

~~#32~~

# 32

Smith

# PROCEEDINGS

## ECO-FALLOW CONFERENCES

Lamar, Colorado

February 10, 1981

Burlington, Colorado

February 11, 1981

Sterling, Colorado

February 12, 1981

Strasburg, Colorado

February 13, 1981

## Status of Chemical Fallow in Colorado

D. E. Smika <sup>1/</sup>

When agriculture moved into the Great Plains the moldboard plow, the disk, harrows and more recently blades, sweeps and rodweeder were used to prepare the soil to produce food. Without these implements food production would not have been able to keep up with population demands. Although much has been said about the necessity of tillage for many purposes, the only proven necessity is that of weed control. Weeds are strong competitors with crop plants for water and nutrients and must be controlled to provide economic returns from crop plants.

In the late 1940's plant growth regulators were introduced and from these selective herbicides were developed. With the advent of selective herbicides weeds could be controlled in crops without tillage and the concept of minimum and no tillage crop production was made economically possible. There are several advantages to a no-tillage cropping system and are: (a) soil erosion by wind and water is reduced, (b) energy requirements are reduced, (c) timing of planting can be improved because of better soil water relations, (d) soil water is used more efficiently because of decreased evaporation and increased water infiltration in the soil, (e) machinery investment may be reduced. There are some disadvantages and are: (a) The population of rodents, wildlife, and wire worms have been noted to increase in some instances, (b) greater management ability and input is required for success, (c) surface soil temperature is reduced which may delay spring growth or decrease growth rate, and (d) pesticide use increases but the danger from pesticides is decreased because due to their characteristics they do not move into the environment except by soil erosion.

Since the introduction of herbicides for chemical fallow in eastern Colorado in 1976, farmers have determined that the advantages outweigh the disadvantages on an estimated 25,000 acres which represents approximately 1% of the total fallow acres. The system currently being practiced is a minimum tillage system involving herbicides for weed control for 11-12 months with tillage for the remainder of the fallow period. The trend that has been observed is that farmers tend to try a small acreage the first year. Depending on their anticipated results they may try a small acreage again the second year. By the third year they either discontinue all together the practice or increase their acreage to a sizeable percentage of their total. With this trend, the total acreage in the practice is expected to increase and the USDA, Office of Planning and Evaluation has estimated that by the year 2000, 65% of the wheat will be produced under a no-tillage system.

---

<sup>1/</sup> Soil Scientist, Central Great Plains Research Station, Akron, CO 80720.

Under the current minimum tillage system there has been a notable shift in weed species with progressive years of minimum tillage. Population of broadleaf weeds such as pigweed has declined and those of summer annual grassy weeds such as tickle grass has increased. This shift was expected in this system because the herbicide effectiveness runs out at the time when the summer annual grassy weeds start their growth cycle and their control is difficult with subsurface tillage. Another herbicide that can persist through this period or the application of contact herbicides may be needed to overcome this situation. Also some of the residual herbicides currently labeled are not the best for grassy weed control. New labels are being sought, such as Mobay's Sencor. Also there are some experimental products under test and one by Elanco looks very promising.

The future for chemical fallow looks very good. With an increasing arsenal of herbicides, problem weeds will be able to be controlled and the advantages of the system to the protection of our resources and environment can be achieved.