**Red Rice**

Red rice is a weed that infests much of the southern rice growing area in the United States. It is a wild rice type that competes with cultivated rice for nutrients, water, and space. Currently, any herbicide that would kill red rice would harm the cultivated rice. While California appears virtually red rice free, all southern rice producing States—Arkansas, Louisiana, Mississippi, Missouri, and Texas—have infestations that have endured since rice was first introduced.

Although red rice is an annual plant, it persists in rice fields because of the long dormancy of its seeds. Once in the soil, red rice seeds may readily germinate or stay latent for years before germinating. Red rice exhibits an uneven development period and produces seeds that shatter upon reaching maturity. Because selective weed control between red rice and cultivated rice is difficult, herbicides have not been able to successfully control red rice.

Farmers currently control red rice by depleting the seed bank through an integrated weed management program that combines preplant-incorporated herbicide applications, continuous or pinpoint flooding, and crop rotations. In Arkansas, farmers typically grow soybeans for 2 years and plant rice the third year. During the soybean cropping, herbicides which control grasses can be used, which kill any red rice seed that grows. This program has severe drawbacks because it seldom completely eradicates red rice. In fact, if just 5 percent of the red rice survive, a seed bank can be restored. In addition, in the last few years returns to soybeans have been, on average, lower than for rice production and thus it is not an economically beneficial rotation crop.

The costs associated with controlling red rice depend on the weed management practices employed. Current systems are expensive and time consuming because several herbicides are required to manage various grasses and none can selectively kill red rice without injuring commercial rice. Controlling red rice also involves flooding and crop rotations. In addition, red rice plants can grow tall and may lodge when mature. This can cause the cultivated rice to lodge as well as increase harvesting and drying costs. Without better weed control, red rice will continue to reduce farm yields and lower grain value. However, during the last few years herbicide resistant rice varieties have been developed through mutation breeding. The varieties possess a gene which conveys tolerance to specific herbicides. Thus, when the herbicide is applied, the cultivar suffers no damage but the red rice plant is killed.

Red rice also raises milling costs. Red rice produces seeds with either black or straw-colored hulls and red bran. When harvested, they mingle with commercial white rice. Removing the red seeds from the commercial rice is necessary but raises costs to the miller, who in turn discount the price to the farmer. Red rice removal requires additional milling and separation through a sorting machine. The additional milling decreases the milling yield because of greater breakage and damage to the rice kernel. The higher content of broken grains reduces the value of the milled rice.