

the two types of farms was that the conventional farms had the option of purchasing nitrogen fertilizer, but the alternative farms did not. Neither type farm used pesticides.

James summed up his results as indicating that "... farming without commercial nitrogen and chemicals is a viable alternative for some, if not many Iowa farms. It has particular comparative advantage where farms have a large part of their land in pasture" (p. 21). By "viable" James evidently means that net returns to alternative farming were positive in most of the cases of this system he considered. However, his results show that in no case were net returns to this system as high as those to conventional systems in which the option to purchase nitrogen fertilizer was taken.

Dabbert and Madden (1986) studied the economics of shifting from conventional to alternative agriculture. They used data for 1978-1982 collected by the Rodale Research Center to study a crop-livestock farm of about 300 acres located near Kutztown, Pennsylvania. Dabbert and Madden studied only the cropping system on this farm. No herbicides or insecticides were used on the farm and except for a small amount of starter fertilizer on corn, all nutrients were supplied by manure and a rotation which included legumes. Weeds were controlled by mechanical cultivation and rotation. About one-third of the land was in corn or soybeans, one-third in small grains (wheat, barley, oats and rye) and one-third in hay (alfalfa or timothy/red clover). Yields for most of these crops were higher than county or state averages.

Dabbert and Madden cited the USDA (1980) report on organic farming, and other sources, as indicating that the shift from conventional to alternative agriculture frequently entails an initial yield penalty, but that after three or four years, yields are restored to their former level. Oelhaf (1978) also states that the shift from conventional to alternative systems generally