



BLUE DWARF OF OATS

Blue dwarf of oats, caused by the oat blue dwarf virus, is transmitted from diseased to healthy plants during the process of feeding by adult aster leafhoppers (*Macrostelus fascifrons*). Immature leafhoppers may occasionally transmit the blue dwarf virus. The disease was first observed in 1951 in Minnesota and neighboring states. Reports since then indicate that it has become widespread over the Great Plains from Kansas to Manitoba, including Illinois.

The disease generally occurs in trace amounts, up to 5 percent being reported in a few isolated fields. Therefore, it is of little economic importance so far, but blue dwarf is a very destructive disease, since affected plants are barren or produce little grain. Thus, it represents a potential threat to oat production in Illinois. The oat blue dwarf virus infects at least 18 species of plants in 7 families.

SYMPTOMS

An oat plant infected with blue dwarf is greatly stunted and becomes uniformly dark bluish green. The leaves, especially the flag leaf, are stiffer, shorter than normal (Figure 1), and stand out at a greater angle from the culm than those of healthy plants. Enations occur on the leaf and culm veins. Tillers appear in larger numbers, and may form above the crown. Infected plants usually remain green in the field longer than healthy plants. The severely blasted heads produce little or no seed. Because of the dwarfed condition of infected plants, the casual observer may easily overlook them. The oat blue dwarf virus may produce a disease in barley called moderate barley dwarf, which is characterized by moderate to severe stunting, shortened and stiffened leaves, a proliferation of lateral tillers with sterile spikes, and sometimes a bluish green color.

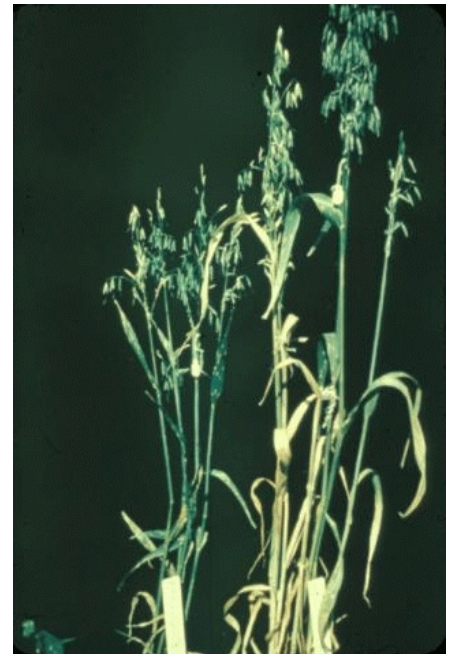


Figure 1. Plant on left affected by blue dwarf virus; right plant, healthy (courtesy Britton).

The same virus causes leaf crinkle disease in flax. Flax leaves pucker at irregular intervals along the lateral veins. Seed and boil production are usually greatly reduced.

DISEASE CYCLE

The oat blue dwarf virus can be acquired by an aster leafhopper within 15 minutes from an infected plant and can be transmitted to healthy plants after a 7-day incubation period within the leafhopper. Maximum transmission occurs after 14 to 15 days and individual leafhoppers may transmit the virus for more than two months. The virus multiplies in leafhoppers.

For further information contact your nearest Extension office or an Extension Specialist, Department of Crop Sciences, University of Illinois, Urbana-Champaign.

The aster leafhopper can transmit both the oat blue dwarf virus and the aster yellows mycoplasma simultaneously to flax. The presence of either in the plant does not inhibit infection by the other, and the presence of both pathogens may increase the severity of the symptoms. The virus is limited to phloem tissue, as is the aster yellows mycoplasma.

CONTROL

No control measures have been postulated or developed. The virus is not seed-transmitted.