Irrigated Pasture Usage

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

A. Shultis and M. D. Miller

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 cooperating 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 pasturage 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.

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 clover, 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 rye grasses grow in winter and spring, while orchard grass and Dallis grass 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.
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 fertility and hatchability—hatcherymen and breeders will probably wish to prevent the spread of the hereditary form of the defect in their breeding flocks. While no detailed recommendations regarding a breeding program can be made at this time, it seems probable that elimination of birds exhibiting this type of crooked toes from the breeding flock will maintain the incidence of the abnormality at a low level.

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### PASTURE USE, FEED COSTS, AND PROFIT

San Joaquin Valley dairies 1947-48

<table>
<thead>
<tr>
<th>Market Milk Dairies</th>
<th>Manufacturing Milk Dairies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>†High use of pasture</td>
</tr>
<tr>
<td>Number of Dairies</td>
<td>19</td>
</tr>
<tr>
<td>Pounds of milkfat sold per cow</td>
<td>339</td>
</tr>
<tr>
<td>Feeds used per cow per year *</td>
<td>4.0</td>
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<tr>
<td>Hay, tons</td>
<td>1.0</td>
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<tr>
<td>Concentrates, tons</td>
<td>1.2</td>
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<tr>
<td>Silage and green feed, tons</td>
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<tr>
<td>Pasture, animal-unit-months</td>
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</tr>
<tr>
<td>Feed cost per cow</td>
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<tr>
<td>Difference</td>
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<tr>
<td>Management income per cow (profit)</td>
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<tr>
<td>Difference</td>
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<tr>
<td>Feed cost per pound of milkfat</td>
<td>.75</td>
</tr>
<tr>
<td>Management income per pound of fat</td>
<td>.30</td>
</tr>
</tbody>
</table>

* 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.

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

### 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.

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.

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 moving 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 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.