Crown Rust: a Perennial Concern in Oats

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Crown rust is caused by the fungus *Puccinia coronata* var. *avenae* f. sp. *avenae* (Urban & Marková), and is the most widespread and destructive disease of oats worldwide. The disease is economically significant in Quebec, Ontario, Manitoba and Saskatchewan. Yield losses can be up to 40% on average, but higher in individual fields. Quality of grain can also be affected. Disease development occurs optimally during periods of warm sunny days and mild nights, with good dew formation. The summer weather over the last few years has been hot and dry, which is not conducive to crown rust development. However, 2022 was a good year for crown rust, meaning the incidence and severity of crown rust was high. Recommended control practices for this disease include seeding early, use of resistant varieties and foliar fungicides. Seeding early can help avoid mounting losses caused by this disease because the pathogen spores are blown in from the USA each year in late June to early July. The earlier the crop matures, the more likely it will avoid the worst build up of the disease. Varieties with resistance to crown rust have been developed in Canada over many years and can be highly effective. The pathogen is highly genetically variable, however, which means that resistance genes may be overcome. Varieties that were considered resistant to crown rust when initially registered, may become less effective against the pathogen over time. A number of examples of resistance genes that have been overcome by genetic changes in the pathogen population are presented. Fungicides can also effectively control crown rust of oats, as we do see more fungicide applications to control crown rust. Users need to read and follow the labels and product information packages of registered fungicides for best results. Fungicide rotations should also be considered to prevent the development of pathogen tolerance or resistance to the fungicide.