ALFALFA PRODCTION IN ARIZONA

By FRANK NICHOLS, '27

Importance of Alfalfa in the Southwest—An Excellent Feed for Cattle—A Great Soil Builder—Methods of Securing a Good Stand and Putting Up the Hay

ALFALFA is the oldest plant to be grown solely for forage, so far as known. It was first cultivated by the Greeks and Romans as early as 470 B. C. From that time on, it has been a commercial crop and in the sixteenth century was introduced into France and Southern Germany. Its development in the United States dates from 1854, when it was introduced from Chili to California. Its uses have increased by leaps and bounds, until it is now the second most important forage crop in America.

It will be well to note some of the uses alfalfa has been put to in the last few years. At the present time, the dairy industry depends to a large extent upon alfalfa as a feed. Its food value for cows is recognized all over the United States to be as high or higher than any other forage crop. It is used for rabbits, goats, horses and according to a recent issue of the Literary Digest, it is an important constituent of some smoking tobaccos.

Although highly recognized as feed, its importance as a soil builder must not be overlooked. Alfalfa belongs to the family of Legumes and has the power of taking nitrogen from the air and fixing it in the soil. This factor alone is of vast importance, owing to the fact that nitrogen is the limiting factor in nearly all soils. Therefore, it is essential that the farmers of today rotate their field crops with some legume in order that the soil may be restocked with nitrogen. Besides the nitrogen effect of alfalfa, the plant is known as a deep feeder, that is the root of the plant grows from five to thirty feet in the ground, according to the soil. In this way it is possible for the alfalfa plant to bring the fertility that is deep down, to the top, thus making it accessible to other plants and a very good green manure crop.

The following paragraphs on the production and care of alfalfa are taken from fifteen years experience in raising alfalfa on the farm of I. F. Nichols, near Tucson.

The first and one of the most important factors in the production of alfalfa is the preparation of the seed bed. When we first began to grow alfalfa, the common practice was to broadcast the seed and disk it in. But upon investigation and experimentation, we found the better the seed bed, the better alfalfa we obtained. In preparing a seed bed, the land must be leveled. It is then necessary to plow to a depth of eight or ten inches. After plowing the borders are made and the land is dragged with a board drag. An irrigation is necessary to settle the land and locate any high places that the water does not reach. When the land is dry enough, the high places are leveled off into the low places, another irrigation is then applied. Just as soon as the land becomes dry enough (not too dry), it is gone over with a light disc harrow and followed immediately with the seeder.

The seeder being a regular four inch grain drill. Seeding across the borders is the best practice because this places some plants on the borders which helps when irrigated to keep the borders from breaking over

Corn grown after three years of alfalfa—Nichols ranch.

Loading alfalfa with a hay loader on Nichols ranch.

and hold the water back so that it will soak in. After seeding, it is then gone over with a culti-packer in order to pack the soil around the seed and to prevent excess evaporation of the moisture in the soil. These operations should be started so that the seed can be in the ground by October or November. After seeding there is little to do until time to make hay.

A field should never be irrigated until the young plants are well on the way, and it is best to keep the water off as long as possible without injury. During the winter months, the young plants will make roots and if water is kept off, the roots will go down after the water, thus making a deep end extended root system.

Another important phase in alfalfa production, is the care of the field after it is established. For the first year, there is very little to be done except to irrigate and cut the hay. By the second year, the plant is strong and well established. After each cutting, the field should be immediately cultivated using preferably a spring tooth harrow or an alfalfa renovator. This allows air to get to the roots of the plants, loosens hard spots and gets rid of any weed or grass that may be in the field. The amount of water required for alfalfa varies with many factors, such as the texture of the soil, the slope of the land and the width of the borders. From our own experience, we find that the best resuts are obtained by applying at least two irrigations, and if possible three between cuttings. Our lands are sixty feet wide and average from three hundred to six hundred feet long, and have a slope of from four to six inches to the hundred feet.

The irrigation stream is about eleven hundred gallons per minute. The next important factor in alfalfa production is in the making of the hay, until the last two years, we have made use of the old style alfalfa tools, namely, the dump rake, buck rake and pitch fork. We found it impossible to make hay of any better quality than the average with these tools. After about two years of looking around we found two tools that are absolutely essential for the economical production of a high grade of alfalfa. The tools are a side delivery rake and a hay loader. Since the purchase of these tools, the quality of our hay has been improved by two to three dollars per ton. With our present equipment, our hay making process is as follows:

The proper time to cut the hay is the first thing to be considered. Many people make the mistake of cutting either too young or too old. If cut too young the plant suffers; if cut too old the quality of the hay is below par. The rule we follow, which seems to be a very good rule, is to cut when the plant is from half to three-quarters in bloom. After cutting, we allow it to lay in the field until it just begins to wilt (about two hours). It is then raked into windrows with the side delivery rake and allowed to cure in the sweat. By curing in this manner very few of the leaves are lost.

After drying from two to three days, it is then loaded on a flat wagon with a hay loader. The loader follows behind the wagon and rolls the windrows up with a very small loss of leaves.

The hay is taken to the baler which is stiuated at the barn. The hay receives its only handling with a fork in that it is pitched from the wagon into the baler by hand, from the baler the hay is stacked directly into the barn. In this manner we find that we can put up a higher grade of hay with less expense than by any other method.

In the economical production of alfalfa, we find that it is important to spend every effort possible in the preparation of a fine seed bed. After the field is established, cultivation is essential for clean alfalfa and an even growth. Water must be applied plentifully, for to spare the water means less tonnage. Lastly, proper tools are essential.

If these factors are closely observed, the cost of alfalfa production will be reduced to a minimum and a maximum quality of hay will be the result.

NOTE—The history of alfalfa was taken from Chapter XVIII in "Piper's Forage Crop."

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OUR COVER PAGE

In this issue of the Agriculturist we are showing a scene of the Gila River, taken near Christmas, Arizona, in Gila county. The Gila River rises in the Sierra Madre mountains in New Mexico, and flows in a westerly direction across Arizona, joining the Colorado about 120 miles above where the latter enters into the Gulf of California. For the greater part of its length, which is nearly 500 miles, the Gila flows through mountain canons, the sides of which are in many places so precipitous as to render the stream almost unapproachable. About 200 miles from its mouth, in a productive portion of the valley, is the reservation of the Pima and Maricopa Indians.

This river is to be dammed at San Carlos, Arizona in the near future. Plans have already been made for the construction of the Coolidge dam, which will, when completed, open up the Casa Grande valley. Many acres that are now worthless between Casa Grande and Florence will soon be converted into a productive farming district.

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The college has a new supply of the bulletin on gas engine troubles and their remedies. If you didn't get your copy, ask for E133 on a postcard addressed to the office of publication, College of Agriculture, Ithica, New York.