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UNITED STATES STANDARDS FOR ALFALFA

By IAN A. BRIGGS

The United States Standards Furnishing Improved Methods for Marketing
Hay Becoming Widely Adopted—Exactness Substituted for
Loose Descriptive Terms in Hay Grading

THE UNITED STATES hay grades have come to stay. All hay purchased by the United States army is purchased by grade. Eighteen states have adopted these standards as state standards and bills proposing such action are pending in other states. This is an indication of the favor with which these standards have been received. Federal hay inspection certificates are accepted in all courts of the United States as prima facie evidence of the truth of the statements they contain. The honest hay man, growers, dealer, or consumer, is protected by the use of the United States hay grades and the man who is not honest will find it increasingly difficult to continue in business.

The use of these standards permits a terse rigid description of hay such as was not possible under the methods in common use. The reason for this is that all the terms which must be used in the grade designations are carefully defined. For instance the term, "Coarse," when used in a grade designation means that more than 30 percent of the stems are hard and round and have diameters greater than that of No. 12 steel wire. "Very leafy" means that the leaves must make up 50 percent or more of the weight of the alfalfa. "High Green Color" means that the alfalfa must be 75 percent or more green in color.

The grades for alfalfa under the United States standards are based on leafiness, color and foreign material. Leafiness is considered the most important since the leaves contain three fifths to four fifths of the crude protein, from over one half to four fifths of the fat and most of the nitrogen free extract. When leafiness is the grading factor, U. S. No. 1 Alfalfa must contain 40 percent or more leaves by weight, U. S. No. 2 Alfalfa must have between 25 percent and 40 percent leaves and U. S. No. 3 Alfalfa have less than 25 percent leaves.



Hay must be cut and cured correctly to bring top price.

Color is also very important since it furnishes a reliable indication of the conditions and treatment to which the hay has been subjected in the curing process. The light yellows caused by sun bleach are far less detrimental to the hay than the dark yellows and browns resulting from moisture damage. Color is particularly important in marketing hay since it is an axiom among dealers that "Color sells hay."

When a shipper says that his car of alfalfa has a "good color," the must have less than 25 percent leaves. "good color" really means and his idea of the term may be quite different from that of the shipper. However, when the car is graded U. S. No. 1 Alfalfa, everyone seeing that certificate knows that the hay is 60 percent or more green in color. Hay that grades U. S. No. 2 Alfalfa must be 30 percent or more green color while that grading U. S. No. 3 Alfalfa must be less than 30 percent green, if color is the grading factor.

The amount of green color carried by a bale of hay is determined experimentally by placing a slug of the bale in a special machine which whirls the hay at a high rate of speed so that the mixture of greens, greys, yellows, browns, and reds appears as a composite color. The percent green

color can then be determined by comparing with special color cards of known color composition. The licensed inspectors are trained to recognize various percentages of color, leafiness and foreign material by the use of analyzed samples so that they can tell the various percentages very closely.

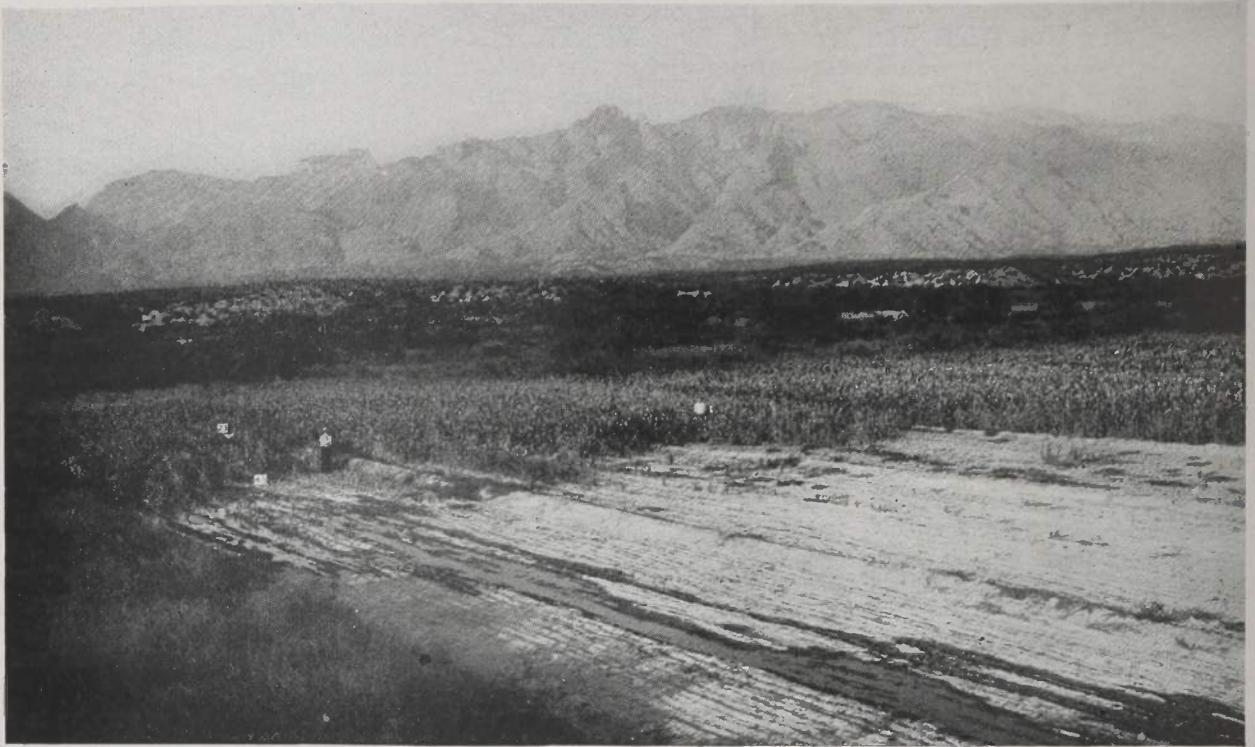
Foreign material in hay is anything which is worthless as feed for livestock such as weeds, late cut foxtail, coarse sedges and rushes, cotton stalks, stubble, and other objectionable matter. Injurious foreign material consists of sand burs, poisonous plants, wild barley or squirrel tail grass and such other matter as is injurious when fed to livestock. Hay grading U. S. No. 1 Alfalfa may contain not to exceed five percent foreign material by weight, U. S. No. 2 Alfalfa not to exceed 10 percent, while any alfalfa with more than 15 percent foreign material is graded U. S. Sample grade alfalfa. More than a trace of injurious foreign material will also place alfalfa in the sample grade.

The use of the United States hay grades is of little benefit when both the buyer and seller can see the hay at the same time. When the business must be conducted at a distance, how-

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"GYPSUM USED HERE, BEN FRANKLIN"

By J. W. McINNES, '27



It is spots like these that make or break the farmer of the southwest. This spot was later treated with gypsum with beneficial results.

WHEN Benjamin Franklin had a field of red clover on one of the main roads out of Philadelphia, he sowed on the sloping field, the letters: LAND PLASTER USED HERE BEN FRANKLIN. The words soon became famous to passersby as they stood out in relief of the deep green legume. The bearing that these words have upon the southwest is that we may make our fields respond in many cases to the same condiment that was used so

many years ago by that noted diplomat. In scarcely any field of any size in Arizona, is there not a spot which does not show up as green and luxuriant as the rest. Here lies the profit or loss in many Arizona farms. It is the unproductive acre that eats out the profit from the bumper forty. The point is that if a spot in a field is tight or heavy, it is probably due to black alkali or a complicated sodium zeolite which tends to tighten the soil on wetting and render it im-

pervious to water. A simple test by the University chemists will determine the correct procedure for one to take. The probabilities are that leeching and a light application of gypsum, calcium sulphate, will correct that spot to make it as productive as the remainder of the field. In any case it behooves every farmer to look to the unproductive of his land, for it is there that he may receive the greatest percentage increase in his profits.

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ever, the use of the federal inspection becomes of considerable importance since it insures to all parties concerned thoroughly impartial, trained judgment of the hay under consideration. Dealers or consumers can purchase hay at distant shipping points with the knowledge that if the hay is not of the grade ordered they will not have to accept it. When hay of a given grade is shipped, the shipper will know that the buyer cannot reject the hay except for a valid reason such as damage in transit or change in grade due to heating or some other condition.

Hay inspection is not a compulsory requirement under either the state or federal regulations, but is purely optional on the part of the parties financially interested in the hay. Part of the hay shipped may be inspected and part not inspected. However, the local organization under which the inspector works must agree not to use any other form of certificate inspection along with the federal inspection.

The chief objections to the use of the United States hay grades and federal hay inspection are based on four ideas: (1) that they do not accurately describe the hay; (2) that the cost of the inspection would be a useless added expense; (3) that present methods and means are ade-

quate; and (4) that their use might decrease profits by narrowing buying and selling margins.

The first objection is usually based on ignorance of the content and purpose of the standards. Hay sold under United States grades may be described just as completely as under any other kind of inspection. At the option of a financially interested party, any descriptive terms may be included on the certificate by the inspector, provided all such terms are true. The United States grades embody all the desirable features of other forms of inspection and in addition include a definiteness and accuracy heretofore impossible.

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DOES ARIZONA NEED FERTILIZER AND FEED LAWS?

By H. V. SMITH

A Little Resume—What Is Being Done in Arizona Today—What Will Be Necessary When the Time Comes—Solution Today

THE AGRICULTURAL EXPERIMENT STATION at the University of Arizona maintains a chemical laboratory where soils, irrigation waters, feeds, etc., received from farmers of the state are analyzed. Occasionally some cattleman who has purchased a large quantity of feed, paying for it on the basis of its protein content, submits samples for analysis to determine whether or not he has received the quality of feed he has paid for.

Often the feed contains less protein than the manufacturer guarantees. For example, one feed submitted said to contain 42 percent protein showed upon analysis only 37 percent. If the cost of the feed had been \$24.00 per ton on that basis it was worth only \$21.15 when valued on its true protein content. Other samples of feed have been found to fall in protein content from $\frac{1}{2}$ percent to 3 percent below the guarantee. It is for this reason that many states have found it advisable to enact laws regarding the sale and manufacture of feeds. Such laws specify among other things that a guaranteed analysis of the feed and the name of the manufacturer be printed on the sack in which it is sold. The laws are enforced by a special board, the members of which are privileged to travel throughout the state and take a representative sample of feed from any source where they may find it.

This sample is then sent to a state laboratory and a chemical analysis made upon it. If it does not live up to the guarantee another sample is taken and put through the same process. If this test also shows a misrepresentation steps are taken to remedy the situation by fining the manufacturer and by publishing the correct analysis of the feed together with that previously given by the manufacturer. Fear of a fine and exposure with the resulting loss of trade makes most manufacturers live up to their word.

Arizona has no such laws because very little finishing or fattening of cattle is done here as the majority of livestock in Arizona are found on the range.

At present there are so few cattlemen who feed cattle in the feedlot

on a large scale that it would not be justifiable to establish a board for the control of feeds because the benefits derived would not be proportional to the expense. The time may come if cattle feeding should become a major industry here when it will be necessary to enact laws to regulate the manufacture and sale of feeds in this state.

Inasmuch as the control of fertilizers is very similar to that of feeds the same board commonly assumes both responsibilities. At present there is little demand for fertilizer laws in Arizona because of the small quantities of commercial fertilizers used.

Arizona is young and her soils have not been farmed by white men for but a very few years so that the natural elements of fertility have not been drawn from the soil by cropping. Neither have the plant food elements been leached from the soil as they have been in regions of heavy annual rainfall. Of the seven essential plant food elements which come from the soil, nitrogen and phosphorous are the only two which are frequently limiting factors for plant growth in Arizona. Nitrogen is more often limiting than phosphorous. When purchased in the form of a commercial fertilizer it is very expensive and cannot be used economically for general farm crops. The most feasible and perhaps the most common method of applying nitrogen to the soil is to turn under leguminous green manure crops. Another valuable source of nitrogen is the irrigation water, some of which contains more than enough available nitrogen in the form of calcium nitrate to produce maximum crops when used for irrigating purposes. Its presence in the water is probably due to the abundance of leguminous desert vegetation growing in the region from which it came.

Although Arizona soils contain an abundance of phosphorous a considerable portion of it is insoluble and unavailable to plants. Recent investigations by the Agricultural Experiment Station have shown phosphorous to be a limiting element in certain Arizona soils. When this becomes generally known a demand not now existing may be developed.

Practically all Arizona soils contain the other plant food elements in such concentrations that the present generation of farmers will not have to give them a thought.

In consideration of the above it would seem that the small amount of feeding stuffs and fertilizers sold in this state will not warrant the establishing of control laws for some time to come, because of the heavy expense and the small number of people who would be benefited by such laws.

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The objection that the expense would be increased too much for the value derived is a common one. However, the cost of inspection averages around a dollar and a quarter per car, seldom more than ten cents per ton. The prevention of rejection on a few cars would pay for a lot of inspections. Reconsignment and resale with the loss involved can often be prevented by federal inspection at shipping points.

The general dissatisfaction among hay shippers, buyers and dealers, the lack of understanding concerning terms used and the large amount of trouble over hay shipments clearly shows that something is wrong with the present methods. If buying or selling margins are narrowed, then either the consumer will be getting his hay for less money or the grower will be getting more for his product. As a matter of fact, the direct shipments of hay from producer to consumer showed a marked increase during the past season. Individual dairymen and dairy associations in Wisconsin purchased approximately 2000 tons of alfalfa direct from producing areas in Nebraska under federal inspection certificate. At the present time, Salt River Valley hay growers are shipping hay direct to the United States army at Fort Bliss, Texas, and are selling it on United States grade.

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Be sure your alfalfa seed is free from weed seeds.

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Male birds from low-producing hens are inferior for breeding purposes.