

THE NEED AND REQUIREMENTS OF ALFALFA SEED CERTIFICATION IN ARIZONA

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Production of Pure Alfalfa Seed Means Greater Profits; Basis Of Seed Certification in Arizona



Alfalfa Production in the Yuma Valley

ARIZONA occupies an enviable position in the matter of alfalfa seed production. The yields are usually good and fairly certain. No serious diseases or insects are prevalent which cannot be controlled, and the weather during the growing season and harvesting is such as to insure a bright, well developed seed of high viability. Consequently Arizona alfalfa seed is preferred to that produced in other sections where harmful insects infest the fields. The bulk of the crop is marketed in the Gulf States, which have a comparatively mild climate. Lately, however, states further north have been buying our alfalfa seed, some going as far north as the Dakotas and Minnesota.

Arizona grows two types of alfalfa, the Hairy Peruvian, and the Chilean, or Common. Both of these types are very well adapted to growth in Southern Arizona, but lately the demand has been mostly for seed of the common type. It happens that the common type, while not as hardy

as the northern grown Grim and Baltic, is considerably more hardy than the Hairy Peruvian.

Since these two types of alfalfa have been grown in the seed districts of Arizona for the past 15 years, comparatively few of the commercial fields are sufficiently pure to justify the certification of their seed crops. It is recognized that any seed district is considerably handicapped in the market when its seed stocks are mixed and not entitled to certification. The alfalfa seed districts of the Northwest are featuring a pure seed production, and are handling their seed in such a way as to insure a certifiable product. As was mentioned above, Arizona is extending the sale of her alfalfa seed to states further north. In these states the more winter hardy Chilean, or Common alfalfa is better adapted, since it has been found that Hairy Peruvian alfalfa winter kills when the temperature falls below 10 degrees Fahrenheit for any considerable period of time. Consequently

Common alfalfa seed containing a high percentage of Hairy Peruvian seed would prove unsatisfactory in these colder states. Naturally this would hurt the sale of Arizona alfalfa seed in these districts. Apparently the major cause of this mixed condition is the mechanical mixing of the seed, both by threshing and recleaning, and by planting one type in a field containing a large number of plants of the other type which had previously been seeded to the same field. In other words the lack of uniformity of our alfalfa fields is mostly due to the simple fact that we have both the Hairy Peruvian and Chilean types growing together in the same field. There is a belief among some alfalfa seed growers that this mixture is largely due to hybridization between the two types, but data secured by the Arizona Experiment Station indicate that hybridization plays a small part in destroying uniformity as compared to mechanical mixture of the seed. In brief outline this experiment may be

stated as follows: Seed was obtained from a commercial Hairy Peruvian field in the Yuma Valley and from this seed ten 600-foot rows were planted. When the plants were about a foot high they were thinned to one plant per hill, the distance between hills being two feet. This provided about 3000 plants which was considered a good random sample of the commercial field from which the seed came. When the early blooming stage was reached and the type of each plant could be judged, 50 plants representing as many different types as could be found were caged. Care was taken to remove any flowers which had already opened. Forty-five of these caged plants produced seed from which as many progenies were grown. These progenies were grown for two years on the same plot and were carefully studied and compared. Now it is a well known fact that when hybrid seed are planted, more or less "breaking up" occurs in the resulting plants if the parental varieties possessed striking differences, such as exist in the Hairy Peruvian and Common alfalfas. Yet only one progeny out of the 45 showed any breaking up which is characteristic of hybrid plants. Each of the other 44 progenies were very uniform within themselves. Some of these progenies were typical Common, and some were typical Hairy Peruvian alfalfa, while others were inferior types such as always occur in any variety. Consequently we are forced to conclude that if no seed mixture takes place between the Common and the Hairy Peruvian alfalfas they may be grown in fields close together for at least two seed generations before hybridization will begin to seriously interfere with the uniformity of either type.

In view of these facts, what should be the basis of alfalfa seed certification? In the writer's opinion it should be based on two considerations:

- 1st. A strain of known purity of the variety desired.
- 2nd. Manner of handling of seed crop.

The first consideration in attempting to establish alfalfa seed certification by this plan in Arizona is to secure an initial seed supply of a pure strain of either Hairy Peruvian or Common alfalfa according to the desires of those interested. This initial seed supply should be furnished by either the state experiment sta-

tion or the United States Department of Agriculture, since the increase seed might be used by any interested grower as the seed becomes available. Suppose an initial seed supply of 500 pounds should be secured. This would be planted on an isolated field, and is sufficient for planting at least 25 acres. This isolated acreage would be increased until the amount of seed produced annually was sufficient for planting all new commercial fields the following season. Both the isolated fields and the commercial fields intended for the production of certified seed would be planted only on ground entirely free from other alfalfa. Only those fields which were planted with seed coming directly from the isolated fields would be certified. The seed produced on the isolated fields would be thrashed and recleaned on a thrasher and a recleaner used in handling no other alfalfa. The seed produced on the certified commercial fields would be thrashed on the regular commercial thrasher. The only additional equipment required by this plan is a new thrasher and a new recleaner for handling the seed produced on the isolated fields. The objection might be raised that the association would not be justified in keeping a thrasher and recleaner for merely handling the seed produced on the isolated fields. However, when it is realized that this would make it possible for every seed producer to secure absolutely pure seed for planting fields from which he intends to sell certified seed, it becomes evident that the cost of maintaining this extra equipment should not be charged against the isolated fields alone. Also, the question will be asked, "Why not clean out the ordinary commercial thrasher and use it for thrashing the seed produced on the isolated fields?" A commercial thrasher always carries a large amount of seed in the various parts of its interior and considerable time would be required to remove it. In fact, it is doubtful as to whether this seed could be entirely removed without taking down a considerable portion of the thrasher. Furthermore the operator of a commercial thrasher who has a thrashing crew of ten or fifteen men can not afford to take the time to do this. Another important point is that this extra equipment would make it impossible to thrash the seed of the isolated fields as soon as the crop is ready for the

thrasher, thus reducing the danger due to rain.

The plan of producing certified alfalfa seed herein proposed may be stated in its essential points as follows:

- 1st. An initial seed supply of a pure strain of the type desired.
- 2nd. Planting a sufficient acreage of this pure strain in isolated fields in order to provide an adequate seed supply for the commercial fields whose seed crops are to be certified.
- 3rd. Thrashing and recleaning the seed crops of the isolated fields on machinery used only for this purpose.
- 4th. Planting both the isolated fields and the commercial fields only on ground entirely free from other alfalfa.
- 5th. Thrashing the seed crops of the certified commercial fields on the commercial thrasher.

It will be seen that this plan of certification is based entirely on the origin and handling of the seed. In the past certification has been attempted almost entirely on the basis of the appearance of the growing plants, and, while field inspection has some value, it is not sufficiently accurate alone to form a dependable basis for identification. When a known pure strain is obtained and the seed handled in such a way as to prevent mixing, there can be no doubt as to its being entitled to certification.

CEDAR CHESTS PROTECT CLOTHING AGAINST MOTHS

Experiments conducted by the United States department of agriculture have demonstrated the value of chests made of red cedar, "Juniperus virginiana." However, to be effective these chests must contain in the body proper at least 70 per cent of three-quarter inch red-cedar lumber. The attention of the public is called to the fact that chests made of neutral woods lined with a red-cedar veneer are not genuine red-cedar chests and can not be depended upon to kill clothes moths. Experiments have proved that clothes moths can develop from the egg, through the worm or larval stage, to the adult moth in chests lined with red-cedar veneer. They cannot do this in genuine red-cedar chests that are in good condition.