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AN ALFALFA SCIENCE FARM

STORY OF HOW ALFALFA IS MADE TO PAY AND ITS VALUE AS A CATTLE AND HOG FOOD TOLD BY AN EXPERT THAT ALL MAY LEARN

Continued from last week

"The higher altitudes have produced alfalfas of the highest percentage of protein content—and it is a curious fact, that I have carefully determined, that the percentage of protein is in inverse ratio to the tonnage of yield. I will guarantee you that an analysis of a ton of alfalfa grown under humid conditions, or in the South or under irrigation, will not analyze to exceed ten or twelve per cent of protein, and I am prepared to show a completely authenticated analysis of alfalfas grown on the bench lands of Montana that exceed seventeen per cent of protein. In other words, it simmers down to this: The alfalfas that are now produced in the humid regions and in the South or under irrigation have not the nutriment—the food value—to fatten stock for the market without the use of corn or other grains as supplemental food.

"I do not say that this will always be the case, for it is not unreasonable to hope and expect that, when the alfalfa growers of the humid and irrigated sections fully realize the necessity of getting food value into their alfalfa, the protein content of their alfalfas may be greatly increased; but it will not be until they realize how much this means to them.

"To develop a variety or strain of alfalfa that will carry this characteristic and maintain it to a high degree, even under humid and irrigated conditions, is one of the objects for which I am working.

"Another important problem is to determine the number of alfalfa plants to the acre that will produce the largest yield of protein. Of course an acre of land will grow and mature many more plants under irrigation and in the humid districts than here under semi arid conditions—but the fact remains that over seeding is the besetting sin of alfalfa growers everywhere especially in the dry farming districts. This I have already determined by careful and repeated experiments. Just how many plants one acre of our Montana bench land will grow to the best advantage I have not yet determined, but it will be settled soon with considerable exactness. This is an immensely important consideration for the dry farmer; its solution will mean millions of dollars to the dry farming sections of this country in the next few years, for it applies to all the crops raised there—not to alfalfa alone.

"Still another problem that I am trying to solve is the most economical and effective way of feeding alfalfa. Hundreds of thousands of dollars worth of alfalfa is wasted every year through inefficient feeding. I might better say millions. The waste by the average feeding methods that prevail on Western ranches is not far from 50 per cent, and at least 25 per cent is wasted by the more careful feeders—even by those who chop and grind their alfalfa. There is just as much for the farmer to learn in the art of using alfalfa as there is in the art of growing it. We have merely scratched the surface of both these problems so far as common practice is concerned."

Breeding Up a Leafy Plant

The only way by which the force of this statement may be fully understood is to begin, as Doctor Sudduth began, with the individual

plant. His ultimate aim was to get the greatest amount of digestible protein from an acre of alfalfa. Common sense, of course, told him that the leaves of the plant were richer in protein than the stems—but he put it to the laboratory test and determined the relative percentages. Chemical analysis showed that, though the leaves were richer in food value, even the stems or the straw carried a surprising amount of protein—generally wasted by ordinary methods of feeding. This cleared the ground for the next step—to develop by selection a strain of plant that would produce a larger percentage of leaves and a smaller percentage of coarse stems—and incidentally, if possible, to build up the percentage of protein in the coarse stems themselves. In his effort to develop a strain having a maximum of protein and a minimum of woody fiber, he was confronted with a distinct physical obstacle. Some of the varieties having the highest protein percentage in proportion to woody fiber were "trailers," that spread over the ground like purslane and could not be harvested and handled in a practical, commercial way. Those had to be discarded as working materials in his breeding work—or at least to be used with great caution, for the habit of sturdy, upstanding growth must be a fixed characteristic of the strain to be developed.

Naturally the greater the number of straws springing from one root, the finer the quality of the straws. Therefore his selection took the line of finding roots having the largest number of straws springing from one bulb, but being of upright growth.

Ver early in his experiments, Dr. Sudduth found that alfalfa, being a hybrid, would not always breed true from seed. He has, therefore, adopted the vegetative form of propagation. Fortunately the alfalfa plant grows from "slipping" as readily as the verbena. The tips or branches are cut off at a length of three inches, tied in bundles and put into a cold frame containing wet sand. From these frames they are transplanted to the nursery, which now contains one hundred acres of breeding and experimental alfalfa plants, set in rows thirty inches apart, with the hills two feet apart in the row.

Cutting for Maximum Protein Yield

Multipled experiments along this line in the propagation beds gave gratifying results as determined by the laboratory tests, but these pushed him onto another problem—that of the time of harvesting. Here his findings ran counter to the most commonly accepted traditions. The greatest amount of protein to the acre and to the smallest tonnage of hay was the object at which he was aiming, and his laboratory tests clearly established the fact that this was secured by cutting before the plants were in bud—not, as common practice has it, after the blossoms have appeared.

"We cut our fields on this basis" declares Doctor Sudduth, "and get a maximum of foliage—and, therefore, of protein—and a minimum of woody fiber. It pays in commercial results. Of course it involves at least one extra cutting a year over the old plan. My tests apply only to alfalfa grown under dry farming. It is safe, however, to make the sweeping statement that alfalfa is everywhere cut too late as a rule, to get the maximum of protein and the minimum of woody fiber.

Speaking for the humid sections, Joe Wing's rule is: Cut when small new sprouts appear near the surface of the ground." Certainly that is a safer rule than to wait for the appearance of blossoms. Only a thorough laboratory test, however, can determine this problem for the humid and irrigated sections."

The next vital phase of alfalfa growing that forced itself upon the attention of this tireless investigator, in his determination to brush away traditions and establish the alfalfa farm upon the basis of "a factory for the production of digestible protein in forage form," was that of the number of plants to the acre for the best results.

Continued next week

PROPERTY OWNERS' PLEA TURNED DOWN BY COUNCIL

At the meeting of the City Council the 23d, a petition from the property owners to have water mains laid in the streets in Ellinger's Addition, was turned down.

"The property owners there can pay their good money out for water works for the rest of the city, but as far as getting any benefits themselves from the new proposed water system they can go hang, for all the help the Council will give them," so one property owner in the Addition expressed himself.

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