

# Early, Late, and Bacterial Blights of Celery

Tom Kucharek and Dick Berger, Professor and Extension Plant Pathologist and Professor and Research Plant Pathologist, respectively, Department of Plant Pathology, University of Florida, Gainesville. 1979; Revised November 2000.

---

Florida Cooperative Extension Service/ Institute of Food and Agricultural Sciences/ University of Florida/ Christine Waddill, Dean

Three major leaf and petiole blights occur on celery grown in Florida. Early blight is the most common and destructive. Bacterial blight is less common but can be destructive primarily in the transplant beds. Late blight occurs in some cool and wet seasons but it is not an annual problem. Recognizing symptoms of these diseases and conditions which favor epidemic development plus knowing what control measures are available and when they should be used are all required for efficient and economical control.

## Early Blight

Early blight is caused by the fungus, *Cercospora apii*. It occurs on plants in the transplant bed and in the field. On leaf blades, it produces light brown spots that are somewhat circular or slightly angular and 1/4 to 3/4 inch across (Figure 1). Spots may be greasy in appearance with or without surrounding yellow halos. A gray fungus growth is often seen on the spot. On the petiole, elongated, brown to gray lesions are formed.

An epidemic begins when microscopic spores (produced on seed, old infected celery debris on the soil, spots on volunteer celery plants or spots on nearby celery plantings) are blown by wind to susceptible celery leaves or petioles. Spores are produced predominately at night when temperatures range from 58 F to 86°F for at least 10 hours, if the relative humid-

ity is near 100 percent during the same period of time. Most spores are released for wind dispersal when the relative humidity decreases during mid to late morning hours. Movement of equipment (tractors, harvesters) in the field also cause release of high numbers of spores which can be blown to nearby celery fields. After landing upon susceptible host tissue and when moisture is present; spores germinate, penetrate the tissue, spread within, and produce symptoms in 12-14 days. More spores are then produced on the new spots and the epidemic is in full swing.

Control of early blight is achieved efficiently and economically when several techniques are used collectively. 1) Disease-free transplants should be produced by using a rigorous spray program as diseased transplants have an overriding influence over other subsequent control measures. 2) Use resistant varieties. Such varieties will reduce, but not eliminate, early blight. 3) Spray with a fungicide recommended by your county Extension agent immediately after transplanting. 4) Celery transplants in late summer to early fall may need sprays two to four times weekly in South Florida, as blight favorable weather (BFW) occurs commonly during this time. By late fall and during winter months BFW occurs on a sporadic basis thus allowing you to use available forecasting systems. During spring months BFW will become more common, thus dictating frequent sprays again. Use fungicides rec-

ommended by your county Extension agent. 5) Celery plantings that are downwind, and within one-half mile of a field being harvested, should be sprayed just prior to the harvesting operation.

### **Bacterial Blight**

Bacterial blight is caused by the bacterium *Pseudomonas cichorii*. Bacterial blight may appear similar to early blight except that bacterial blight spots are smaller, more angular, and reddish in color. Bacterial blight has a more sharply delineated border compared to early blight (Figure 2). From a few lesions on infected seedlings, rain, irrigation, or movement of machines and people can spread bacteria to other plants. Bacterial cells enter plant tissue through natural openings (stomates, hydathodes) or wounds. Within a few days from entrance, symptoms appear. Bacterial blight is favored by warm, wet weather. Another manifestation of *P. cichorii* in celery is the presence of long, brown, firm discolorations in the petioles. This disorder is called brown stem and is a problem in the field during wet seasons. See Fact Sheet PP-126 (by Pernezny et. al.) for information on symptoms and control of Brown Stem.

Bacterial blight is controlled by using several techniques. 1) Minimize working in transplant beds when plants are wet. 2) If topping is needed to harden transplants, top mow transplants when they are dry and apply an approved copper fungicide immediately after topping. 3) Include an approved copper fungicide

in your spraying of transplants, especially if bacterial blight is present. 4) Use subsurface irrigation rather than overhead irrigation in transplant beds.

### **Late Blight**

Late blight is caused by the fungus *Septoria apiicola*. It is similar in appearance to early blight in spot size and shape (Figure 3). However, late blight often will have black pimple-like spore-bearing structures (pycnidia) within the spot. With the aid of a hand lens, tendrils of spores can be seen oozing from pycnidia when leaves are wet. Thus, late blight spores are dispersed primarily by rain, equipment and people. Infected seed is the primary source of inoculum (pycnidia with spores) (Figure 4). After spores are deposited on susceptible host tissue by rain or mechanical means, they germinate, penetrate, and grow within the tissue for 9-12 days after which symptoms are produced. Late blight is favored by rain plus cool temperatures (50-81°F).

Control is achieved by: 1) Using disease-free seed. Two year old seed is usually free of viable inoculum. 2) Staying out of transplant beds when plants are wet. 3) Using fungicides recommended by your county Extension agent.

**REMEMBER: DISEASE CONTROL IS MOST EFFICIENT WHEN USED ON A PREVENTIVE BASIS. SYMPTOMS OF A DISEASE INDICATE THAT INFECTION OCCURED 3-14 DAYS PREVIOUSLY. FUNGICIDES PREVENT INFECTION BUT THEY DO NOT REDUCE SYMPTOMS.**



**Figure 1. Early blight lesions in celery leaf.**

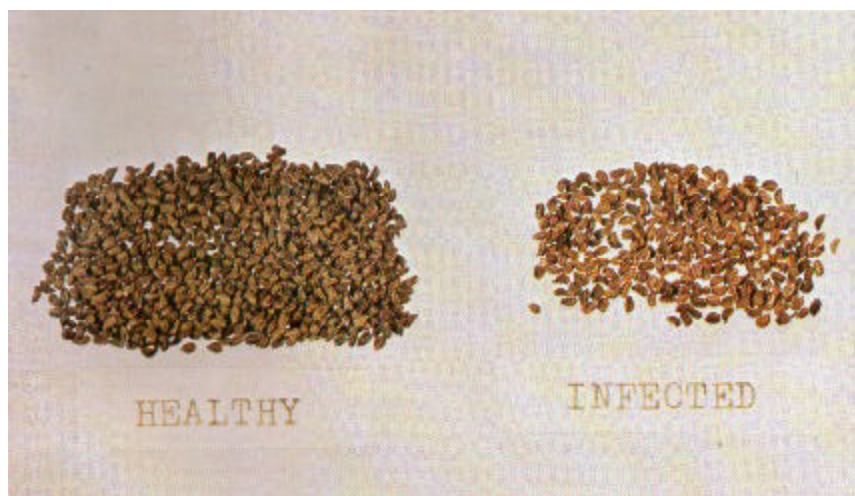


**Figure 2. Bacterial blight in celery leaf.**





**Figure 3. Late blight lesions in celery leaf.**



**Figure 4. Celery seed without and with Septoria.**