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ROTATIONAL GRAZING OF IRRIGATED PASTURE  
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Greater production by the pasture and greater consumption by the grazing animals should be the aim of every dairyman using improved pastures. Management practices will greatly influence both of these factors. Any management practice which will tend to increase the total growth of pasture forage and improve the palatability of that forage should be followed carefully.

Rotational grazing is that system of grazing wherein the total pasture acreage is divided into smaller fields and these fields grazed in succession. Each field is given a definite growing period. The size of each field will be determined by the number of animals to be pastured on it at any one time. Four to five days is a good average time to be used to harvest the forage from a given field by dairy cows. Ten to twelve cows will harvest the forage from one acre in five to six days when a three to four-week rotation schedule is used on very good pasture.

The interval between the grazing of each field will depend upon how rapidly the forage grows. Under average conditions this period will be three to four weeks. In the early part of the pasture season growth may be more rapid and grazing periods may be more frequent.

The only added cost in rotational grazing is the additional fences and this will be a small part of the value of the increased yield. When electric fencing can be used it will be cheaper and the size of the fields can be easily changed to meet the specific needs.

The following data were obtained from two years' experimental work with irrigated Ladino clover and grass pasture.

Experimental Data

Seven plots of 100 square feet each were measured off in a continuous row. The plots were protected from grazing and clippings were taken at intervals of one to seven weeks. The one-week plot was clipped every week and the two-week plot every two weeks and so on. At the beginning of the pasture season all plots were clipped on the same day. All plots were clipped on the last day of the pasture season.

In 1939 the pasture period was for 210 days, beginning April 7 and ending November 3. In 1940 the pasture period lasted 203 days from April 12 to November 1.

TABLE 1. Green Forage Yield in Tons per Acre for Pasture Season

	Interval of Clipping by Weeks						
	1	2	3	4	5	6	7
1939 - Tons per acre	10.8	17.1	20.9	24.4	26.0	22.1	24.5
1940 - Tons per acre	9.8	13.8	17.7	20.6	18.6	22.3	22.6
Average	10.3	15.4	19.3	22.5	22.3	22.2	23.5

TABLE 2. Percent Dry Matter and Protein in Pasture Forage

	Interval of Clipping by Weeks						
	1	2	3	4	5	6	7
1939 percent dry matter	21.85	20.41	19.48	19.03	17.33	20.22	19.71
1940 percent dry matter	23.25	20.59	20.06	23.78	22.42	21.35	26.09
Average percent dry matter	22.55	20.50	19.77	21.40	19.37	20.78	22.90
Average percent protein	19.47	21.04	19.55	18.14	18.44	17.21	15.36

TABLE 3. Tons of Dry Matter per Acre for Pasture Season

	Interval of Clipping by Weeks						
	1	2	3	4	5	6	7
1939 Tons per acre	2.34	3.49	4.07	4.64	4.51	4.47	4.83
1940 Tons per acre	2.28	2.84	3.55	4.90	4.17	4.76	6.00
Average tons per acre	2.31	3.11	3.81	4.77	4.34	4.61	5.41
Alfalfa hay equivalent in tons per acre	2.5	3.4	4.2	5.3	4.8	4.9	5.9

### Discussion

The pasture in which these plots were located was seeded in the fall of 1937 with Ladino clover. In 1939 the amount of clover in the stand in the experimental plots was considerably less than the previous year. During this year the plots averaged fifty to eighty percent Ladino clover. The bulk of the grass was Italian and English rye with native mesquite grass.

During 1940 the forage samples varied from thirty to forty percent Ladino clover. The Ladino clover seems to grow more rapidly than the grass during the first two or three weeks after clipping or grazing. At the six

and seven-week stage of growth, the grass begins to gain in growth and the result is a higher percentage of grass in the more mature forage.

The percent of protein decreases with maturity of the forage. The maximum percent of protein was reached in the second and third weeks of growth. Efforts should be made to obtain the greatest total yield of protein rather than the higher percent found in very immature forage.

These pastures were treated with three hundred pounds of eighteen percent superphosphate in the spring of each year. Lime was applied in 1940 at the rate of one ton per acre.

Table 1 shows that the maximum green forage yield is reached between the third and fourth weeks. Table 2 gives the percent of dry matter and the percent of protein in the forage harvested at different intervals of growth. Table 3 indicates that the greatest yield of dry matter is reached between the third and fourth weeks of growth. While the seventh week shows a favorable yield, the protein and palatability are low.

A greater yield results under rotational grazing because the cows graze more evenly without leaving as many clumps to mature and reach an unpalatable stage. Rotational grazing prevents overgrazing which would tend to cause a yield such as that obtained under one and two weeks' clippings.

#### Summary

1. A pasture supplying adequate forage in the middle of the pasture season will produce a large excess tonnage during the first months of pasture. This excess can best be used as silage.
2. Maximum yield and total protein are obtained when forage is harvested between three and four weeks of growth.
3. Forage is most palatable and more readily grazed up to and including the four weeks' growth.
4. Two weeks' growth gave 49 percent greater yield; three weeks', 87 percent; and four weeks', 118 percent greater yield than the one week growth.
5. Four weeks' growth gave 46 percent more yield than two weeks' growth.
6. These data would indicate rotational grazing every three to four weeks would result in maximum pasture yield. During a very favorable growing period, two to three-week grazing periods may be practicable.

7. The number of acres in each pasture and the number of cows grazing should be in a ratio that will allow four to five days' grazing on each pasture each grazing period.
8. One and two weeks' forage growth is usually too short to allow maximum grazing.
9. The yield from five, six and seven weeks' clipping tended to approximate the four-week yield but the palatability and percent protein is much lower.