

## Practice Abstract

### Visual scoring protocol for powdery mildew assessment in strawberry

leaves and fruit of strawberry, leading to reduced yield and fruit quality. Consistent and repeatable disease assessment is essential for breeding, crop protection trials, and integrated disease management. This protocol is based on the Simpson (1987) five-point visual scale for powdery mildew on leaves. Disease severity is assessed on plots of at least four plants and repeated 3–5 times throughout the growing season to capture disease progression. The recommended approach includes scoring on replicated plots and at multiple timepoints to ensure robust data. In cases where plot replication is not feasible, the Area Under the Disease

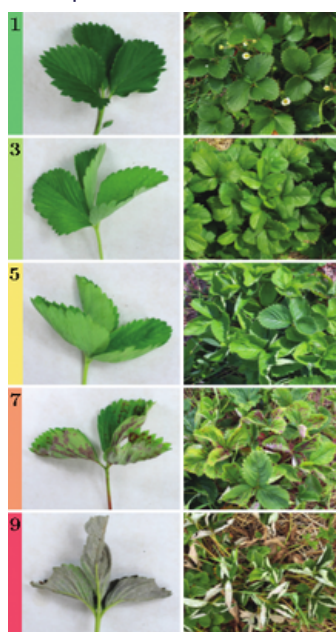
Progress Curve (AUDPC) still offers a reliable alternative to summarize disease dynamics over time. AUDPC is calculated using the trapezoidal method:

$$\text{AUDPC} = \sum_{i=1}^{n-1} \frac{(y_i + y_{i+1})}{2} (t_{i+1} - t_i)$$

where y represents the disease score and t the time of observation.

This protocol provides a practical and standardized approach to evaluating powdery mildew resistance in strawberry trials.

Five-point scale for visual assessment of mildew susceptibility (according to Simpson 1987) :



- 1 No visual symptoms.
- 2 Slight leaf curling; no apparent mycelia.
- 3 Leaf curling and mottling. “Many small fungus colonies on 25 to 50 % of the leaves.”
- 4 Severe leaf curling; reddening and visible damage to the lower leaf surface. “Big parts of the lower leaf surface infected, infection of the upper leaf side possible.”
- 5 Severe necrosis and some leaf death.

Reference: Simpson, D. W. (1987). The inheritance of mildew resistance in everbearing and day-neutral strawberry seedlings. *Journal of Horticultural Science*, 62(3), 329–334. <https://doi.org/10.1080/14620316.1987.11515788>