Pesticide Use Enabled Rapid Growth in South Korean Rice Production

International Pesticide Benefits Case Study No. 64, September 2012
Leonard Gianessi and Ashley Williams

Prior to the 1960s, the Korean economy was one of the poorest in the world. In the 1960s the Korean government embarked on a policy of industrialization and the national economy began to take off, recording an average 8.3% annual growth rate from 1965-97 [1]. Korea is one of the very few countries in which the transition from a rural economy to a developed industrial nation took place in a single generation. Rising living standards and employment opportunities in urban areas drew farmers away from rural areas. This led to a shortage of workers for crop production. More than 12 million people migrated from rural to urban areas from 1957-82.

In Korea, manual weeding had been the prevalent control method for centuries. Farmers typically weeded three times per growing season; about 300 hours of weeding labor per hectare was required [2]. Prior to 1966, herbicide use in Korea was negligible. As labor shortages appeared, herbicide use was recommended and by 1971, 27% of the rice acres were treated [3]. In 1977, 65% of the total rice area was treated with herbicides [2]. Since 1980, 100% of Korea’s rice acreage has been treated with herbicides. The adoption of herbicides was influenced by the labor shortage in rural areas and the increased cost of labor for weeding.

In Korea, one of the national development goals in the early 1970s was achievement of self-sufficiency in rice production, which was achieved by 1977 through the widespread planting of high yielding cultivars and application of fertilizers. However, in 1979, outbreaks of sheath blight, blast and plant hopper insects caused a 19% decrease in production [4]. In order to prevent future losses to insects and pests, the use of fungicides and insecticides were promoted beginning in 1980 [4]. Approximately 75% of Korea’s rice acres are treated with insecticides [6]. Current research shows that in Korea, rice yield losses caused by insects and diseases are 16% when no fungicides and insecticides are applied [5].

Rice production in Korea increased from 4 million tons in 1970 to today’s level of 6 million tons. The amount of land planted to rice has remained largely the same. Thus, the increase in rice production in Korea has been achieved primarily by raising yields. The use of pesticides has been a key factor in the increase in Korean rice yields [1].

References