

# advantages t

Darryl E. Smika, research soil scientist at the U.S. Great Plains Research Station in Akron, Colo., is a confirmed believer in chemical fallow, a farm production system in which weeds are controlled with chemical herbicides for the entire period following wheat harvest.

Chemical fallow, Smika says, maximizes soil water storage and reduces energy requirements and production costs. He believes the system can be practiced on any kind of soil where conventional practices are now used and is convinced chemical fallow will become the dominant method of farming in the Great Plains in the not-to-distant future.

In a true chemical-fallow system, tillage tools are not used at all. Wheat is planted into the previous crop's stubble with a no-tillage drill after a 14-month fallow period. Some farmers are gaining some of the advantages of the system by using a limited amount of mechanical tillage only in the late summer just before planting.

Chemical fallow is not a new practice, although it is just now

beginning to gain broad acceptance. Research at the Akron station has been going on since the early 1960s, with a concerted effort since 1971. It is these two decades of research results that make Smika and his colleagues so confident about chemical fallow, or econ-fallow, a sister practice where four crops are obtained in six years.

Their data suggest five requirements must be met to improve water conservation and erosion control in chemical fallow:

—Weed control using herbicides, not tillage, for the entire fallow period (harvest to planting) is essential. Weeds can use from .2 to .3 inches of water per day and up to 27 pounds of available nitrogen per acre. Tillage operations also increase water loss through evaporation by .2 to .3 inches per operation.

—Stubble must be left standing over winter to hold snow.

—Straw mulch must be left on the soil surface during the season to absorb rainfall impact, which reduces puddling, and cuts evaporation losses by insulating soil.

—Hard soil clods should be left on the soil surface to resist wind erosion, help anchor mulches, slow run-off, and protect young wheat plants.

—Soil must be managed to retain enough water in the seedbed to germinate seeds.

Farmers adhering to these requirements can expect to increase yields nine bushels per acre on the average and get almost total protection from water and wind erosion, according to Smika.

Average losses to erosion under conventional systems on the Great Plains are five tons per acre per year, or 1/32 of an inch of topsoil, he says. Research also shows after seven years or so of chemical fallow, soil chemical properties are improved, and with additional years of practice, the land may be returned to the condition it was in when first broken out of sod 100 or more years ago.

Controlling moisture-robbing weeds is the cornerstone of a chemical-fallow program, according to Smika, and is essential to success. "Paraquat and atrazine are the chemicals used for research 23 years ago, and are the basics of chemical fallow today," Smika says, "although new herbicides have been developed in recent years for specific purposes in the system."

A typical application would be Ortho Paraquat Plus and atrazine immediately after harvest in July on those fields

where atrazine can be used, Smika says. Atrazine is not recommended on very sandy or high clay soils or soil with high pH, but short residual triazines have been developed that can be substituted for atrazine. 2,4-D can also be used for effective broadleaf control and for spot treatment.

In the fall, farmers should be on the lookout for wild sunflower and Russian thistle, the major broadleaf problems, and winter annual grasses such as downy brome and jointed goatgrass that mature about the same time as wheat. Ticklegrass, stinkgrass, and green foxtail may also be evident in the fall after harvest. In the spring, control measures should be directed at tough, prolific weeds such as lambs-quarters and pigweed, Smika says, while Kocia germinates all year and should be regarded as a constant threat.

Smika estimates 15% of the fallow land on the Great Plains is under chemical fallow, and the percentage is increasing each year. "But there is still a great deal of resistance to the use of herbicides instead of tillage to kill weeds," he says. "Farmers have been tilling the soil for thousand of years, so it's instilled in them."

He figures a young farmer can buy the equipment he needs to farm chemical fallow for one-fifth of the cost of tooling up for conventional farming. "But if he's a third generation farmer, it's likely that his grandfather, who probably owns the land, and his father have been plowing the ground for 40 or 50 years," Smika says. "He's going to run into a lot of resistance."

be unduly complex, revolutionary.

"There is no need to reinvent the wheel. The basic components are simple and well-known: parity based CCC loan rate, price-firming farmer-reserve, and a land conservation strategy which includes a diversion system as needed.

## Reduce cooling costs with better

Keeping your home cool comfortable through a summer can easily cost more than a winter's worth of heating bills.

"Before you start your conditioner and send the electricity meter whirling this summer consider other ways to cool your home," said J. Snead, Extension specialist in residential energy at Kansas State University.

Controlling cooling costs means controlling the effect of sunshine on your home. The heat typically creates the bulk of the cooling load.

"Keeping the sun's heat off your walls, windows, and roof is an excellent way to cut cooling costs," Snead said.

Shading and sun control devices help cut down on sunlight heating up your home.

Sun control devices can be natural elements such as shrubs, and landscaping building elements such as overhangs, awnings, shutters, screens, reflective films, drapes, blinds, or shades. Combining controls such as trellises climbing vines can be effective as well as attractive additions to your yard and home.

The effectiveness of a control device is determined by its shape and form, its location near the window, its color, and the reflectivity of the material used.

The most effective shading



TIME FOR A BREAK—After a hard morning's work, trail drivers put the Longhorns out to pasture and then gathered around the chuck wagon for a lunch break. The first day's ride Thursday, June 2, circled around the Moore Ranch. Friday afternoon the Longhorns were loaded up and hauled to the Coronado Cross Park near Fort Dodge, Kans., where the

trail drive Saturday in Coronado City, Kan. Longhorn for a Little the Longhorns.)

Handrails are essential to stairway safety.