

The Global Value of Herbicides

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When it comes to herbicides, the world can be divided into three groups of countries—developed countries that treat 90% of their acres with herbicides and have used herbicides for fifty years, rapidly developing countries, such as India and China, that treat 30-50% of their cropland with herbicides, and countries in sub-Saharan Africa, where herbicides are used on only 5% of cropland. Developed countries rapidly adopted herbicides in the 1960s due to shortages of farm labor for hand-weeding and the desire for increased food production. American cotton workers in the South migrated to the North for factory jobs. In California, the *Bracero* Program ended in the 1960s and the short-handled hoe used for weeding was banned in the 1970s. In Japan, Germany and other Western European countries, rebuilding industrial sectors after World War II required millions of new workers. In Italy, hand-weeding of rice became a social justice issue. The survival of agriculture in these countries depended on the timely arrival of herbicides. Concurrently, herbicides proved more effective than tillage for weed control in field crops (maize, rice, wheat) and yields increased dramatically.

The same phenomena are driving rapid adoption of herbicides today in India and China, contributing to significant increases in crop yields in these and similar countries. Shortages of rural workers are occurring due to rapid industrialization. In the 1980s, China had an estimated 43 million hectares heavily infested with weeds, resulting in a loss of 18 million tons of grain annually. With herbicide use, wheat and maize yields have doubled since the 1980s.



It has been well known for many years that herbicide use by African farmers would dramatically increase yields. Yields on smallholder farms are one tenth that of African research farms where weeding is done at the right time. Subsistence farmers are only able to do half of the weeding required for optimal yields; poorly timed and suboptimal weeding results in yield losses of 20-100%. Despite years of trials demonstrating the benefits, herbicide use remains low due to several factors. First, weeding is seen as women's work and not taken seriously by governments. Additionally, international aid organizations have not made weed control a priority and generally do not support herbicide use in sub-Saharan Africa. As a result, weed science and extension support and spray services for weed control are not available to most African farmers.



U.S. Rice Yields

