

were allowed to dry and then broken using a vertical mower with the blades set deep enough to break up the cores but not the soil surface. The vertical mowing treatment was applied using walk behind vertical mower with the blades set to penetrate the soil to a depth of 0.3 cm. On August 11, 1987 the cultivation treatments, starter fertilizer, and overseeding were completed.

The analysis of variance on plant counts indicates that seeding rate and cultivation treatment were highly significant in the establishment of creeping bentgrass. Seeding with 4 lb/M creeping bentgrass seed resulted in significantly more creeping bentgrass than the 1 or 2 lb/M rates (Table 3). The vertical mowing treatment also resulted in significantly more creeping bentgrass while there was not a significant difference between coring and no cultivation on the establishment of creeping bentgrass (Table 4). Although seeding rate and vertical mowing resulted in significantly more creeping bentgrass both factors increased creeping bentgrass cover less than 10%. When you compare the results of this study with the first study, it demonstrates how important the use of chemicals are in the establishment of overseeded creeping bentgrass.

A third overseeding study (Study 3) was initiated to determine if intensive core cultivation and the application of Embark, applied two days following overseeding, would increase the success of overseeded creeping bentgrass. Embark has been shown to result in a thinning and a reduction in vigor of the turf, and it was believed that this thinning could be used to give the creeping bentgrass a better chance of getting established. This experiment was also designed to see how long following treatment damage from Embark would last. Intensive core cultivation consisted of two passes with the Ryan aerifier (3/8 inch tines). Following cultivation the cores were allowed to dry and reincorporated into the turf using a vertical mower. The study was overseeded by hand with 2 lb/M Pennncross creeping bentgrass and then drag matted, rolled, and irrigated as described previously. Two days following overseeding, Embark was applied at 0, 0.25, 0.5, and 1.0 lb ai/a.

The analysis of variance of percent plant cover indicated that rate of Embark did not significantly increase the establishment of creeping bentgrass. Application of Embark two days following overseeding may have resulted in a decrease in germination and establishment of creeping bentgrass (Table 5). This is more evident when you compare the Embark treatments of this study with those of the first study which had greater creeping bentgrass establishment at all rates and combinations of Embark. It also appears that intensive core cultivation did not make an adequate seedbed

which resulted in decreased establishment of creeping bentgrass.

Embark however, was successful at opening up the canopy with the 0.25 lb rate resulting in a 25% reduction in cover which lasted for about three weeks. The 0.5 lb rate resulting in a 25 to 50% reduction in cover, with recovery occurring in about 4 to 5 weeks. The 1 lb rate resulting in an unacceptable reduction in turf density, which led to a severe invasion of crabgrass.

In summary the overseeding studies conducted this year emphasize two points. First the use of a chemical herbicide or PGR to reduce the competitiveness of the annual bluegrass is absolutely necessary. Round-up and Round-up + Prograss result in the greatest establishment of creeping bentgrass but, there is a period unacceptable turf quality. The Embark + Prograss $3/8 + (34 + 3/4)$ resulted in slightly less creeping bentgrass but also resulted in less reduction in turfgrass cover. Lastly, some cultivation technique must be used in combination with chemical treatment to ensure good overseeding results.

TABLE 3 EFFECT OF SEEDING RATE ON PERCENT
CREEPING BENTGRASS (OVER87B)

<u>SEEDING RATE (lb/M)</u>	<u>% COVER</u>
1	2.6
2	2.8
4	6.8
LSD (0.05)	2.5

TABLE 4 EFFECT OF CULTIVATION TREATMENT ON PERCENT
CREEPING BENTGRASS COVER (OVER87B)

<u>TREATMENT</u>	<u>% COVER</u>
VERTICAL MOWING	6.7
CORE CULTIVATION	2.8
NO CULTIVATION	2.7
LSD (0.05)	2.5

TABLE 5 PERCENT CREEPING BENTGRASS COVER FROM EMBARK
TREATMENT AND INTENSIVE CORE CULTIVATION (OVER87C)

<u>EMBARK RATE (lb ai/a)</u>	<u>% BENTGRASS COVER</u>
0	2.7
0.25	3.7
0.50	2.7
1.0	2.7