

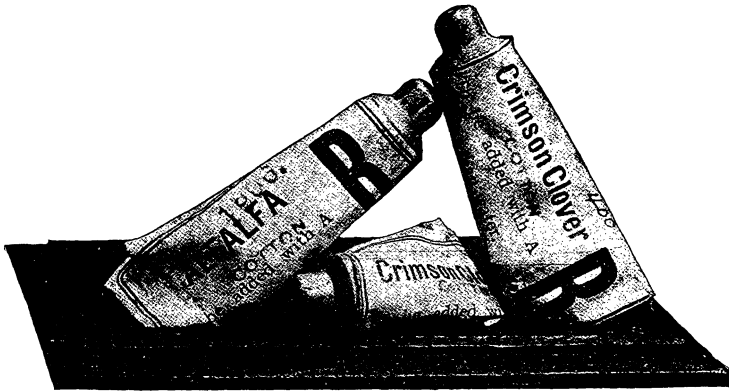
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DRIED CULTURES FOR LEGUMES UNSATIS- FACTORY.

SUMMARIZED BY

F. H. HALL

FROM BULLETIN BY

M. J. PRUCHA AND H. A. HARDING.

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BULLETIN No. 282.

DRIED CULTURES FOR LEGUMES UNSATISFACTORY.

F. H. HALL.

Previous results confirmed. By investigations reported in Bulletin No. 270, this Station showed that the cultures for inoculating legumes, on the market in 1905, were not reliable. Many examinations of packages of such cultures were made, not only in our own bacteriological laboratory but in four other laboratories; and few or no living bacteria of the kind desired were found in any case.

These results have now been confirmed by the tests made by sixteen other Stations. These tests, both in the field and in the laboratory, fail to find evidence that the cultures are of any value to the agriculture of the regions covered by the stations making the tests.

Method modified. In explanation of the results shown by the Station examinations, it was claimed, by certain sponsors for the method, that the alternation of moist and dry conditions to which the sealed packages were subjected in transit or in storage was injurious to the bacteria; but that if the cultures are placed on cotton, dried promptly and kept absolutely dry they retain their vitality for a considerable time. The company whose packages had been

*This is a brief review of Bulletin No. 282 of this Station, on The Quality of Commercial Cultures for Legumes in 1906, by M. J. Prucha and H. A. Harding. Any one specially interested in the detailed account of the investigations will be furnished, on application, with a copy of the complete bulletin. The names of those who so request will be placed on the Station mailing list to receive future bulletins, popular or complete as desired. Bulletins are issued at irregular intervals, as investigations are completed, not monthly.

examined and found valueless in 1905 took advantage of this claim and put upon the market in 1906 cultures on cotton enclosed in metal containers. These containers are collapsible metal tubes, which are closed after the cotton has been introduced, by rolling up and compressing the open end. By this device the company claims that the objections to the cultures have been met, and that the bacteria thus protected will give effective inoculation.

New tests made. If this claim be true it is but fair that the Station should give the modification as wide-spread favorable mention as it had given condemnation to the original method.

Accordingly, eighteen packages were secured for us by a disinterested farmer, which included duplicate acre packages for alfalfa, crimson clover and vetch from each of three seedsmen. The cultures for alfalfa and crimson clover were in the metal containers; but those for vetch were wrapped in parchment paper and tinfoil as in 1905.

Two careful laboratory tests of each package were made, using flasks containing water and chemicals as directed by the manufacturers and taking every precaution to give proper conditions for growth of the bacteria and to prevent contamination by undesirable forms. Two series of check flasks were also used. The flasks in one series contained water and chemicals as did the test flasks; but were inoculated with pure cultures of legume bacteria developed in the laboratory. These flasks produced abundant and pure growths of the germ with which they had been seeded, thus proving the conditions all right for growth of such bacteria. The flasks of the second check series contained water and chemicals as did the others, but were not purposely inoculated in any way. They were handled, with the exception of the inoculation, just like the other flasks and therefore were exposed to similar accidental contamination in the laboratory with undesired forms. All of them remained sterile,—good evidence that few or no undesirable germs would be introduced into the cotton-culture flasks by the laboratory manipulation.

Under such favorable conditions for testing, legume bacteria were found in the flasks from only four of the eighteen packages tested and in two of the four cases the bacteria were present in such small numbers that there would have been very little chance of successful inoculation under field conditions. In the other two cases the legume bacteria made up from 20 to 50 per ct. of the germs present, probably enough to have given some inoculation as handled by a farmer.

There was no apparent difference, so far as legume bacteria are concerned, between the packages in the metal tubes and those in paper and tinfoil; but there was more contamination with undesirable forms in the paper packages.

Conclusion. It would seem from these results that the strong claims made by the culture company for the metal containers are not at all in accord with the facts.

It should be clearly understood that this publication concerns itself only with the commercial cultures which up to this time have been exclusively those dried upon cotton in accord with the method of Dr. Moore. These cultures have proved essentially a complete failure in tests made in practically all parts of the country and it is hard to understand how any firm can feel justified in continuing to offer such cultures for sale.