

## Ergot

Sarah Rosenthal\*, UW-Plant Breeding and Genetics  
 Craig Grau and Brian Hudelson, UW-Madison Plant Pathology

**What is ergot?** Ergot is a fungal disease of worldwide distribution that is common in the northern two-thirds of North America. Ergot affects wild and cultivated grasses, as well as small grain crops such as wheat, oats, barley and especially rye. The ergot pathogen produces alkaloid toxins that, if ingested, can result in

convulsions, hallucinations, gangrene, and death. Interestingly, some ergot toxins, when used at low dosages, have pharmaceutical applications such as inducing labor and treating migraine headaches.



**Production of honeydew (red arrow) and sclerotia (white arrows) are typical of ergot.**

**What does ergot look like?** Signs of ergot first appear as droplets of a sticky exudate (called honeydew) on immature grain heads. Honeydew contains asexual spores of the ergot fungus. Over 40 species of insects are attracted to honeydew and can carry spores from infected to healthy plants. After approximately two weeks, infected grains are replaced by dark, compact fungal structures (called sclerotia). Sclerotia range in size from  $\frac{1}{16}$  to  $\frac{3}{4}$  inches in length, and often look like seeds, rodent droppings, or insect parts.

**Where does ergot come from?** Ergot is caused by several species of the fungus *Claviceps*, most commonly *Claviceps purpurea*. Sclerotia of these fungi survive in soil and harvested grain. Sclerotia require a one to two month period of cold temperatures (32 to 50°F) after which they germinate to form small, mushroom-like structures that produce sexual spores. Germination is most common in cool (57 to 84°F), damp weather and is inhibited at higher temperatures.

Sexual spores are blown to developing grain heads where infection occurs. Humid weather (> 90% relative humidity) contributes to honeydew production. Ergot is also often more severe if frosts occur at the time of spore production.

**How can I save a small grain crop with ergot?** Fungicide treatments are not recommended to control ergot. If ergot occurs, efforts should focus on removing sclerotia from harvested grain by sieving, or by soaking contaminated seed in water or brine (1.5 lb salt/gal) to float off sclerotia. Tolerances for ergot sclerotia in harvested grain can be as low as 0.05% by weight.

**How can I avoid problems with ergot in the future?** Maintain a rotation with at least one year between small grain crops. Use crops that are not susceptible to ergot (e.g., soybeans, alfalfa, corn) in years when small grains are not grown. Plant seed that is free of ergot sclerotia. Ergot-resistant varieties are not available, but avoid longer-flowering varieties as they tend to be more susceptible to infection. Keep weed grasses under control. Also, mow areas adjacent to small grain fields to prevent grasses from flowering and prevent development of ergot in these areas. In fields where ergot becomes a problem, consider clean, deep plowing that will bury ergot sclerotia to at least three to four inches, thus preventing sclerotia from germinating.

**For more information on ergot:** Contact your county Extension agent.

\*Completed as partial fulfillment of the requirements for Plant Pathology 559 – Diseases of Economic Plants at the University of Wisconsin Madison.

© 2005 by the Board of Regents of the University of Wisconsin System doing business as the division of Cooperative Extension of the University of Wisconsin Extension.

An EEO/Affirmative Action employer, University of Wisconsin Extension provides equal opportunities in employment and programming, including Title IX and ADA requirements.

References to pesticide products in this publication are for your convenience and are not an endorsement or criticism of one product over similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

Thanks to Diana Alluth, Bryan Jensen and Kevan Klingberg for reviewing this document.