

## Pesticide Use in Russia: Restoring the Benefits

*International Pesticide Benefits Case Study No. 23, September 2011*

*Leonard Gianessi and Ashley Williams*

Throughout the 1950s-1980s, pesticides were widely used on the large collective farms in Russia. In 1975 estimates were made that 46 million hectares were treated with pesticides of which 23 million were treated with herbicides [1]. The Russian Ministry of Agriculture estimated that pesticide use reduced the potential losses to pests by 40% resulting in the preservation of 22 million tons of crops [1]. The Ministry estimated that every ruble invested in pesticides returned 5-6 rubles in terms of additional crops. A large part of the cost of pesticides as well as the machinery used on the cooperative farms was paid by the government. By 1990, 61 million hectares of Russian cropland were treated with pesticides [2].

The dissolution of the Soviet Union in 1991 led to privatization of the collective farms. Government support of agriculture collapsed and most farms were without the financial resources to buy pesticides. As a result, from 1991-97, pesticides were applied to only 31 million hectares and crop losses to pests were 40% higher in comparison with losses from 1986-1990 [2]. The reduced use of pesticides was a major factor resulting in lower wheat production in Russia in the 1990s (Figure 1).

Losses in the 1990s would have been greater had farmers been unable to use pesticides altogether. Estimates were made by the Russian Academy of Agricultural Sciences on the use and benefits of herbicide use from 1990-99 [3]. The additional yield on the 15 million hectares treated with herbicides was determined to be 6 million tons per year.

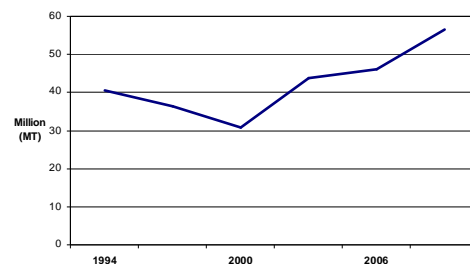
In recent years the Russian government introduced policies to increase the availability and use of pesticides in crop production. These policies have included increased imports, construction of manufacturing plants, and subsidies to farms for purchasing pesticides. The Russian market for pesticides is growing at an annual rate of some 20% (Figure 2). The area treated with pesticides reached 63 million hectares in 2010 [4]. The recent increase in pesticide use has made a major contribution to increased wheat production (Figure 1).

Research continues to demonstrate the large financial gains that are achieved with pesticide use. For example, spring wheat crop profitability was estimated at 9% without plant protection and 20% with protection [5]. Wheat yields were 21% higher with treatment.

### References

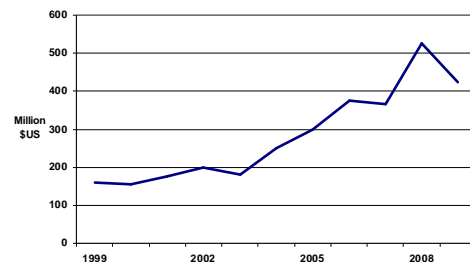
1. Chenkin, A.F. 1975. Economic effect of plant protection in the Russian Federated Republic. *VIII International Congress of Plant Protection*. Moscow. 2:27-31.
2. 1999. Pesticide use plummets in Russia. *Agrow*. No. 320:13.
3. Zakharenko, V. 2000. Bioeconomic methods and decision-making models for herbicide use in Russian agriculture. *Third International Weed Science Congress*. Foz de Iguassu.
4. 2010. Russian pesticide market shows steep growth. *Agrow*. No. 590:14.
5. Kargin, V.I., S.N. Nemtsev, R.A. Zakharkina and Y.I. Kargin. 2011. Effectiveness of biopreparations in spring wheat crops. *Russian Agricultural Sciences*. 37(1):51-54.

**Figure 1: Russian Wheat Production, 1992-2008**



Source: FAOSTAT

**Figure 2: Russian Pesticide Expenditures, 1999-2009**



Source: Phillips McDougall