

Research service reports soil erosion findings



Agricultural Research Service and OSV Experiment Station Scientists measure erosion losses under the STEEP program.

Soil erosion research has been conducted in Morrow County by the Agricultural Research Service since the fall of 1979. A major conclusion of these studies has been that the erosion problem results primarily from rain on snow, melting snow, or rain, all occurring when the ground is frozen. In most cases a layered soil, that is a thawed surface over a frozen layer, is largely the most potentially erosive winter condition in the dryland grain region east of the Cascades. Moreover, experiments conducted at the Columbia Plateau Conservation Research Center showed that different soil heat flows and frost penetration is related to the

amount of surface residue and possibly green cover. Our research site this year is located on land farmed by Ken Turner in the Stingle Canyon area. It is completely equipped with instruments which continuously record air temperature, relative humidity, soil temperature and precipitation. The site is visited weekly by either ARS or SCS personnel who record frost depths, snow depths and snow water equivalent. The objectives of this research are to define the climatic, soil, and physiographic factors responsible for runoff and erosion and to define the effects of residue, green cover, surface roughness and tillage practices on these events.

of erosion on soil productivity. This research is being conducted by Ray Allmaras, Paul Rasmussen, and Clyde Douglas. There are a total of 33 sample sites in Umatilla, Morrow, Gilliam, Sherman, Wasco, and Walla Walla Counties, five of which are in Morrow County. The objectives of the research are to determine the effects of slope steepness, slope aspect, soil depth, depth of A and B horizons, and slope position on grain yield. Yields were taken on different slope positions and aspects within a field. Soil samples were collected at these sites to a depth of six feet or to bedrock. Soil samples are being analyzed for soil depth, topsoil depth, pH, water storage, organic matter level, and nitrogen content to relate erosion to yield loss.

Another area of research conducted in Morrow County is to determine the long-term impact

Fertilizer trials conducted with no-till annual cropped grains

This is a summary of a research report by Bob Ramig, USDA Soil Scientist, Pendleton.

Repeated fertilizer trials with no-till annual cropped small grains were conducted by Bob Ramig on the Frank Anderson Ranch in Morrow County in 1983.

The trials were seeded with a Noble DK5 drill equipped with USDA modified openers trailed by split press wheels. The modified openers permit no-till seeding and placement of liquid fertilizer two inches below the seed. Row spacing was 10 inches. Drill

performance was satisfactory in clearing residues, keeping seed and fertilizer separated, and seed placement. Similar trials are being continued in 1984 in Umatilla and Sherman Counties.

Conclusions drawn from this single trial in a series of continuing experiments are:

1. Chem-Hoe applied before planting at 1.5 quarts per acre gave good weed control but damaged stands of shallow late seeded fall small grains.

2. Glean at 0.5 ounce per acre in a tank mix applied before seeding damaged stands of winter barley.

3. A tank mix of 16 ounces of Roundup plus 0.5 ounce of Glean per acre applied before seeding gave excellent season long weed and volunteer control for Stephens winter wheat.

4. Eighty pounds of nitrogen per acre gave optimum yields in Morrow County. Bank placement two inches below the seed was better than surface broadcasting

for spring wheat but not for winter wheat or spring barley in 1983.

5. We do not recommend banding more than 12 to 15 pounds of sulfur per acre as Thio-Sul two inches below the seed. Five to

eight pounds of sulfur per acre per crop should be adequate.

6. The best treatment of no-till annual cropped winter wheat yielded 72 percent of the yield of

winter wheat after fallow.

7. No-till seeding of annual cropped spring cereals using proper herbicides and fertilizers is a viable option. More research on a single application tank mix for season long weed control is

needed for no-till annual cropped fall seeded small grains.

8. More research is needed on the fertilizer needs of no-till annual cropped small grains.

9. No-till annual cropping gave excellent erosion control.

Tucker honored by SWCD



Morrow SWCD chairman, Dick McElligott (right), presents the Outstanding Cooperator award to Brok Tucker of Wagon Trail Farms.

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