A sharp reduction in summer fallow began three decades ago in western North America. Summer fallow, a practice in which fields are tilled but not planted, is used in arid regions to conserve moisture for the following year's crop and reduce variations in yield. Unfortunately, summer fallow also increases soil erosion and contributes to reduced air quality.

Changes in summer fallow acres have varied considerably over time and geography, as shown in the map graphics above. In 1969, 17 percent of cropland in the western United States was in fallow. By 1997, fallow acreage had dropped to 8 percent of cropland acreage. In roughly the same time period, farmers in the Canadian prairie provinces cut summer fallow from 40 percent of cropland to 19 percent of cropland.

Markets, Policies and Fallow Acres

Between 1964 and 1974, U.S. summer fallow acreage fluctuated between 32 and 41 million acres. Until 1971, the real price of wheat was declining and a grain-fallow rotation was an effective risk management strategy for many farmers. When wheat prices rose during the mid-1970s, U.S. summer fallow declined to 31 million acres, with all states showing a reduction. Canadian provincial data showed farmers fallowed 26 to 29 million acres until 1974, except for 1970, though fallow increased in Alberta and Saskatchewan from 1964 to 1974.

U.S. summer fallow acreage increased 11 percent during the real grain price decline from 1974 to 1987. While summer fallow increased in most states during this period, it declined by 23 percent in the Canadian provinces. The coupling of wheat and barley subsidies to historical base acres in the United States probably discouraged U.S. farmers from deviating from their customary grain-fallow rotations.

During 1987 to 1997, summer fallow in the United States declined from 32 to 20.9 million acres, or by 35 percent. Fallow acreage declined in the Canadian provinces by one-third during this same time with the largest decline occurring in Saskatchewan. Contrary to expectations, the 1987 to 1997 decline in the U.S. began during a period of traditional coupled grain subsidies and low real grain prices. The decline continued during the higher real grain prices of 1995-'97 and the decoupled subsi-
dies of 1996-97. Elimination of acreage controls in the 1996 Farm Bill, plus the high grain prices of 1995-97, probably kept some Conservation Reserve Program and other idled land from returning to fallow.

Agricultural Technology and Summer Fallow

Since producers use fallow to restore soil moisture, irrigation may facilitate the conversion of some fallow land to annual cropping. Is irrigation the real reason? Probably not because total irrigated acreage in the western U.S. and Canada changed little between 1974 and 1997.

Conservation tillage technology, especially improved no-till drills, probably explains more of the trend to annual cropping in the U.S. and Canadian plains. No-till and minimum-till systems maintain surface mulch, which reduces the need for water conserving summer fallow. In the 1990s, farmers used no-till and ridge-till practices on 14 percent of cropland in the northern plains and 16 percent in the Canadian prairies.

Plant breeders have facilitated the movement toward annual cropping by developing spring crop varieties that can be rotated with wheat in arid areas. New cultivars and agronomic practices for lentils, dry peas, canola, herbicide tolerant canola, mustard, and food-oil quality mustard prompted increased plantings of these crops in the Canadian prairies from 1.8 million acres in 1976 to more than 15.5 million acres in 1997. Acreages of these crops increased 11-fold in the northern United States during 1992-1997. Further south, soybeans and corn are increasingly grown in historic wheat (fallow) areas.

Reducing summer fallow requires more fertilizer, herbicides and management. While fertilizer costs have increased at the same rate as the aggregate cost index, herbicide costs have increased by only 76 percent and machinery costs by 151 percent. Roundup™, a key herbicide for no-till and annual cropping, fell in nominal terms from US$100 per gallon in the early 1980s to US$38 in 1999 — a 78 percent reduction in real price.

Requiem for Summer Fallow?

Summer fallow will survive in some arid farming regions of western North America, but acreage in fallow is likely to continue to decline for another few decades. The decline in summer fallow is not a short-term response to transitory world grain prices and national agricultural policies. During the past 35 years, summer fallow has responded only modestly to prices and policy. The decline appears to be an enduring adjustment to technological and management changes. We believe future refinement and adoption of these technologies — especially reduced tillage and new crop cultivars — will continue to displace fallow.

For More Information


Data Sources