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RELATIONSHIP OF AGE OF STAND AND VARIETY TO ALFALFA HAY YIELDS

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Alfalfa is used primarily in short-term rotations in many irrigated areas of southern Idaho. The alfalfa stand is maintained for only one or two crop years before it is plowed and replaced by cash crops. Profits from this system are consistently higher than when longer-term alfalfa stands are used.

Flemish alfalfas — DuPuits, Alfa, Cardinal, Emeraude, Orchies and others — are popular in short-term rotations. These varieties are noted for early maturity, rapid regrowth after clipping and late fall growth — all characteristics which generally mean increased yields. Most Flemish varieties are also susceptible to bacterial wilt but this is a less serious problem in short-term rotations. Wilt normally does not seriously reduce the stand or yield of alfalfa until after the second or third crop year.

What happens, though, if growers want to maintain the alfalfa stand for an additional crop year or two? How does the age of stand affect yield? How do the Flemish varieties compare with Ranger, a wilt-resistant variety, for stand and yield?

Some answers to these questions are provided by alfalfa varietal trials conducted in southern Idaho since 1955. These tests are centered at the Twin Falls Branch Experiment Station, with some supplemental work at the Parma and Aberdeen Branch Stations. Test plots are maintained for 3 or 4 harvest years with only three cuttings per year. A fourth cutting was made one year at Twin Falls to obtain an estimate of late fall regrowth.

Test results through 1966 are summarized in the following paragraphs.

How Does Age of Stand Affect Hay Yields?

Average yields of Ranger alfalfa (Table 1) were good in all locations through the four years of harvesting. Hay production peaked the second year and declined gradually in the third and fourth years. Stands remained excellent except for occasional winter damage from mice.

Average yields of the Flemish varieties are shown in Table 2 as a percentage of Ranger yields. In the test at Aberdeen, yields of Flemish

Table 1. Average yields of hay in tons per acre produced by Ranger alfalfa in southern Idaho, 1955-1966.

Cutting	Year of Production 1st	2nd	3rd	4th	Ave.
1st	2.63	2.90	2.81	2.80	2.79
2nd	2.27	2.21	2.25	2.26	2.25
3rd	1.63	1.81	1.32	1.17	1.48
Total	6.53	6.92	6.38	6.23	6.52

Table 2. Yields of varieties of Flemish origin expressed as percent of Ranger: 1956-66 data from Aberdeen, Parma, and Twin Falls.

Location and Years	Year of Production			
	1st	2nd	3rd	4th
Aberdeen 1958-61	94	92	98	
Parma 1962-64	126[1]	112	104	
Twin Falls 1956-58	93	88	95	
Twin Falls 1960-63	104	96	102	93
Twin Falls 1960-63	104	101	108	107
Twin Falls 1963-66	102	97	82	46
Twin Falls 1963-66	109	101	98	49
Twin Falls 1964-66	102	102	68	
Average	104	99	94	74

[1]/Seedling Year

varieties were lower than Ranger each crop year. The reverse was true at Parma where Flemish varieties outyielded Ranger, particularly in the first year which, in this test, was the year of seeding. Bacterial wilt apparently was not a factor in the tests at either Aberdeen or Parma.

At Twin Falls, the Flemish varieties showed different patterns of performance. In some tests (Case 1, Fig. 1), yields equaled Ranger throughout. In others, yields of the Flemish varieties dropped sharply after 2 years (Case 2) or 3 years of harvest (Case 3). The decreases ranged from 32 to 54 percent and occurred suddenly rather than gradually. As a result, total yield for the life of the stand was much less for the Flemish varieties in these cases than for Ranger.

Yield decreases were caused by bacterial wilt damage to the alfalfa stands. In these plots, stands ranged from 80 percent down to only 10 percent of the original stand after 2 or 3 years of hay production.

What Does This Mean For Alfalfa Producers?

These tests emphasize the need to use bacterial wilt-resistant varieties if you plan to keep the alfalfa for more than two years of hay production.

Bacterial wilt decreases stands and yields of Flemish varieties. Damage appears so suddenly that a good stand in the fall is no guarantee of good yield the following spring. You can expect two years of good hay production from the Flemish varieties, but you are gambling if you try for the third or fourth year of production.

In short rotations, Flemish varieties offer advantages. Their earliness, ability to recover

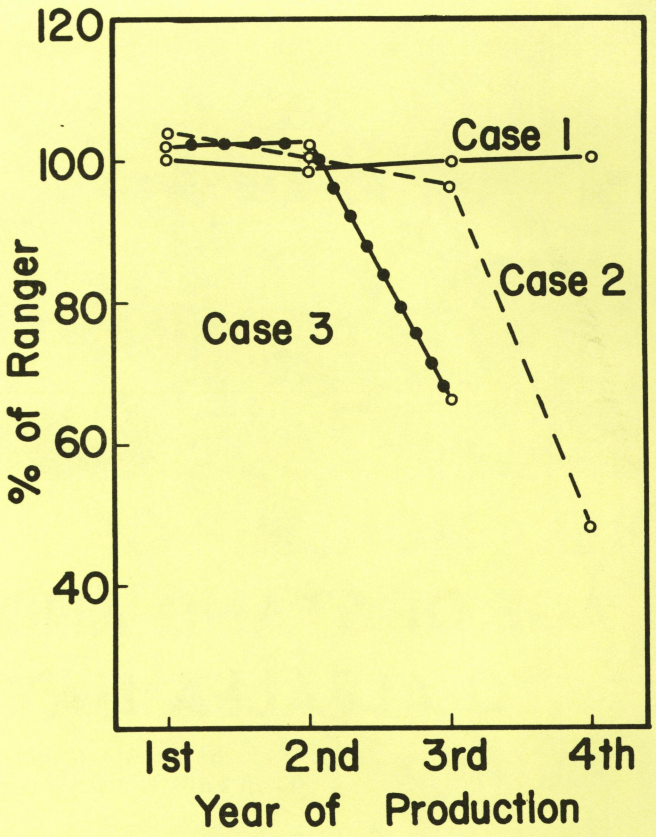

Figure 1. Effect of stand age on yield of Flemish alfalfas, expressed as percent of Ranger; 1956-66 data from Twin Falls.

quickly after cutting and later fall growth may mean increased production. The varieties also have considerable resistance to foliar diseases and more tolerance to green pea aphid than many other varieties.

Flemish varieties are susceptible to stem nematode and spotted alfalfa aphid as well as bacterial wilt. Any of these will make it difficult to establish and maintain alfalfa stands. Spotted alfalfa aphid is of little concern in Idaho now. But stem nematodes are a serious problem in some irrigated areas.

These results were obtained from a three-cutting system of management. Under a four-cutting system, yield advantage of the Flemish varieties would probably be higher. Stands would also weaken sooner. The fourth cutting is a late fall cutting which reduces food reserves and makes the plants more susceptible to winter injury.

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