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Planting Corn in Sod

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Research and farmer experience have shown that corn can be grown successfully in a killed sod in the southern fringes of the corn belt, which includes the rolling sandstone and limestone derived soils of southern Indiana. The system may also work on well drained soils in central and northern Indiana.

This is how the sod planting system works. The sod, either perennial or annual, is killed with a contact herbicide about two weeks before planting. Special equipment, which leaves most of the sod mulch undisturbed, is used for planting. Cultivation is usually not required. Insecticide is limited to a band application with the planter. Fertilizer may be broadcast, banded with the planter, or both. Where corn is to be grown continuously on erosive land, a cover crop, such as rye, must be seeded in the fall. The cover crop then provides a sod mulch to plant in the following year.

Benefits

Greatest benefits of sod planting are associated with its erosion control potential. Soil loss, even on slopes of 10 to 12 per cent, is cut by 90 per cent or more when a good sod mulch is maintained during the summer growing season. This allows more intensive use of land already in row crop production and may allow grain production on land formerly suited only to pasture and forage. The additional high energy feeds can help balance the pasture program and lead to expanded livestock enterprises on many farms.

Another benefit from sod planting is more available water during late summer drought periods, a common occurrence in most of southern Indiana. Kentucky research shows 18 to 20 per cent more soil moisture throughout the growing season under a good sod mulch than with clean tillage. This may lead to increased yields with sod planting in drouth years. Sod planting allows more timely planting and lower equipment and labor costs.

Where Adapted

Sod planting maintains cooler, more moist soils throughout the growing season. While this is an advantage in late summer, it causes slow germination and growth in the spring. This early delay in maturity may reduce yields on poorly drained soils, particularly in central and northern Indiana, with shorter growing seasons. Sod planting appears best adapted on rolling loam and silt loam soils of the southern one-third of Indiana and on sands and sandy loams in northern Indiana. The practice would not be adapted on poorly drained soils.

Equipment

Sod planting can be accomplished with several types of no-plow tillage equipment which leave all or part of the residues on the surface. These include chisel plows equipped with sweeps, strip tillage with rotary tillers or wide sweep till planters and "no tillage" or slot planters. Since most sod planting advantages are associated with surface residue, planters...
which leave most of the sod mulch undisturbed would seem most desirable.

A fluted coulter which loosens soil in a 2½-inch band ahead of each planter unit has been the most popular sod planting method. Extra weight is often needed on the planter for proper penetration of the coulters in dense soils. A ribbed press wheel on planter units provides better soil-seed contact and improves germination.

Killing the Sod

Competition from the sod to the crop is eliminated during the growing season primarily by the herbicide; however, in certain tillage systems it is aided by the tillage in the planting operation. Normally these tillage operations are such that there will be little or no cultivation during the season.

Heavy sod is a good smother crop and will effectively control most annuals as well as some warm season perennial weeds. The first year of no-till planting on a heavy established perennial sod presents very little weed problem to the crop planted. The weed problem increases with the increased number of seasons out of established sod.

In our studies the yields have been related to the competition from the sod and the weeds. With this in mind, complete killing of the sod is suggested to eliminate the sod competition for moisture, light and plant nutrients until more information is available on sod dormancy treatments. As different weed species exhibit different tolerances to a herbicide so will the sods of different grass species.

Research results point to the mixture of atrazine plus parquat as an effective and compatible sod killer giving more rapid kill than atrazine alone.

These materials are cleared by the USDA for combination and single application prior to corn emergence. Generally these are applied in 30-40 gallons of carrier per acre. Liquid nitrogen or fertilizer can replace the water as the carrier. Soil type, organic matter, sod density and moisture condition following the treatment will influence the sod kill with atrazine or atrazine-parquat combinations. Alfalfa, crown vetch and timothy are not effectively controlled by atrazine-parquat. Additional herbicides are required for effective control of these and other atrazine tolerant species. A pretreatment of alfalfa with 2,4-D prior to the atrazine-parquat application will help control this species.

Investigations on annual cover crops and herbicide systems are currently under way.

Special Problems

Establishment of a cover crop after corn harvest may not provide adequate growth to prevent erosion over the winter and early spring. Early hybrids and combine harvest with artificial drying for the grain would aid the system. Seeding rye by airplane in late August, before fall rains, has proven successful for several Kentucky farmers.

Field mice and ground squirrels feeding on seed have been an economic problem in some sod planted fields. There is also evidence that such insects as slugs and armyworms present greater risk than they would in clean plowed corn fields. Farmers should be prepared with control measures for these insects.

Since the soil remains essentially undisturbed when sod planting, any applied phosphorus and potassium will remain near the soil surface. Nitrogen, a more mobile nutrient, will be moved farther down in the root zone by rainfall. With a sod mulch, corn roots are more likely to proliferate in the moist surface soil where they can effectively utilize the applied P and K. Periodic incorporation by plowing, however, may be necessary to reach top yields.