Volume 15 | Number 10 Article 6

4-1-1961

For Your Interest

Agricultural and Home Economics Experiment Station

For your Interest

horticulture

Bluegrass and Grama Best Orchard Covers

BLUEGRASS and side-oats grama are the most acceptable grasses, of those tested, for cover crops in the orchard, observes C. C. Doll, who directed the Experiment Station tests. Ratings of orchard cover crops 8 years after seeding show that bluegrass, bromegrass and orchardgrass are 100 percent established and spreading—followed by alta fescue and side-oats grama. Legumes that were seeded have less than a 50-percent survival rating after 8 years.

soils

Soil and Water Losses Measured

SOIL AND WATER losses from corn, oats and meadow have been measured on five Iowa soil types. Using these measurements, W. C. Moldenhauer and his Experiment Station and USDA coworkers hope to see how different rotation and tillage treatments influence losses. They also want to compare the amounts of erosion for the five soil types and see how rainstorms of different intensities affect these rates of erosion.

Nine storms caused soil and water losses on *Marshall silt loam* in 1959. Three occurred in May, three in June and three in August. Soil losses under continuous corn with high nitrogen fertilizer were lower than losses under rotation corn and under continuous corn with no nitrogen fertilizer. These lower soil losses under continuous corn with nitrogen fertilizer might be explained by the fact that between 2.5 and 3 tons of corn stalks are turned under every year, compared with a short stubble of alfalfa, brome or straw in the oats and meadow years of the rotation. The meadow yield preceding the 1959 corn crop was low (1.8 tons per acre) which also helps to account for the relatively higher soil and water losses from rotation corn.

Eleven storms caused soil and water losses on *Ida silt loam* in 1959—seven in May, two in August and two in October. No soil or water was lost from contour-listed plots, while 23 tons of soil per acre were lost under an up-and-down hill treatment, and 21 tons per acre were lost from a contour-surface-planted plot. In a very severe storm, the efficiency of contour surface planting, compared with the up-and-down hill treatment, is greatly reduced. During 1958 and 1959, a rotation with 2 years of meadow reduced soil loss during the corn year to one-third of that under a corn-oats rotation with the same type of tillage—contour surface planting.

Water losses from *Grundy silt loam* ranged from 1.23 to 3.92 inches in 1959. Soil losses ranged from 0.02 to 1.71 tons per acre. Lowest water losses were under

The amount of soil and water loss from cropland depends on a lot of different factors. Researchers at the Experiment Station are currently measuring the amount of loss under various tillage treatments.

first-year meadow in a corn-oats-meadow-meadow rotation and mulch tilled continuous corn. Highest water losses were under second-year corn in a corn-corn-oats-meadow rotation. Soil losses were low because the two largest storms occurred in August and September, and by then the corn crop had grown tall enough to protect the soil.

Both soil and water losses were low for *Seymour silt loam* and *Carrington silt loam* in the seasons studied. No measurable soil or water losses occurred under oats or meadow in the corn-corn-oats-meadow-meadow rotation for either soil.

Study Seepage From Western Iowa Reservoirs

THE RATE at which the water surface of western Iowa reservoirs dropped through 1959 was observed by H. P. Johnson and coworkers at the Experiment Station.

Reservoirs were treated with 0.1 or 0.2 pound of tetrasodium polyphosphate per square foot, or 2 pounds of bentonite per square foot. These treatments reduced the seepage rate considerably in the coarse loess soils of western Iowa. When the reservoirs are full (at inlet level), however, at least an inch a day is lost by seepage.

This reservoir—like most western Iowa reservoirs—probably loses about an inch of water a day through seepage. Agricultural engineers are testing various chemical treatments to reduce this seepage loss.

home and family

Study Nutrients Involved in Growth

THE DIFFERENCES in magnesium deficiency when diets containing either 20 percent or 30 percent casein protein are fed to laboratory test rats are under study at the Experiment Station. Male rats have shown more severe symptoms when magnesium deficient than have females. Later experiments will look for relationships between the nutrients, magnesium and protein.

Test Relationship of Protein to Carotene Use

HOW DOES the amount of nitrogen in the diet affect the use of carotene? Researchers measured carotene use by the amount of liver vitamin A stored. Up to a point, it seems that the amount of protein in the diet is directly related to the amount of liver vitamin A stored.

There are several steps involved in the use of carotene—absorption, conversion, transport and storage. Researchers are trying to learn what effect protein has on each step. They believe that there may be a connection between protein in the diet and the amount of carotene available for absorption. Laboratory experiments to test this relationship are being conducted under the direction of Lotte Arnrich of the Experment Station.

Values Held by Iowa Homemakers Tested

FOR ADULT educational programs to be of real benefit, it is important for teachers to know as much as possible of the values held by the people they wish to teach.

Methods by which to test what is important to Iowa homemakers are being developed at the Experiment Station by Mary S. Lyle, assisted by Jermaine Folkman. They will question married and unmarried junior and senior women at Iowa State to discover differences in values by class, marital status and college.

Study Deficiency of Vitamin E in Rats

IT'S BEGINNING to look as if a lack of vitamin E interferes not only with maintenance of pregnancy but also with normal delivery of young in the rat. Rats which were fed diets deficient in vitamin E from the first day of pregnancy delivered one litter but resorbed their second litter. Rats receiving the special diets from the time of weaning resorbed their first litters. Rats which were fed the special diet from weaning, then given a small dose of vitamin E both on the eighth and ninth days of pregnancy, frequently died about the time they were to deliver. Rats receiving the same diet plus regular doses of vitamin E delivered living young.

Graded doses of vitamin E fed early in pregnancy resulted in hemoglobin concentrations near the end of pregnancy that may be related to the dose of vitamin E. When washed red blood cells from the same animals were suspended in a solution containing dialuric acid, hemolysis was related to the amount of dietary vitamin E, also. Research is under the direction of Charlotte Roderuck and Pearl Swanson of the Experiment Station, assisted by Mary Crenshaw and Mary Alice Kenney.