Comparison of Band Seeding and Other Methods of Seeding Legumes

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IT WOULD be difficult to estimate what percentage of the millions of acres seeded to legumes and grasses in the humid eastern section of the United States is either total or partial failures. An estimate of seeding losses would merely verify what is already known by most farmers, extension and research personnel — too many seedings are failures.

Drought, inadequate liming and fertilization, competition from companion crops and weeds, insect damage, poor seeding methods, and other factors operate alone or in combination to cause poor seedlings. Some of the reasons for seeding failures, such as drought, are not controllable practically but considerable improvement can be made in getting better forage stands as shown by Thatcher et al. (6).

Among the more common and practicable recommendations for improving seedings made with or without a companion crop are adequate liming and fertilization and the shallow placement ($\frac{1}{4}-\frac{1}{2}$ inches) of the small legume seed. Fertilizer is usually applied either prior to or at the time of seeding. If fertilizer is applied before the seeding operation, it is either broadcast or drilled, worked into the ground and the seeding is made by one of various methods of broadcasting or drilling with a grain drill equipped with a grass seeder attachment.

If a drill is used for the seeding, most forage specialists recommend that the seed tubes of the grass seeder attachment be extended to broadcast the legume seed on top of the ground behind the disks to ensure shallow seed placement. If fertilization and seeding are done simultaneously, the fertilizer and small-grain companion crops are drilled from 1 to 2 inches deep in rows 7 inches apart. The legume seed is broadcast behind the drill by extending the grass seeder tubes as described above. Cultipacking is usually advised for firming the soil and covering the seed slightly unless the soil is subject to crusting. Even with adequate fertilization and shallow seed placement as described above, many farmers still have difficulty in getting good stands of legumes because an uncontrollable factor, such as drought, may contribute to poor seedings.

Haynes and Thatcher (3) in 1950 first reported on this new method of seeding which they called "band seeding." Since that time these authors have given evidence on the beneficial effects of band seeding and adapting commercial grain drills into "band seeders." In contrast to seedlings between the row, they noted the difference in size to the delay of reaching the fertilizer bands. Soil ridges between fertilizer rows were formed by disks and seed tended to roll from the ridge into the furrow made by the disk. The drill seeded 8 pounds of legume seed per acre for each experiment. Seedings were cultipacked immediately after seeding.

1. FIELD STUDIES

Methods

Experiments designed to test the efficiency of these methods were conducted in the field during 1950 on the legumes seeded in the trials. Treatments used are presented in table 1.

Seedings were made on a Conover silt loam and a similar loam in East Lansing in south-central Michigan. The former is an imperfectly drained soil generally high in inherent fertility with good internal drainage. The northern Michigan, seedings were made on a well-drained loam sand which occupies droughty, sandy uplands and low in organic matter and strongly acid. Lime and fertilizer are required for crop production.

An 11-hole John Deere grain drill with grass seeder attachments was used. Four hundred pounds of radioactive fertilizer were drilled $1\frac{1}{4}$ inches deep in rows 7 inches apart following seeding treatments:

(a) Seed broadcast on the surface over the fertilizer rows. This was the standard for seed to be compared with experimentation.