

# Irrigated Pasture Usage

**study records show dairymen can improve profits through better use of pasture**

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**Maximum use of pasture** as a basic feed for the dairy herd reduces feed costs and increases profit.

Dairy management study records show clearly the advantage of using more pasture and less hay and other forms of roughage.

Seventy-nine dairy records—for the years 1947 and 1948—in the San Joaquin Valley showed varying quantities of pasture used per cow. Those using more pasture had lower costs and greater profit, as shown in the accompanying table.

Pasture is measured in animal-unit-months. An animal-unit-month is the feed required for one mature head of cattle—or its livestock equivalent—per month. It is further defined as furnishing 400 pounds of total digestible nutrients, or the equivalent of 4/10ths of a ton of hay.

Dairymen coöoperating in these management studies carefully reported the use of pasture by cows and young stock each month. The pasturage used during the year was computed in animal-unit-months per average cow. Most of the pasture used was irrigated permanent pasture, but there was some natural pasture and pasturing of crops such as alfalfa, sudan grass, and barley.

In both market milk and manufacturing milk dairies the savings in feed costs through using more pasture were largely reflected in additional management income or profit. This is because feed harvested by stock costs much less than the hay, silage and green feed harvested and fed by high-cost man labor and equipment.

Most of the dairy records in this study show the pasturage obtained per acre of irrigated pasture far below that which would ordinarily be obtainable. Pasture studies in the San Joaquin and Sacramento valleys show yields of 12 animal-unit-months of pasturage per acre during a year to be easily obtainable, yet half of these records had yields between five and 10 animal-unit-months per acre. Figures varied from a low of 3.9 to a high of 17.8 and averaged 10.8.

Yields as high as 30 animal-unit-months have been obtained in southern California with its longer growing season.

## Mixtures

For best results with dairy cattle, about 45% of the forage in the irrigated pasture should be legumes, such as clovers, trefoil or alfalfa. The rest should be

grasses to provide the necessary roughage and to avoid bloat.

Ladino clover is the best basic legume for shallow, dense soils, but there are places, or perhaps even parts of fields, where narrow leaf trefoil would be better. This legume stands salinity and poor drainage. On deep soils trefoils and alfalfa are recommended.

Several varieties of grasses should be used in the mixture, since each has its preferred season of growth. The ryegrasses grow in winter and spring, while orchardgrass and Dallisgrass are summer growers and Alta Fescue grows from late spring on through to late fall. Winter growing grasses such as Tall Oatgrass, Harding, and Prairie Bromegrass are being tried experimentally to increase the winter feed available.

## Grazing and Stocking

A common cause of low yields is overstocking. Overgrazing and overstocking not only result in lower total production, but upset the legume-grass balance and may weaken some grasses and kill out alfalfa.

Pastures should not be grazed below  
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**Pastures may be cropped evenly by rotating grazing stock from field to field with aid of electric fences.**



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Not only has the incidence been increased by selection from one to two to over 90%, but the severity of expression has also greatly intensified in the crooked toe line. There is no doubt concerning the hereditary nature of the deformity in view of these results and of data from other experiments conducted.

Although there is no evidence at present that crooked toes, even when the expression is severe, have an adverse effect on productive qualities—including fer-

#### Per Cent Incidence of Crooked Toes

Year	Production line	Selected crooked toe line
1943	2.19	
1944	0.28	14.7
1945	1.86	42.3
1946	0.75	63.3
1947	1.42	88.2
1948	5.00*	97.1
1949	1.72	94.0

\* This increased incidence may be explained in part by a more exacting classification.

## PASTURE

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five or six inches lest there be insufficient leaf area for rapid regrowth. Also internal parasites are largely concentrated near the ground. If grazing stock keep the pasture closely cropped they tend to pick up more parasites.

A good way to utilize irrigated pasture on dairy farms is to have seven or more fields and rotate the grazing stock from field to field. Cattle are thereby concentrated in a field in sufficient numbers to crop the pasture evenly to the proper level in a day or two and then are removed to a different one so irrigation and regrowth may take place.

Dairymen, who put the milking herd in a fresh pasture each day or two, suffer less decline in milk production than where the herd is left in four to seven days with declining available feed. The milking herd is followed in each field by the dry and young stock.

As soon as a field is eaten down to five or six inches, stock should be removed until regrowth makes the field ready for use again. Where the basic legume is alfalfa it must be allowed to grow practically to the stage where it would be cut for hay or the life of the alfalfa stand will be very short.

Where sufficient fields are not available for such a rotation, it is important to limit the numbers of stock or the hours of use so there is always plenty of vegetation for quick regrowth. Selective grazing, tufty grass, overgrazing, and manure spots are more of a problem under constant grazing than rotational grazing.

## Irrigation

Proper irrigation is essential to maximum pasture production and maintenance of the desired mixture.

Ladino clover is shallow rooted and will suffer or be eliminated with too long a period between irrigations. Grasses feed below the clover and will be harmed by too shallow irrigations, hence frequent irrigation of moderate amounts is generally a better practice than very frequent light waterings or infrequent heavy ones.

The irrigation schedule must fit the particular soil type, the weather and the pasture mixture.

## Fertilization

Field trials in many areas show considerable response to pasture fertilization.

The use of commercial fertilizers to supplement the available manure and barn washings is increasing. In San Bernardino County both nitrogen and phosphorus have been shown to be beneficial.

Improper grazing, poor irrigation practice, and low fertility promote the replacement of desirable forage plants by weeds. Attention to the above three factors will help control weeds, but periodic mowing as needed is an essential operation in reducing weed competition.

Most productive pastures are usually mowed at least twice a year. It has recently been shown that 2,4-D will, if properly timed and applied, control many of the troublesome weeds in the Ladino grass pastures. At present, it should not

## PASTURE USE, FEED COSTS, AND PROFIT San Joaquin Valley dairies 1947-48

Number of Dairies	Market Milk Dairies		Manufacturing Milk Dairies	
	†High use of pasture	‡Low use of pasture	†High use of pasture	‡Low use of pasture
<b>Pounds of milkfat sold per cow</b>	<b>19</b>	<b>29</b>	<b>12</b>	<b>19</b>
<b>Feeds used per cow per year*</b>	<b>339</b>	<b>371</b>	<b>307</b>	<b>322</b>
Hay, tons	4.0	5.0	3.5	4.9
Concentrates, tons	1.0	1.2	.7	.9
Silage and green feed, tons	1.2	3.3	.0	2.6
Pasture, animal-unit-months	10.8	5.7	11.1	5.5
<b>Feed cost per cow</b>	<b>\$254.32</b>	<b>\$291.31</b>	<b>\$211.85</b>	<b>\$236.47</b>
Difference		36.99		24.62
<b>Management income per cow (profit)</b>	<b>\$102.33</b>	<b>\$74.02</b>	<b>\$64.05</b>	<b>\$21.81</b>
Difference	28.31		42.24	
<b>Feed cost per pound of milkfat</b>	.75	.78	.69	.73
<b>Management income per pound of fat</b>	.30	.20	.21	.07

\* Includes feed for young stock and bulls.

† Dairies having 9 or more animal-unit-months per cow.

‡ Dairies having 8 or less animal-unit-months per cow.

Standard practice now is to apply 300 pounds per acre of 16-20 ammonium phosphate in February or March to stimulate early feed production and another 300 pounds about mid-July to overcome the midsummer sag and to stimulate fall growth. Application of commercial fertilizers should be based on local trials on a particular soil.

Weeds use moisture and plant food that should go to the desirable forage species in a pasture.

be used in pastures where alfalfa or trefoil are the basic legumes.

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*Agricultural Extension Service Circular 125 "Irrigated Pastures in California" has just been revised and may be obtained from the College of Agriculture or from the local office of the Farm Advisor.*