

Vegetables

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Grower & PCA



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Investigation of Leaf Spot Problems on Radish

By Jose Luis Aguiar and Steven Koike

Radish (*Raphanus sativus*) is harvested for its fleshy taproot and is usually harvested in bunches with the foliage left attached. The whole plant must be free from discoloration, disease, decay and insects. Recently a pest control advisor brought in several radish plant samples with a foliar problem (**Figure 1**). This radish field was very close to harvest and plants had scattered spotting on the leaves.

These plants had leaf spots that started out small and circular in shape (**Figure 2**); the spots gradually increased in size and number as the leaf grew and expanded. As the disease developed, the spots turned brown and affected tissue eventually died (**Figure 3**). The older leaves of the radish showed the most severe damage. The roots did not have any visible damage. This leaf damage resembled insect feeding damage of flea beetles. However, no insects were found after a thorough inspection of all the submitted plants. Therefore at this point in the investigation insect feeding appears unlikely to be the cause of the field problem.

The possible role of environment has been considered. This production area had experienced nighttime temperatures close to freezing with the temperature gradually warming up. It is possible that this changing environment was involved with the problem but this connection has not been documented.

Fresh radish samples were collected and sent to the UCCE Diagnostic lab in Salinas for further analysis. Some non-pathogenic, secondary mold fungi were recovered from some spots. In addition, one type of *Alternaria* fungus was also found (**Figure 4 on page 20**). Spores of this *Alternaria* are similar to those of known *Alternaria* pathogens. To investigate if the recovered *Alternaria* could be the causal agent, radish test plants were grown in the UCCE greenhouse in Salinas. Plants were then
(continued on page 20)



Figure 1. Radish leaves with spotting and necrosis.

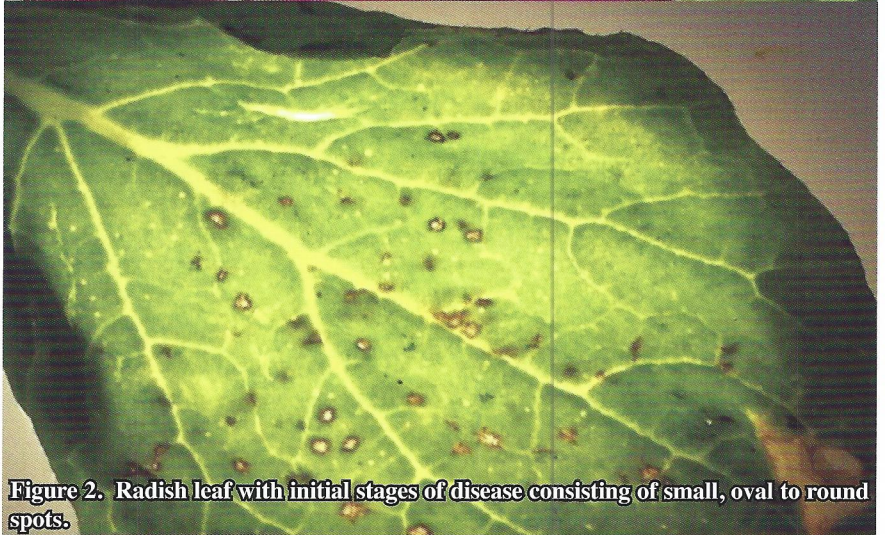


Figure 2. Radish leaf with initial stages of disease consisting of small, oval to round spots.



Figure 3. Radish leaf with advanced symptoms consisting of irregular, brown lesions. Lesions become papery in texture and the leaf tissue can break and tear.

Leaf Spot

(continued from page 18)

spray inoculated with a concentrated solution of the purified spores. Plants were subsequently incubated in humid conditions (**Figure 5**). After 10 days however, no leaf spots were observed on the inoculated plants. The experiment was repeated and again no leaf spots were observed on the test.

This process demonstrates the value in laboratory analysis and follow-up



Figure 5. Young radish plants inoculated with isolates of an *Alternaria* sp. that were recovered from the radish plants with leaf spotting.



Figure 4. *Alternaria* sp. recovered from necrotic areas.

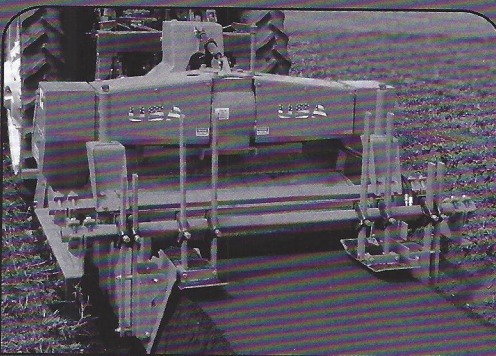
experiments in attempting to diagnose problems for the industry. Growers and Pest Control Advisors who see this problem on radish are encouraged to submit additional samples to their local UCCE office because this is an ongoing investigation and research on this problem continues.

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