Bacterial streak is one of the most common bacterial diseases of cereal crops. The pathogen attacks wheat and other grasses.

All of the aboveground parts of the plant may be affected, but the disease occurs most commonly on the leaves and glumes. The early symptoms appear as small, light-brown, water-soaked spots or streaks. The lesions tend to develop between the veins early but eventually expand and coalesce, producing irregular gray-brown blotches. Under high humidity, droplets of yellow bacterial exudate form with the lesions. Small yellowish granules or then shiny scales form on the surface of leaf blades when the exudate dries. As the disease progresses to the leaf sheaths and adjacent culms, the stems become dark stained and weakened.

The bacterium persists on plant residues in soil and on host plants. It tolerates relatively wide ranges of temperature and moisture conditions. Wheat is invaded through natural openings and wounds and supports the bacterium intercellularly. It is spread by splashing rain, plant contact and by spike-visiting insects such as aphids.

Black chaff is caused by the same bacterium that causes bacterial streak. But black chaff is used to describe the disease of the neck and head of the wheat plant. It can be recognized easily by the dark, linear, water-soaked streaks on the glumes and lemmas (husks). Usually, the symptoms appear first on the upper part of the glumes. As the disease develops, the lesions merge, darkening the glumes, lemmas and peduncles. When the disease appears early and is severe, infected heads are dwarfed, spikelets fail to develop, heads are twisted and discolored, and the spikes are badly blackened.

When wheat matures, the bacterium is returned to soil in crop residues. As a result, crop rotation and deep plowing will help control the disease. Crop rotation with nonhost plants also may reduce disease incidence. Although the bacterium may be present on harvested seed, seed stored six months or longer before planting is not an important source of inoculum. Use of disease-free seed or seed stored six months to reduce bacterial populations is suggested.

Figure 1. Typical bacterial streak leaf symptoms

Figure 2. Black chaff grain symptoms