

Delta Rice Production – Pest Management

Rice pest management practices in the Delta reflect the conditions and pest pressures of the region. Operations described below are typical for the Delta drill-seeded system but will vary across farms and seasons.

Weed management

Weeds are the most problematic pests in Delta rice fields. Grasses – like barnyardgrass and watergrasses (*Echinochloa* spp.) and sprangletop (*Leptochloa fascicularis*) – are the most challenging weeds (Fig. 1), but broadleaf weeds and sedges must also be managed. The Delta system also has weeds that are not found in other regions, like nutsedges (*Cyperus* spp.). In the drill-seeded system, growers manage weeds with pre-plant cultivation and ground application of herbicides before the permanent flood is established. Herbicides are applied when the rice has about three to four leaves. The flood should be applied within a few days after herbicide application to avoid impacts to the rice. Later in the season, an aerial herbicide application may be applied to manage weeds that escape the ground application, but often



Figure 1. Early watergrass (top panicle) and barnyardgrass (center panicle) are two typical weeds in the Delta system.

this application is not needed.

Wetland plants like cattails (e.g. *Typha* L.) can become weedy in the Delta system, particularly if they emerge ahead of the rice crop and outcompete the rice. Cattails are difficult to control because they propagate by seed and underground rhizomes that become new plants if divided, as from tillage. Herbicide application can help to manage cattail pressure, but application timing is critical. Research has shown that control can be achieved if cattails are small (i.e. less than three feet tall).



Figure 2. Weedy rice is a significant pest because it reduces crop yield and quality. Weedy rice may be observed as light-green patches of plants that stand taller than the cultivated variety.

Weedy rice is rice with undesirable characteristics, like grain shattering and seed dormancy (Fig. 2). It is sometimes called red rice because some types have a red pericarp. Weedy rice has been identified in the Delta region and should be managed with cultural practices, like using certified seed, roguing plants, and equipment sanitation. Reductions in the weed seed bank have been observed where post-harvest management included mowing but no tillage, followed by winter flooding. These

practices keep seed on the soil surface where it may be eaten by migratory waterfowl or deteriorate in the water. Herbicide spot spraying for in-season management is possible, but there are limited products registered for use.

Arthropod management

Among the arthropod pests, true armyworms (*Mythimna unipuncta*) may present serious problems in some years by feeding on vegetation or damaging grain panicles. UC Cooperative Extension has been monitoring populations in the Delta since 2016 (Fig. 3). While armyworm populations may undergo two generations during the season in the Sacramento Valley, only one generation has been observed in the Delta system. Scouting is an important part of management, and insecticides are registered for use. See the armyworm fact sheet for more information on this pest. Other insect and arthropod pests are generally not problematic in the Delta.

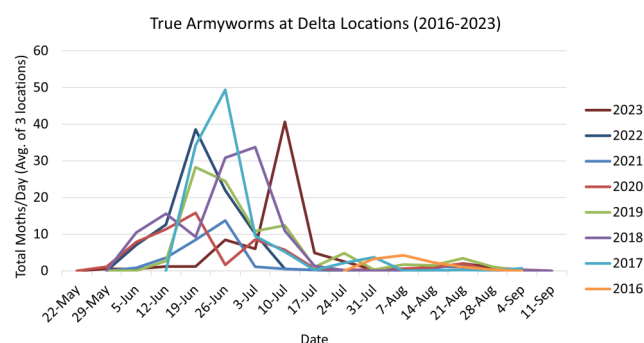


Figure 3. UCCE monitors true armyworms in Delta rice fields. Pest pressure varies from year to year.

Disease management

Diseases that have been observed in the Delta include stem rot (*Sclerotium oryzae*), aggregate sheath spot (*Rhizoctonia oryzae-sativae*), and

rice blast (*Magnaporthe oryzae*); though, disease pressure is highly variable across the region and over time. Stem rot will manifest as black lesions along the water line at late-tillering. Aggregate sheath spot will manifest as gray or green lesions on the lower leaf sheaths at the water line. Both diseases that can be more problematic on low potassium soils, which occur in the Delta. Rice blast will often appear as diamond-shaped lesions on the leaves mid-season and may present as lesions on the node below the panicle later in the season. It is important to scout for both of these diseases at late-tillering. Fungicides are registered and are most effective when applied between late-boot and early-heading. There is no varietal resistance for stem rot, but M-210 is blast resistant and has performed well in Delta variety trials. The biology and management of these diseases is described in more detail in separate fact sheets.

For more on this topic:

- ✓ California Weedy Rice. <https://caweedyrice.com/>.
- ✓ Delta Crops Resource Management, Rice. <https://ucanr.edu/sites/deltacrops/Rice/>.
- ✓ UC Agronomy Fact Sheets agric.ucdavis.edu/fact-sheets.
- ✓ UC Integrated Pest Management: Rice. <https://ipm.ucanr.edu/agriculture/rice/>.

Agronomy Research and Information Center

<http://agric.ucdavis.edu/>



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