

Barley is the main grain crop of the Californian State, and, as a rule, the cheapest concentrate available for feeding farm animals, hence this grain is generally used for feeding dairy cows supplementary to lucerne. In order to secure definite information as to the value of this system of feeding the Animal Husbandry Division of the University Farm took up the subject for study.

Fourteen cows in the university dairy herd were made available for this experiment the first year, and eighteen cows the second year. These were separated into two lots as nearly alike as possible with reference to breed, age, weight, and production. The animals on the experiment were placed on one side of the University Farm dairy barn, the two lots being separated by an alleyway. Two small yards were thus available. One of these was assigned to each lot. The treatment accorded both lots of cows, and the conduct of the experiment in general, was identical for all cows except as regards the system of feeding adopted. The plan of the experiment initiated in 1913 called for three periods of three weeks each, and in 1914 for two periods of four weeks' duration each. For the 1914 experiment the cows in the two lots were fed as follows: Period 1 (23rd July to 20th August)—Lot A, lucerne only; lot B, lucerne and barley. Period 2 (27th August to 24th September)—Lot A, lucerne and barley; lot B, lucerne only. The food was placed for consumption in racks and feed-boxes in the corral or yard.

While on lucerne and barley the cows ate, on the average, an equivalent of 63 lb. of green lucerne, 13·6 lb. of lucerne hay, and 5·8 lb. of ground barley per head daily, and on lucerne only 75 lb. of green lucerne and 14 lb. of lucerne hay. On the former ration they produced on the average 19·3 lb. milk and 0·73 lb. butter-fat per day, and on the latter 17 lb. milk and 0·64 lb. butter-fat.

The results of these two experiments with feeding barley to cows on lucerne show that an immediate increase in production will be secured as a result of the grain-feeding, but that this increase will not, as a rule, pay for the extra cost of the ration. On account of the increased production obtained and the increased value of the manure from grain-fed cows, as well as the favourable influence on the condition of the cows and their offspring, it may be concluded, however, that the practice of feeding grain to cows on lucerne is economically sound and may be recommended. This holds true especially for heifers and young cows, as well as for heavy-producing animals which cannot be brought to a maximum production on roughage only, even if this be as excellent and palatable a feed as green lucerne or good lucerne hay.

National Irrigation.

Irrigation in the United States has increased from less than 100,000 acres fifty years ago to about 12,000,000 acres now. In North-west Canada more than 1,000,000 acres are irrigated. In California irrigated farms increased from 25,675 in 1900 to 39,352 in 1910, and the irrigated acreage increased from 1,446,114 to 2,664,104.

It is claimed for California that the agriculture of the future will be irrigated. All of California is not arid, but if plants are to be kept green and vigorous in midsummer recourse must be had to irrigation. The benefits are not difficult to trace. It is stated that wherever one finds the most valuable crops, the highest-priced land, the most compact and the most prosperous communities, there irrigation is found. The object-lessons are many and so convincing that the trend of public opinion is towards irrigated agriculture. The farmer with a water-right knows exactly what he can do. The element of chance is eliminated, crop-failure is reduced to a minimum. If he would put the benefit arising from irrigation into a single phrase it would be "the assurance of a good crop." Go into an irrigated district anywhere in our valleys and this is the confidence expressed: "We know what the harvest will be; we can figure out months in advance the tonnage from our lucerne-fields, from our beet-fields, or our potatoes."

Under the clouds the farmer's business is a good deal of a lottery. The questions are always, "Will it rain?" "Will it rain enough?" "Will it rain too much?" "Will it rain at the right time?" and he watches the weather-signs, lies awake at night, goes through anxious days. All this is dropped when he has water at his command: he gets moisture when he wants it. His lucerne-fields needs flooding, but over there are 10 acres of sugar-beet just maturing and needing the sun to store up sweetness. The strawberry-patch wants moisture, but the orchard just now would be injured by turning on water.

But the point is the quality and certainty of the crop. He is not only practically sure of a crop each year, but the crops are always of superior quality, grading No. 1. If the year is an ordinary or extra dry one the crop, as compared with dry farming, is increased two- and sometimes three-fold.

It is said there is nothing difficult or intricate about irrigated farming, and a single season suffices to master all its details as well as to show its great advantages. Of course, for the highest success, the farmer must be intelligent and must understand the elements in the composition of the soil on his farm, the crops best suited to that soil, and the value of rotation, and he must know also how much water or how little is necessary to perfectly mature his varied crops.

It is stated that the amount of time irrigation takes is about one-third of the time that the rainfall farmer loses by rains when he ought to be working, and by bad roads when he wants to haul his stuff. The crops by irrigation (according to the United States Government) average a little more than 50 per cent. more than the crops by rainfall. Following are the census figures:—

					United States at large.	Irrigated Lands.
Barley	...	...	...	...	20·40	30·30
Oats	...	...	...	...	29·60	31·40
Wheat	...	...	...	...	12·30	19·00
Potatoes	...	...	...	...	80·80	114·30
Hay (tons)	...	...	...	...	1·28	2·16