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THE CHEMISTS SERVE SWEET POTATO GROWERS AND USERS

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A radio talk by Dr. Henry G. Knight, chief of Bureau of Chemistry and Soils, delivered Friday, September 30, 1932 in the Department of Agriculture period of the National Farm and Home Hour, broadcast by a network of 47 associate NBC radio stations.

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SALISBURY:

Today in the Department of Agriculture period of the Farm and Home Hour, Dr. Henry G. Knight, the chief of the Bureau of Chemistry and Soils, is going to give us the fifth of his series of fourteen reports on the present and prospective achievements of chemical research which are of service to producers and users of our chief agricultural products.

Doctor Knight tells me that this fifth talk of his series will give us facts about chemical research on the problems of sweet potato growers. You know, sweet potatoes are the second largest vegetable crop in the United States. Last year they took up 778,000 acres of mighty fine crop land, and turned out to be worth in the neighborhood of thirty five million dollars to growers. It goes without saying that they are of value to us people who eat them. For flavor and also for nutritive value they rank high. But our speaker will tell you more about that. Ladies and gentlemen, Dr. Henry G. Knight.

KNIGHT:

Thank you, Mr. Salisbury:

I know that you and the other people in the Farm and Home Hour audience will be interested in my report today on the work of the chemists who are investigating problems of the sweet potato industry. As you said, Salisbury, that industry uses nearly a million acres of crop land and brings a return that makes it an important part of farming in a good many sections.

Our chemists have been directed by Congress to find a solution for one of the most troublesome business problems of the industry. That is the problem of finding profitable use for the potatoes culled out in the process of grading for market. Growers have to cull out as high as 50 per cent of the crop of some varieties in some years. At present most of these culls are wasted.

Some men have tried canning the oversize and undersize sweet potatoes. But the product has not gained much public favor. Another possible outlet for the culls is feeding them to livestock. But our best estimates are that only about a fifth of the total amount is used in this way. Too bad, too, because the protein is fairly abundant in sweet potatoes and is of high value for correcting human diets or animal rations that contain too much of the cereal grains. So, the culls make a particularly good supplement to a livestock ration which derives most of its protein from concentrates coming from other plant sources.

(over)

But as I have said, neither feeding of sweet potatoes to livestock nor canning has solved the surplus problem.

Two years ago Congress ordered our bureau to investigate all the possibilities of making more profitable use of the great amount of sweet potato culls.

Our chemists took up at once the study of methods of producing starch from this cull material. We believed that this had possibilities as we knew that a fifth of the starch used in Japan comes from sweet potatoes. And we knew too that several years ago the South Carolina Agricultural Experiment Station had produced starch of good quality from sweet potatoes. However the South Carolinians did not have complete success in producing a prime starch of uniform quality under all conditions.

I am happy to report to you today that our chemists now have devised an improved process for producing starch of fine quality and a uniform white color from sweet potatoes. By this process as high as 18 1/2 per cent of starch has been obtained from sweet potatoes. This yield compares very favorably with the yield of starch the Germans obtain from white potatoes.

But, I can hear you saying, what are you going to do with this starch?

Well, we have investigated that point too. We find that the United States imports quite a lot of white potato starch. In 1929 we imported 28 million pounds of white potato starch. Most of this is used in the cotton textile industry. The first question we asked was if sweet potato starch could replace imported white potato starch.

Our first tests have shown that sweet potato starch is suitable for use in cotton mills, but we have not yet definitely found that it is fully equal in all respects to high grade white potato starch. Of course we are going ahead with experiments and tests to establish the suitability of sweet potato starch as a substitute. It will interest you to know the first results of the experiments indicate that we can produce sweet potato starch in this country at a very reasonable cost.

But we are not stopping there. We're going ahead to see what other products can be made from this starch. We're now working with derived products such as soluble starches and dextrans, which find wide application in industry. Further we are investigating the possibility of using sweet potato starch as sizing in the production of paper. One manufacturer already has reported that he finds it useful and economical in making kraft paper.

And as always we are working to find uses for the by-products of the by-products. One of the by-products from the manufacture of sweet potato starch is the pulp left after the starch has been taken out of the potatoes. We have analyzed this pulp and find it might be used to provide part of the carbohydrate constituent in a mixed livestock feed. The cattle specialists of the Department have suggested a formula for such a feed in which sweet potato pulp and cottonseed meal together make up more than three-fifths of the mixture.

I think you can see the advantage to the rapidly developing livestock industry of the South if such a mixed feed formula would prove successful. The

chief ingredients -- cottonseed meal and sweet potato pulp -- are produced right in the same territory so transportation costs would be low.

Also you will observe that the parts of the South that have the largest sweet potato production are the parts of the South that have the cotton textile mills. So if sweet potato starch is found to be suitable for use in these mills, it will be available at small transportation cost.

Finally, there are a few sections, such as Eastern Virginia and North Carolina, where starch producing plants would have available both white potato and sweet potato culls as raw material. This would lengthen the annual period of starch production and hence cut down the manufacturing costs per pound of starch produced.

Well, there is the story of our research on finding uses for sweet potato culls and thus opening up new sources of income to sweet potato growers.

This work on possible new markets for sweet potatoes does not constitute the only activity of our chemists in behalf of sweet potato growers. The growers of the Southeastern States this year are profiting by discoveries of our fertilizer chemists and soil fertility men. They found that by using a higher potash fertilizer and applying fertilizer broadcast over the row after the plants were set they increased yields and quality and lowered per-bushel costs of production. But I'll tell you more about results of fertilizer experiments in a later talk.

Salisbury tells me that we'll be off the air next week for the broadcasts from the Waterloo Dairy Congress but I shall visit with you again on Friday, October 14. At that time I shall report to you on our research that is of chief interest to growers and users of wheat and wheat products and to producers and users of tanning materials.

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