Chapter 13: Other Pests and Damage

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Rabbits

Rabbits will start foraging soon after seedling emergence, especially near the edges of fields. They will tend to concentrate on one row and apparently eat their fill, then leave until the next feeding period. Continued feeding by rabbits has been observed until the plants are 8 to 10 inches tall. Rabbit feeding on such large plants may be confused with deer. However, deer can be detected by their tracks.

Deer

Deer begin foraging on sunflower plants when the plants reach 8 to 10 inches and continue through harvest. They feed in areas near cover, such as wooded areas. All leaves of young plants will be consumed below the growing point. Heads will be foraged until near maturity and seeds until harvest. Often deer will knock down the stalk to facilitate foraging.

Gophers and Mice

Gopher and mouse damage usually is seen just after planting. It generally occurs next to overgrazed pastures, grassland recently converted to cropland and fields next to abandoned areas. The seed will be dug up, split open with the kernel consumed and the hull left on the soil. Several seeds in a row will be eaten. Seedlings are eaten occasionally when they are 2 to 3 inches tall. If the growing point is consumed, the seedling gradually dies.

Lightning

Lightning damage sometimes is mistaken for a disease. It is distinguished from disease damage by the sudden death of the plants in the affected area and the fact that both sunflower and weeds (not grass, however) are killed. Near the edge of the area, plants are wilted but not dead, and the stalks may have a brown to blackened pith. The area may be as large as 50 to 100 feet in diameter. The affected area usually is circular and does not increase in size after the first two weeks.

Flooding

Soils should have good drainage for sunflower production, but the crop doesn't differ greatly from most other crops. In flooded sunflower, research found that ethylene increased in the stems and roots below the water. Later, chlorophyll breakdown and leaf epinasty resulted. Sunflower plants flooded longer than three days may not recover. Cool, cloudy days during the flooding period reduce the damage, whereas hot and sunny days may hasten the death of plants.

Heat Canker

Warm temperatures and sunny days can result in heat canker injury to young sunflower seedlings growing in

black or dark, moist soils. Hot temperatures at the soil line cause cell death in the young stem and the plants will show bands of yellowing and constricting. In severe cases, the constricted area completely girdles the stem at the soil line and the plant topples over. The sunflower seedling will not recover since the growing point is above this site.

Frost Damage

Sunflower seedlings in the cotyledon stage (VE) can withstand temperatures down to 26 F when just emerging from the soil. Sunflower in the V-1, V-2 and V-3 stages become less tolerant to frost as they grow and develop. The terminal bud can be frost damaged in seedlings with two, four and six true leaves. This early frost damage and killing of the terminal bud can result in excessive branching as the sunflower grows and develops.

Sunflower is most susceptible at the bud (R-4) and pollination stages (R-5.0 to R-5.9) of development. Temperatures of 30°F or less can cause damage to the anthers and stigmas of the pollinating disk flowers. (See Fig. 13.1 for frost-damaged sunflower head).

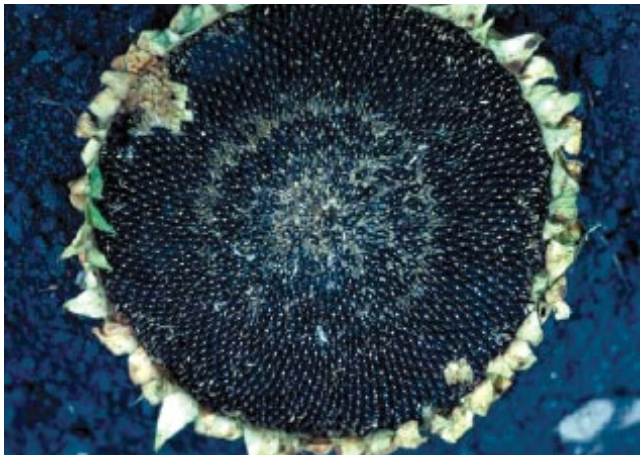

Figure 13.1. Frost damage in the center third of sunflower head. (Photo: Duane Berglund, NDSU).

Sunflower has a composite flower. Several rows of showy yellow ray flowers encircle the head and commonly are called the “petals,” although each is an individual flower. The center portion of the head, and by far the greater part, is composed of inconspicuous individual flowers, one for each seed that may develop. These disk flowers mature in circles from the outside of the flower head to the center, so that at various stages, the disk flowers ready for pollination appear as a yellow circular band in the brownish or dark center of the head. These disk flowers are sensitive to frost.

The result of the frost damage in the flowering period is circular bands of undeveloped seed that would vary with individual flower heads from a band around the outside edge to an area in the center. Unopened buds are less susceptible to frost than the opened flower heads. Growers can determine the extent of injury by cutting the surface of the flower head.

Once pollination is completed and 10 to 14 days after petal drying occurs, the sunflower plants can withstand frost temperatures as low as 25°F and have only minor damage. If hard frosts do occur, many times only the seed in the center of the head (the last to pollinate) will be affected.

When sunflower heads start to turn yellow on the backside and the bracts are drying and turning brown, most risk of frost damage is very minimal.

In non-oilseed sunflower, frost damage can cause quality problems by causing a dark brown to blackened nutmeat to result during the roasting process. For the birdseed market, light-weight sunflower seed and brown seeds are the result of frost damage and will be discounted. For oilseed sunflower, reduced test weight per bushel and lower oil percent may result from a frosted immature sunflower crop.

Selected Reference

Kandel, H., Buetow, R., and Endres, G. (eds.) 2020. Sunflower production. A-1995. North Dakota State Extension Service, North Dakota State University, Fargo, ND, USA.

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