



Early Stages – Pycnia (L) and Aecia (R)

This is the earliest visible stage of rust. The bright orange lesion is called *pycnia* and is found on the upper surface of the leaf. These bright orange lesions are easily spotted and are often surrounded by a yellow halo. This stage rarely appears with the exception of years like 09/10 which saw high local inoculum levels and favorable conditions (free moisture and warm temperatures). Early appearance of rust provides the opportunity for multiple infections throughout the season.

The pycnial stage gives rise to the aecial stage. Directly below the bright orange pycnia lesion, *aecia* form on the underside of the leaf. When looked at very closely, they are 3D upside down cups filled with spores. These spores give rise to the economical and most recognizable stage of rust – the brown pustules.



Economical Stage—Uredia (Above)

The most common and recognizable stage of sunflower rust is the uredial stage. This stage appears as cinnamon red/brown pustules which *protrude from the leaf surface and rub off*. The pustules will generally appear first on the lower leaves and move up that plant as new spores are produced. This is the economical and repeating stage of rust which can cause significant yield losses depending on:

- a. Where the infection is present
- b. % infection
- c. Crop staging

The upper three to four leaves of sunflower plants are responsible for the majority of photosynthesis and contribute the most to yield. You want to *protect the upper leaves* from rust infection during flowering to minimize yield impact.



Management with Fungicide

Scout fields to determine;

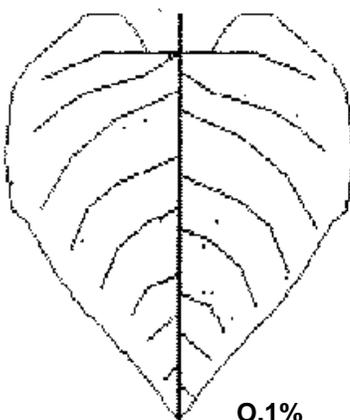
1. Is rust present (the brown pustules)?
2. Where is it present (lower, middle, upper leaves)?
3. What is the severity (% infection)?
4. What stage is the crop at?

If rust is present in the reproductive stages (R-1 thru R-5);

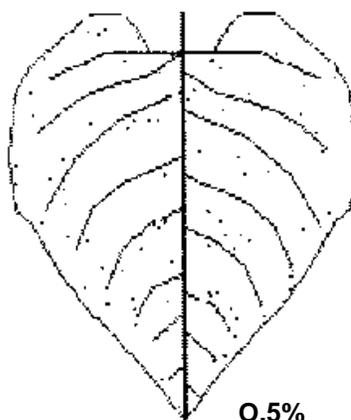
- ⇒ A single, well timed application is very effective and timing depends on % infection of upper leaves.
- ⇒ 0-1% infection on upper four leaves is a good threshold for Headline®, assuming that rust is present on middle leaves. If at 0% on upper leaves, use 1-2% infection on middle leaves as a threshold.
- ⇒ If possible, waiting for early flower is ideal (R-5.2 or 20% flower).

If rust is not showing up on upper leaves or shows up after flowering (R-6);

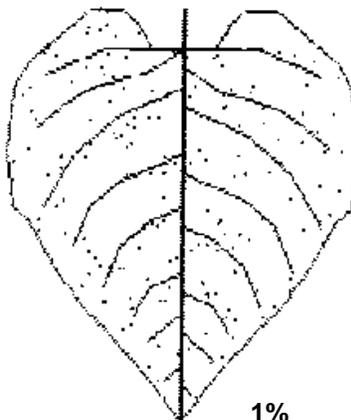
- ⇒ A fungicide application is not likely warranted.



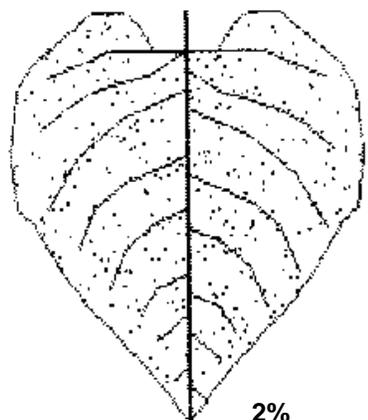
0.1%



0.5%



1%



2%