state competitors.

Irwin said all three promotions were deserving, and he is pleased to see that Penn State personnel agreed.

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