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PERMANENT AGRICULTURE AND SOIL FERTILITY

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Permanent Agriculture Requires a Fertile Soil; Crop Rotations and Livestock As a Means of Maintaining Fertility

FARMING is the oldest occupation of man, and as long as the world lasts, agriculture will be the great fundamental industry. The soil must furnish all the necessities and comforts of life, but the soil cannot continue to do so unless the fertility is maintained.

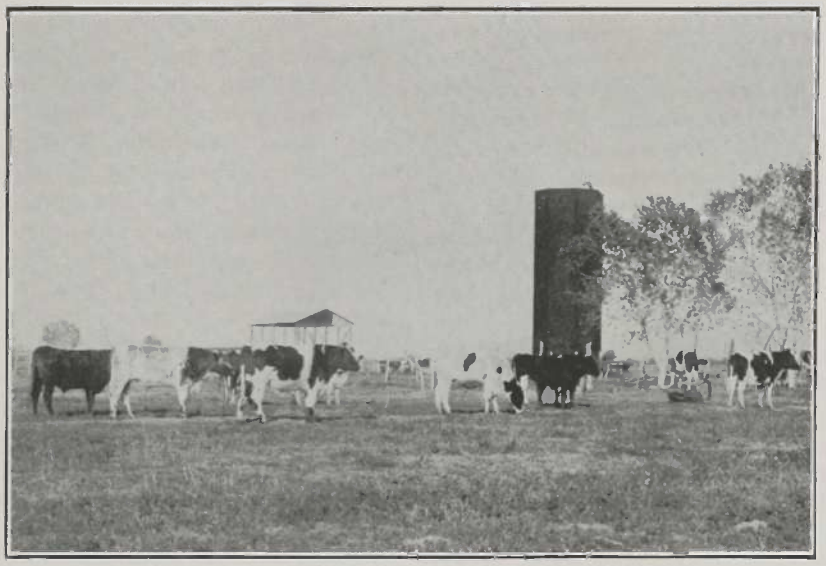
Under our system of irrigation farming with the high cost of water, labor and land, every acre should be made to produce at its maximum at all seasons of the year. This cannot be acomplished without some method of keeping up the fertility of the soil. One of the greatest sources of fertility is through the proper use of all the barnyard manure that is produced.

Where a district is handicapped by high freight rates, it should be the policy of the producers of agricultural products to plan their farm operations in such a manner that they can use all the bulky products on the farm. If these products are fed to dairy cows, fat cattle, sheep, etc., they will be marketed in a concentrated form. This will have the double advantage of reducing the marketing charge and keeping the manure at home to feed the soil.

Experiments conducted by the Arizona Agricultural Experiment Station in which the land was cropped to hegari and corn in the summer and barley in the winter, one part of the land receviing ten tons of manure per acre per year and another part receiving no extra treatment, the following yields were obtained:

Barley yields following	Hegari		Corn	
	1925	1926	1925	1926
10 ton manure	3047	3181	2774	3309
No manure	1822	1151	2675	1454
Difference	1225	2031	99	855
Percent increase	67.23	176.45	2.7	58.8

Here we have a very marked increase in grain yields on the hegari ground amounting to 67.23 per cent in the first year and 176.45 per cent the second year. The value of the increase in barley yield at $2.50 per hundred amounts to $30.60 an acre in 1925, and $50.78 in 1926. This makes the manure applied in 1925 worth $3.00 a ton and $5.00 a ton in 1926. When a farmer can secure such market increase in acre returns he cannot afford to sell the barnyard manure that is produced on the farm.



Permanent Agriculture Depends Upon Livestock

In the case of barley following corn there was not quite so marked a difference between the manured and unmanured plots although the second year there was an increase of 58.8 per cent in favor of the manure.

Where a farm is large enough to be organized for efficient production, some definite cropping plan should be worked out and followed. A well planned rotation has many advantages.

1. It allows a more even distribution of labor throughout the year.
2. It helps control weeds, insect pests, plant diseases.
3. It distributes the income over the entire year.
4. There are more sources of income.
5. Soil fertility is easier to maintain.
6. Provides better food for livestock.

A well planned rotation should provide for:

1. One or two cash crops.
2. Soil building crop to maintain the fertility.
3. Provides forage and grain for livestock.

Legume crops contribute greatly to the benefit of the succeeding crop in any section of the country where there is sufficient moisture to decay the plant growth turned under. Where sufficient livestock cannot be included in the farm plans, some green manure crop should be included in the crop rotation to keep up soil fertility.

There are a number of crops that can be used for this purpose, i. e., alfalfa, cowpeas, Tepary beans, soy beans, sweet and sour clover. Alfalfa is the greatest soil building crop Arizona has. In order to get the greatest benefit it should remain on the ground for three or four years. Cowpeas, Teparies and soy beans must be planted in the summer and should be plowed under when first setting pods, for maximum fertilizing value. Sweet and sour clover can be planted in the fall and plowed under in the late spring.