

## **How do dry conditions affect crop development?**

Adequate levels of precipitation are important to maximize crop production. Dry soil conditions can result in crops that are stunted, wilting, and are either skipping or moving very quickly through growth stages. Cool season crops such as cereals, canola, and peas generally start growing and using moisture earlier in the season than warm season crops and therefore may see the effects of drought stress sooner.

### **Cereals**

Spring and winter cereals are most sensitive to water stress at tillering and anthesis. Drought stress early in the season causes leaves to stop expanding, and tiller buds will remain dormant. Drought stress at anthesis results in low kernel numbers and kernel weight. In general, drought stressed cereals will move through crop development stages faster than those not experiencing drought stress. Drought stressed cereals typically have a shorter vegetative phase and an earlier flowering time, so in drought stressed conditions don't be surprised to see cereals heading earlier than usual.

### **Canola**

Dry soils and inconsistent seed-to-soil contact can result in non-uniform crop emergence. Dry conditions may result in reduced above-ground tissue development, as canola may put more effort into developing a stronger root system to access soil water held deeper in the soil profile. Delayed vegetative growth early in the year can be compounded by seed treatments wearing off, or excessive flea beetle pressure. Under drought stressed conditions, canola will generally not produce as many leaves as in a typical year, and early-onset flowering tends to occur. Premature bolting is a visible indicator of drought stress.

### **Peas**

As with cereals and canola, dry conditions can result in field peas moving through growth stages very quickly. Pea is more sensitive to water stress during flowering and pod fill than the vegetative state, but with dry conditions field pea may have reduced vegetative growth and flower earlier than normal. Field peas have similar moisture requirements to cereal grains.

### **Corn**

Dry conditions during the early stages of growth may encourage deeper initial rooting, which could be beneficial later in the growing season. During vegetative stages, dry conditions can result in shorter plants with less leaf area. Stress during the V6 to V8 stage can result in fewer rows of kernels, while stress at the V8 stage and beyond can result in fewer kernels per row. Drought stress during pollination results in poor pollination and fewer kernels per ear. Dry conditions can cause corn leaves to roll and turn a dull greyish-green. Leaf rolling occurs in response to leaf stomates closing as a plant is trying to slow transpiration. While this defensive measure limits moisture loss in the plant, it also reduces photosynthesis.