## Seeding Orchardgrass In An Established Stand of Alfalfa

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### Introduction

Several situations arise where it would be desirable to seed a cool-season grass, such as orchardgrass, in an already established stand of alfalfa. The most common situation occurs as alfalfa stands become unproductive due primarily to a thinning of the stand. The recent development of "clear seeding" of alfalfa involving the application of the herbicides Balan or Eptam dictate that pure alfalfa must be seeded since these herbicides kill many grasses.

Many dairy farmers prefer to seed alfalfa without a grass because of the high quality forage produced by alfalfa. However, there are advantages to growing a cool-season grass in association with alfalfa (1). These advantages include:

1. Reduced soil erosion.
2. Reduced winter heaving of alfalfa.
3. Resistance to weed encroachment.
4. Reduced bloat hazard.
5. Reduced lodging of alfalfa.
6. Hay drying is more rapid.
7. More easily preserved silage.

The following experiment was conducted since little, if any research has been reported relative to the feasibility of seeding orchardgrass in an established stand of alfalfa.

### Materials and Methods

This experiment was conducted on the Purdue University Agromony Farm, West Lafayette, Indiana. The soil types on the experimental site were a Chalmers silty clay loam (typic argioquoll) and Raub silt loam (aquic argiudoll).

'Hallmark' orchardgrass was seeded on a 5-year-old stand of 'Tempo' alfalfa employing the following methods of seeding: 1) late summer seeded with a Nordsten grain drill, 2) frost-seeded in late winter, 3) early spring seeded with a John Deere Powr-Till Seeder. The dates of seeding were September 24, 1975, March 26, and April 2, 1976, respectively. The rate of seeding was 11.2 kg/ha for all methods of seeding. Tiller counts, using a 20 x 50 cm quadrat, were taken after the first cutting in 1977.

The 5-year-old stand of alfalfa had been originally seeded to study the effect of seeding rate and method of seeding on alfalfa yields (2). At the time the orchardgrass was seeded, the alfalfa population was approximately 20 plants/$m^2$ (3).

## Results and Discussion

Tiller counts of the orchardgrass were taken following the first cutting in 1977. No attempt was made to make a stand evaluation in 1976 since seedlings from the spring-seeding were slow to establish. The 1975 late summer seeded orchardgrass plots made vigorous growth in 1976 indicating successful establishment.

The data presented in Table 1 demonstrate that all methods of seeding the orchardgrass in an established stand of alfalfa were successful. It was evident from observing the plots during the growing season in 1976 that the seeding rate for the late summer seeded and the spring seeded orchardgrass was too high. Consequently these two methods of seeding resulted in excessive competition for the alfalfa.

TABLE 1. *Effect of time and method of seeding orchardgrass in established alfalfa on the number of orchardgrass tillers/m². Tiller counts were taken in June 1977.*

| Seeding Time | Orchardgrass[1] Tillers/m² |
|---|---|
| Late Summer — 1975 | 1188 |
| Frost Seeding — 1976 | 631 |
| Spring Seeded — 1976 | 950 |

Based on these results it is apparant that, in Indiana, late summer is a better time to seed orchardgrass in an established alfalfa stand than late winter or early spring. One of the factors favoring the late summer seeding of orchardgrass is the cool temperatures at this time along with adequate rainfall. In addition, adapted alfalfa varieties produced a rosette type growth during the fall months thereby offering less competition to the orchardgrass seedlings. Alfalfa makes vigorous growth during the spring months and consequently offers a great deal of competition to the young orchardgrass seedlings.

Agronomists in the Midwest often do not recommend late summer seeding of orchardgrass due to lack of winterhardiness in orchardgrass seedlings. There was no evidence of winter killing of seedlings in this experiment. Quite possibly the established alfalfa plants provided some protection to the orchardgrass seedlings.

Based on the results of this study, a late summer seeding rate for orchardgrass of 5-6 kg/ha should be adequate when seeding in an established alfalfa stand. The 11.2 kg/ha seeding rate appeared optimal for the frost seeding while 6-8 kg/ha should be sufficient for spring seeding of orchardgrass.

Some soil coverage of the orchardgrass seed was provided by the Nordsten grain drill and the John Deere Powr-Till Seeder. Based on the data from this investigation, the use of seeding equipment providing some soil coverage of the seed would appear advantageous to insuring the successful establishment of a cool-season grass such as orchardgrass in an established stand of alfalfa.

[1]Average of 3 replications.

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