The Influence of Spring-clipping, Interval between Cuttings, and Date of Last Cutting on Alfalfa Yields in the Yakima Valley

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The time of season and frequency of removal of alfalfa top growth has been shown by several investigators (1, 2, 4) to influence the vigor and future productivity of the stand. Most reports on alfalfa management have come from the Midwestern states where alfalfa is not as well adapted as it is in the irrigated regions of the West. Graber and Sprague (2) have shown that the deleterious effect of cutting alfalfa at a critical time in the fall was greater on a soil of moderately low fertility than it was on a soil of optimum fertility. Management practices not suited to areas where alfalfa is not well adapted may be safe to use where alfalfa is well adapted.

Alfalfa dehydrated to supply carotene in poultry and livestock rations is necessarily harvested at a more immature stage than is customary in hay making, to produce a product of a quality high enough to meet market standards. As the dehydrating season progresses, the first crop of alfalfa becomes too mature to produce a quality product, and the second crop has not made enough growth to be harvested. Hence there is a period when alfalfa of the right maturity is not available for drying. Spring clipping is an obvious way to delay maturity of the first crop. The processing season is usually extended as late in the fall as weather conditions permit. These practices, with the possible exception of spring clipping, are hazardous in the Midwest, according to management studies conducted there.

The climate of the Yakima Valley is characterized by low rainfall and high light intensities during the growing season. Nelson (3) has presented weather data from the Irrigation Experiment Station, Prosser, Wash.

This paper reports the results of a study conducted at the Irrigation Experiment Station from 1947 through 1949 on the influence of spring clipping, interval between cuttings, and date of last cutting in the fall on Ladak alfalfa seasonal production and on production in subsequent seasons.

Materials and Methods

A field of Ladak alfalfa with a uniform stand in 1946, was selected for the cutting schedule in 1947. The soil in the field is of Sagemoor fine sandy loam type, well drained, and 15 to 20 feet deep.

The alfalfa was irrigated about once a month, using 24-hour applications of water in rills 3 feet apart.

All combinations of four spring clipping applications, and between-cutting treatments were made on plots arranged at random in three blocks. The spring clippings were: no spring clipping and clipping when the average height was 4, 7, and 12 inches. The intervals between cuttings were 25, 29, 33, 37, and 41 days. Each spring clipping plot was divided equally. One half was cut on September 1, and the other half left uncut. All springs on the same date at each of three cuttings in 1947 were used to give an indication of the effect of previous management practices on vigor of alfalfa.

Standard mowing equipment was used in cutting, leaving a stubble of about 2½ inches. Of the leaf area at the spring, about 60% of the leaf area remained in the clipping, and about 25% was left after the autumn cut. When the alfalfa was clipped at 25-day intervals, more leaf area was left. The amount, of course, varied with the height of the plants. The amount of leaf area left decreased rapidly as the interval between cuttings increased.

Yields were determined from a 5-foot mowing sample in the middle of the plot. The green weight was oven-dried to a sample of approximately 500 grams was saved for moisture content. All yields are given on an oven-dry-weight basis. The exception of the yield of the 4-inch spring clipping in 1947, all spring clipping yields are included in the seasonal yields.

Experimental Results

Yields of dry matter produced in 1947 and 1948 are given in Table 1. The mean squares for 1947, shown in Table 5, indicate that there were highly significant differences in the yield between plots cut at different intervals, and that the differences between the plots were not significant. There was no significant interaction between the various stages in the spring and the different intervals in the autumn. Spring clipping had no effect on seasonal yield in 1947.

The 1948 seasonal yields were adjusted to the last date of cutting in 1947 had a definite influence on yield that year. The last cutting date was February 21, 1950.

Table 1. — 1947 seasonal yield of dry matter for Ladak alfalfa cut at various intervals for each spring clipping treatment

<table>
<thead>
<tr>
<th>Interval between cuttings</th>
<th>Yield (tons/acre)</th>
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<tbody>
<tr>
<td>25 days</td>
<td>7.069</td>
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<tr>
<td>29 days</td>
<td>7.069</td>
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<tr>
<td>33 days</td>
<td>7.069</td>
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<tr>
<td>37 days</td>
<td>7.069</td>
</tr>
<tr>
<td>41 days</td>
<td>7.069</td>
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</tbody>
</table>

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