

# Fusarium Yellows of Celery in Michigan



Fig. 1. The disease first appears as stunted, yellow plants.



Fig. 2. In severe cases, plants wilt and die.

M. L. Lacy and W. H. Elmer,  
Department of Botany and Plant Pathology

Fusarium yellows of celery is a very serious disease that can eventually destroy the crop. This disease caused extensive losses in Michigan celery from about 1920 until the late 1950s. A highly resistant green celery cultivar was identified in 1952 and was introduced as Tall Utah 52-70. Many other resistant cultivars introduced later were descendants of Tall Utah 52-70. The disease soon disappeared and was almost forgotten until it reappeared in the 1970s.

Fusarium yellows of celery is caused by the soil-borne fungus *Fusarium oxysporum* f. sp. *apii*. Reappearance of the disease in Michigan in 1981 on the formerly resistant green cultivars was due to a new race of the fungus (Race 2), which has also appeared in California, Wisconsin and New York. Race 1 affects only the older celery cultivars, such as Golden Self-Blanching and Golden Detroit. Race 2 affects both the older celery cultivars and virtually all of the commonly grown cultivars that are resistant to Race 1, such as Florida 683, Florida 2-13, Tall Utah 52-70 R Improved and Tall Green Light. In Michigan, Fusarium yellows of celery caused by Race 2 has been identified in Ottawa, Muskegon, Van Buren, Kent and Ingham counties and poses a severe threat to Michigan celery production.

## Symptoms

The disease first appears in small areas of a field as stunted, yellow (Fig. 1) and, in severe cases, wilted or



Fig. 3. Discoloration in water-conducting tissues is diagnostic for Fusarium yellows.



Fig. 4. Symptoms may vary widely within a field.

dead celery plants (Fig. 2). Cutting open the crown and primary roots usually reveals a reddish brown discoloration in the vascular (water-conducting) tissue, which is generally diagnostic for *Fusarium* yellows (Fig. 3). This discoloration is often accompanied by a rot of the central part of the crown. Usually, a wide range of symptom severity is observed among plants within a field (Fig. 4). Aster yellows is sometimes mistaken for *Fusarium* yellows, but aster yellows has no vascular discoloration associated with it. Aster yellows also exhibits curling and twisting of young leaves and petioles, which are not seen with *Fusarium* yellows.

The fungus builds up rapidly in the soil if susceptible cultivars are grown and can persist for many years in the absence of celery as dormant spores in the soil or on the roots of weeds and other crop plants. The fungus builds up more rapidly in the soil if susceptible celery is grown year after year with no rotation, especially when celery trimmings are incorporated back into the soil. Growing onions for two years or more reduces the level of *Fusarium* in the soil and should reduce the incidence of *Fusarium* yellows to some extent when the field is rotated back into tolerant celery cultivars.

If you do not have *Fusarium* yellows in your fields, we recommend the following:

- Avoid buying transplants from areas where *Fusarium* yellows has been reported.**
- Try not to borrow machinery from areas where *Fusarium* yellows is suspected.** If you do, steam clean or wash the equipment thoroughly with hot water. In addition, exercise caution in allowing people or machinery in your fields—the fungus can easily be carried on shoes and tires.
- Practice sanitation in the greenhouse.** Steam or

fumigate your soil and flats every year before seeding. Use a disease-free commercial potting mix or steamed or fumigated muck. Sterilize your flats, with steam or hot water if possible, or surface-sterilize with 10 percent household bleach (1 gal. bleach to 10 gal. water). Surface sterilize your benches with a 10 percent solution of household bleach before seeding. If your benches contain soil, steam or fumigate the soil. Preventing the introduction of *Fusarium* yellows is the best control.

- Grow resistant varieties**, even if the disease is not present in your field.

## Control

If you do have *Fusarium* yellows, we recommend the following:

- Observe the above recommendations** to prevent the spread of the disease to non-infested areas of your fields.
- Grow resistant cultivars**, such as Deacon or Tall Utah 52-70 HK, which have shown the most tolerance to the disease in recent cultivar trials, or use other more resistant cultivars as they are released.
- Avoid returning celery trimmings to your fields**—the fungus can increase on celery residues.
- Rotate into onions** for one to two years between celery crops.

There are no chemicals known that are useful in controlling *Fusarium* yellows of celery, including soil fumigants.

If you think you have *Fusarium* yellows of celery, please contact your county Extension agent.

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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U. S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

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