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Pasmo of Flax

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Cooperative Extension Service

Pasmo of Flax

BRIEFLY—

Effective control of pasmo is not now possible. No satisfactory resistance available in present recommended varieties.

Reduce losses by:

- (1) Using clean seed treated with recommended fungicides.
 - (2) Plowing under all straw and stubble.
-

Pasmo is a fungus disease that attacks leaves, stems, and seed bolls of the flax plant. The disease was first described in South America in 1911 which accounts for its name: in Spanish pasmo means "dry up or shrivel" and probably was used to describe the effects of infection on the bolls.

DAMAGE CAUSED BY PASMO

When weather conditions are favorable for development of the fungus, the disease causes drastic reductions in seed yield and of quantity and quality of oil. Infected plants ripen prematurely. Seeds fail to fill and shrivel. Tiny stems which support the bolls are killed, become brittle and break off causing many

bolls to fall prior to or during harvest operations. Infected stems also are weakened so that lodging becomes a serious problem. The disease also reduces yield and quality of the straw.

SYMPTOMS ARE STRIKING

Symptoms are easily recognized and are quite striking during the last part of the growing season. First symptoms consist of circular spots or lesions of various sizes on the lower leaves. Lesions vary in color from greenish yellow to dark brown depending on age.

As the disease progresses, all leaves may become infected, turn brown, die, and drop off. Infected areas

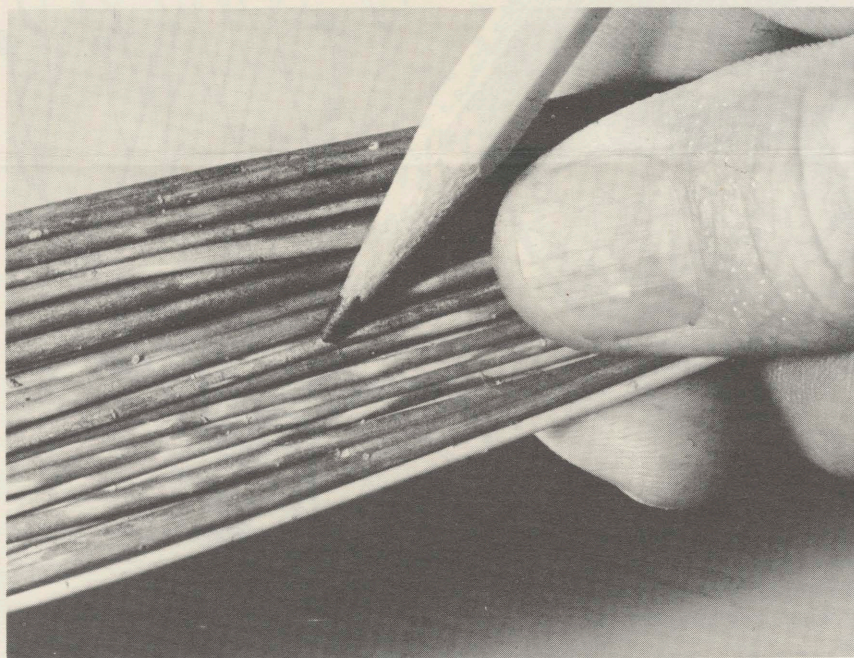


Figure 1. Symptoms of pasmo on flax stems.

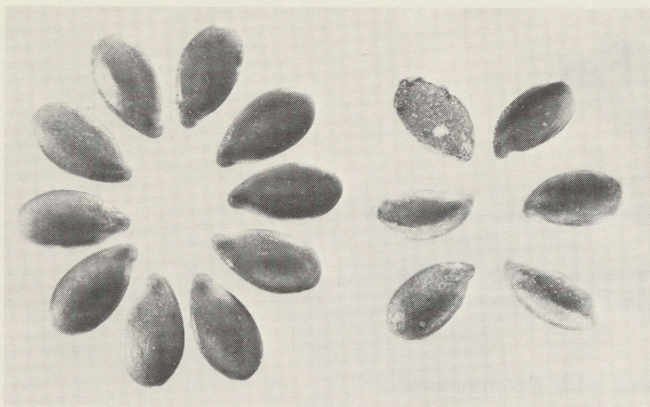


Figure 2. Plump seeds (left) produced in a healthy, well-developed boll. Small, shriveled seeds (right) produced in boll borne on a stem infected with pasmo.

appearing on stems develop first as elongated, dark-brown lesions which then enlarge to extend around the stem. Infected stem areas alternate with green (non-infected) tissue to produce a brown and green blotchy appearance (figure 1). As disease severity increases, the entire stem turns brown.

Lesions also develop on the tiny stems which support the bolls causing premature death of bolls. This stage of infection frequently becomes the most serious, as water and food supply to developing seed is cut off, resulting in partially filled bolls and small, shriveled seed (figure 2).

HOW THE DISEASE DEVELOPS

The fungus or its spores can overwinter on seed or on infected stubble and straw from the previous year.

The disease can spread readily from infected straw. It develops on the seedling leaves of plants growing on soil where diseased straw from a previous flax crop was not completely plowed under. Seed-borne spores of the fungus may also cause early infection of seedling leaves.

As the disease develops throughout the season, leaf and stem lesions become dotted with small black bodies which contain microscopic-sized seed-like spores. During periods of high humidity, dew, and rainy weather, these spores ooze out from an opening at the top of the black spore-bearing body. Spores are spread to other flax plants by wind, splashing rain, insects, and animals (figure 3).

In a given field the disease usually develops first on a few plants and can then spread rapidly to form circular areas giving the field a patchy, chocolate-brown appearance. Often patches appear first where flax has lodged following heavy rain and storm. These diseased areas may enlarge rapidly to include the entire field.

Yields are not seriously affected when the disease appears after flax has flowered. When the disease be-

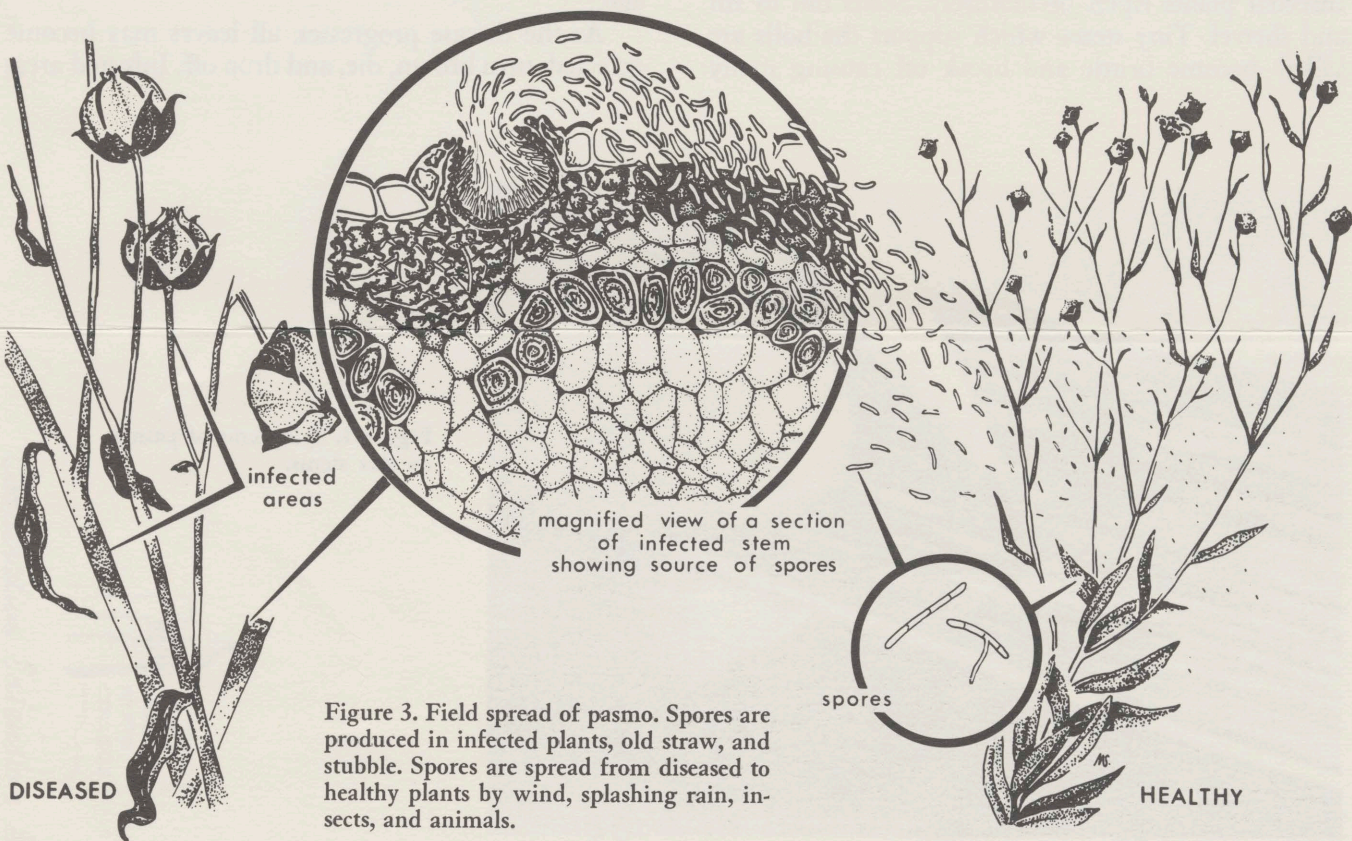


Figure 3. Field spread of pasmo. Spores are produced in infected plants, old straw, and stubble. Spores are spread from diseased to healthy plants by wind, splashing rain, insects, and animals.

comes established before or during flowering, and weather conditions are unusually favorable for spread of the fungus, yield losses may be extensive. An example of conditions favorable for an epidemic situation existed in the 1962 season. Extremely wet and relatively cool conditions brought about widespread disease development, and the result was one of the most serious losses in yield that South Dakota farmers have ever experienced. Losses of 30% were estimated in most fields, and yields of many of the early sown fields were reduced 50% or more.

CONTROL

Complete control is not now possible. However, several steps can be taken to reduce amount of early infection.

- (1) Use clean seed and treat with an effective fungicide. This will reduce early infection due to fun-

gus spores which may be seed-borne. Seed treatment materials such as Captan 75, Ceresan M or L, and Panogen 15 should be used. See Fact Sheet No. 193 for details of seed treatment.

- (2) Careful plowing to cover all straw and stubble will help reduce the disease.

Resistance to pasmo in commercial varieties is inadequate to provide effective control, but some varieties appear less susceptible than others. Marine and Army show more tolerance to pasmo than other varieties now recommended. However, Marine and Army are susceptible to the new flax rust race 300 and are no longer suitable varieties to grow in South Dakota. Rust-resistant varieties B-5128, B-5128(SS), Bolley, Redwood, Summit, and Windom are all susceptible to pasmo. Of these, Bolley appears to be the more tolerant. But until more resistant varieties are developed, these are the best available in South Dakota.

Use of a trade name does not imply endorsement of that brand over another.

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