
White Rusts

White rusts are all members of a single genus, *Albugo*, in the Oomycetes and are apparently obligate parasites like the true rusts. They form a white blister just underneath the epidermis.

Albugo (Cystopus)

Oomycetes, Peronosporales

Sporangia are borne in chains at apex of a short, clavate, usually unbranched sporangiophore, forming a limited sorus beneath the host epidermis and exposed by its rupture. The mycelium is intercellular except for small, knoblike haustoria. The sporangia dry to a white powder and are disseminated by wind, germinating by swarmspores. Fertilization of a globose oogonium and a clavate antheridium produces a single oospore, also germinating by swarmspores. **Albugo bliti** White Rust or White Blister on beet, amaranth, globe amaranth, seabeach amaranth, and smooth pigweed. Blisterlike white pustules formed in leaves change to reddish brown when mature. Flowers and stems are dwarfed, distorted. The fungus winters in seed coats. Destroy infected plants and debris at end of season. Change location of plantings.

Albugo candida White Rust of crucifers on arugula, cabbage, chinese cabbage, radish, horseradish, turnip, watercress, garden cress, peppergrass, salsify, mustard, arabis, sweet alyssum, boerhavia, draba, hesperis, candytuft, stock, wallflower and western wallflower.

Blisters appear on any part of the plant except root. They vary in size and shape and are often confluent in extended patches. There seem to be two types of infection: general or systemic, resulting in stunting of entire plant and formation of pustules on all parts; or local, with direct invasion of single leaves, stems, or flowers. Upper surface of leaves often has yellow areas with white pustules on the underside. The latter are powdery when mature, and the epidermis is ruptured to free chains of sporangia that are carried by wind to moist surfaces. They germinate by 6 to 18 zoospores, swarmspores, which settle down, produce germ tubes, and enter plants through stomata.

Stems have localized or extended swellings, sometimes sharp bends, proliferation from lateral buds giving a bushy growth. Various flower parts are deformed with pronounced distortion of flower pedicels. When these thickened parts die, oospores are formed to survive the winter in crop refuse. The disease flourishes in cool, wet weather; the spores germinate better when slightly chilled.

Control Remove infected parts of ornamentals as noticed. Clean up all vegetable refuse at end of season and all cruciferous weeds nearby. Spraying is impractical.

Albugo ipomoeae-panduratae White Rust, general on sweet potato, also on morning-glory, moonflower, *Jacquemontia* and quamoclit. The disease is usually late on sweet potato, after vines have made their growth, but it is very conspicuous with irregular yellow areas on upper surfaces and

white cheesy pustules on lower surface. Oospores wintering in host tissue are liberated by decay in spring. There are no control measures.

Albugo occidentalis White Rust of spinach. After a report from Virginia in 1910, the disease went unrecorded until 1937, when it appeared in epidemic form in Texas; it has since been serious in Oklahoma and Arkansas and has attacked all commercial varieties tested at the University of Wisconsin. The white blisters are small, usually on underside of leaves, sometimes on upper. Infected leaves become chlorotic, then brown; the entire crop may be lost.

Albugo platensis White Rust, on trailing four o'clock, common four o'clock, and boerhavia.

Albugo portulacae White Rust of portulaca. Swollen and deformed branches bear white pustules. Shoots tend to become more erect and spindling.

Albugo tragopogonis White Rust of salsify, also on African daisy, antennaria, artemisia, centaurea, feverfew, matricaria, senecio and sunflower. Light yellow areas appear on leaves. The epidermis, forced into domelike swellings, bursts to show chalky sori of spores. Foliage may die; plants are dwarfed. There is no control.