The Organic Rice Production System in California

Luis Espino1, Anders Lundberg2, Bruce Linquist3, Whitney Brim-DeForest1

1 University of California Cooperative Extension

2 Lundberg Family Farms

3 University of California, Davis

Rice is grown in 200,000 hectares annually in the Sacramento Valley of California. Of these, between 6,000 and 8,000 hectares are grown as certified organic, with acreage fluctuating according to market conditions. Productivity of organic rice is about half to three quarters of conventional, but the market price of organic rice can be more than double that of conventional.

In the organic rice system, fertilizer is applied before planting as dry manure, which supplies a large part of the nitrogen requirement of the crop. In some cases, a leguminous cover crop is grown during the off season and incorporated before planting to provide more nitrogen. At mid-season, a top-dress may be applied using an organic fertilizer to increase nitrogen availability.

The main pest problem of the California rice system is weeds. Conventional rice is typically grown from seeding to harvest under a 10 cm flood to limit the establishment of weeds; however, herbicides are necessary to reduce weed infestations that can severely limit yields. In the organic rice system, higher water depths of 20-30 cm are commonly used to suppress and control water grass for 18-22 days after planting. In addition, a mid-season dry down period of roughly 30 days is often applied to kill aquatic weed species. These methods are generally effective, but the dry down period extends the vegetative period of the crop and may have negative effects in productivity. On the positive side, the dry down period has also been shown to reduce methane emissions and reduce arsenic content in the grain. Management of other pests relies on cultural practices; the availability of organic insecticides or fungicides is limited.

After harvest, organic rice is dried, stored, and milled by processors that specialize in organic rice. Because chemical fumigants cannot be used to control stored grain pests in organic systems, food-grade CO2 may be used to control insects.

Lundberg Family Farms is a family owned business in the northern part of the Sacramento Valley. Its founders grew their first crop of organic rice in the late 1960s. To this day, the company is the leading producer of organic rice in the U.S. Lundberg produces, processes, and markets organic rice and rice products under its own brand. The company has also pioneered many of the techniques and cultural practices used in California organic rice production. In addition to the commonly used practices, Lundberg has done extensive work in trying to improve California organic rice system productivity. This work includes variety development, development of new organic weed control techniques, and extensive work in sustainability. In 2022, Lundberg Family Farms was the first California rice brand to become Regenerative Organic Certified ®.