

### Chemical and Fertilizer Use on Ohio Farms

This article is the fourth in a series describing characteristics of nearly 900 Ohio farm operators surveyed by The Ohio State University in 1988. The sampled farm households are intended to be representative of the 70-80,000 households operating farms in Ohio. Previous reports focused on the economic performance and financial condition of the sampled farms. This article reports farm operators' management practices relating to fertilizer use, chemical use, and weed control practices. Finally, farm operators' opinions regarding government regulation of chemical use are summarized.

As in previous reports, "commercial" farms are distinguished from all farms or "average" farms. Commercial farms are defined as those farm households producing \$100,000 or more in gross farm sales during 1987. While they number only 17 percent of Ohio farms, they are responsible for producing nearly two-thirds of Ohio's agricultural output. Average farms include data from all farms, regardless of farm size.

Over 90 percent of all farms and 95 percent of commercial farms use commercial fertilizer (Figure 1). Livestock manure and cover crops or green manure also are used to enhance soil condition as well as to meet crop nutrient needs. About two-thirds of all farms and three-fourths of commercial farms apply livestock manure to some of their crop acreage. Crops with relatively high nitrogen requirements, such as corn, are most likely to respond to manure application. Estimates are that livestock manure is applied to 17 percent of Ohio's corn acreage, 8 percent of its soybean acreage, and 5 percent of its wheat acreage.

Cover crops or green manure are used on about 30 percent of all farms and 35 percent of commercial farms. Most commonly used cover crops are rye, sweet and red clover, and vetch.

Chemical weed control is used nearly as widely as commercial fertilizer. Three-fourths of all farms and over 90 percent of commercial farms use herbicides to control weeds (Figure 2), although weed control by cultural practices, such as cultivation and crop rotations, are also common. Over 80 percent of all farmers use crop rotations and 58 percent use cultivation to control weeds. Insecticides are used most heavily on corn and are applied at the time of planting to control corn rootworm larvae. Farmers report the use of insecticides on approximately 40 percent of the corn acreage. Insecticide use on other major field crops is negligible.

Over one-half of the farmers identify continuous row crops (e.g., corn-soybeans) or row crops-small grain as their primary rotation. The use of continuous row crops is especially prevalent as farm size increases (Figure 3). Rotations with pasture or hay are used by about one-fourth of all farms, and these tend to occur more on smaller farm operations.

#### Farm Operators' Opinions Regarding Pesticides

Farm operators have become concerned about the effects of pesticides on their personal health and environmental quality. Participants in our survey were asked, "Do you think Federal and State governments are doing enough to ensure safety against contamination from pesticides and chemicals used on U.S. farms?" Responses showed

---

\* The analysis of the Ohio Household Longitudinal Study is supported by the Ohio Agricultural Research and Development Center and the U.S. Department of Agriculture, Economic Research Service. Project staff are Lynn Forster, Robert Munoz, Linda Reif, Tom Stout, Nate Asplund and Lois Thiergartner.

considerable diversity of opinion. About 15 percent felt that government regulations are too strict or that government should stay out of pesticide regulation. About 30 percent were satisfied with the amount of government regulation of pesticides. Nearly 23 percent were supportive of increased regulation of pesticide use. The remaining 30 percent had no opinion regarding the question. In short, there appears to be little consensus among farm operators about the adequacy of pesticide regulation.

Participants in the survey were encouraged to give their opinions regarding farm pesticides. Their concerns about pesticide safety and suggestions for improving pesticide safety can be categorized as follows:

a. About 11 percent of the farm operators expressed concern about pesticide pollution in ground water and streams. Some thought government agencies should spot check wells and streams periodically. Others were satisfied with current water conditions, but they worried about water contamination in the future if chemicals continue to be used at current rates.

b. About 11 percent of the farm operators suggested that farmers should stop using chemicals, especially on farms producing meat or milk. These farmers feared build up of chemicals in the soil. Organic farming was favored by most of these farmers, but only about half of those farmers who favored a shift to organic farming actually practiced it (3 percent of our sample). Many farm operators stated that they would like to try farming without chemicals; however, in order to keep their yields high enough to cover production costs

and compete in the market place, they felt pesticide use was essential.

c. Nearly 8 percent of the respondents felt that more research and education was needed for the safe use of chemicals. They felt that chemical companies should be responsible for thorough testing of a product, as well as for an educational program to inform users of safe application practices.

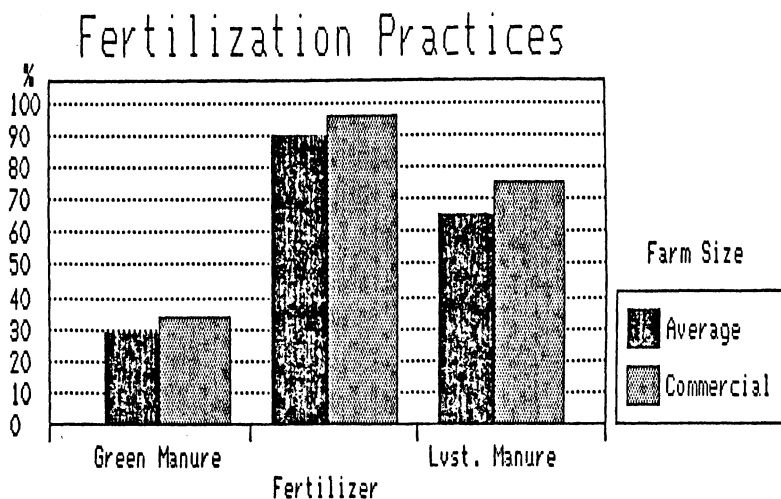
d. Some respondents expressed concern about no-till methods of farming. They feared that chemical application rates used in no-till systems might build up in the soil or be detrimental to environmental quality.

e. Others questioned the wisdom of some farmers' desire to maximize yields when estimating application rates. Maximizing yields may not be in the farmers' best economic interest nor in the best interest of environmental quality.

#### Summary

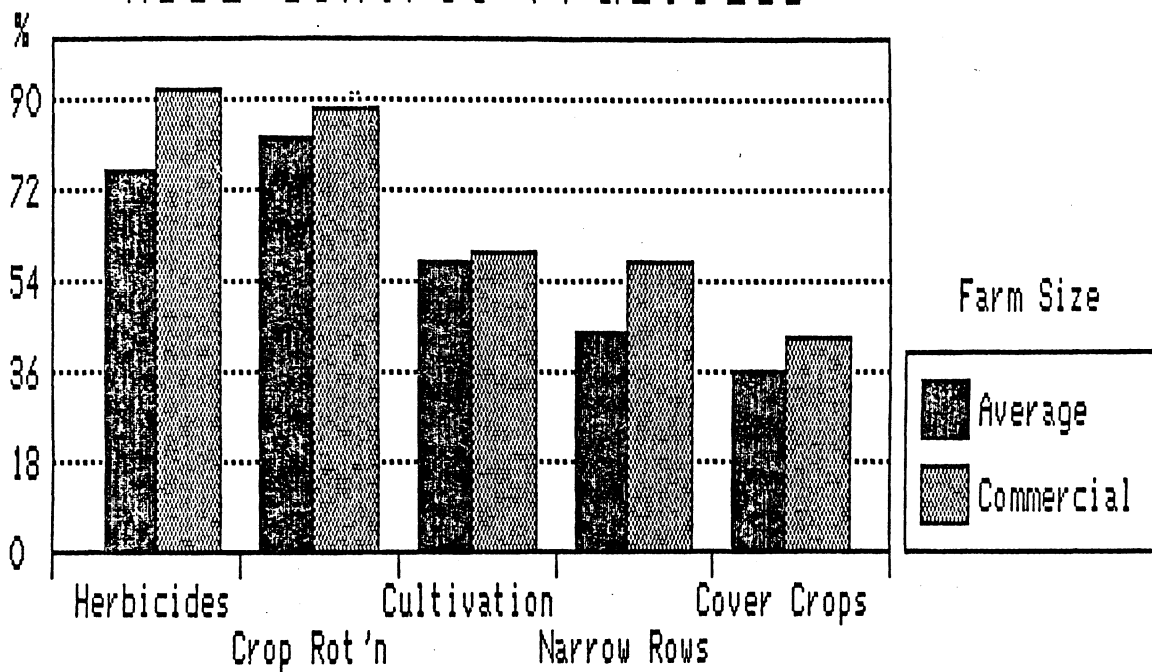
Ohio farm operators farm intensively on tillable soils. Farmers have widely adopted the use of commercial fertilizers, herbicides, and row crops. The economic environment of the past two decades has caused a dramatic change in Ohio's agricultural landscape especially in the western half of the state, where row crops in fenceless fields and abandoned livestock facilities dominate the rural scene. If chemical concerns become widespread with the public as well as with producers, and the interest in "sustainable agriculture" becomes widespread, the rural landscape in Ohio may begin again to display some of the cultural practices of a generation ago.

Fig. 1



# Weed Control Practices

Fig. 2



# Crop Rotations by Sales

Fig. 3

