

Soybeans in North Dakota

History and Development

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A northern state like North Dakota, with a relatively short growing season, low rainfall and severe winter temperatures, restricts the choice of what to grow, so the possibility of some new and supplementary crop always is of interest. While agronomists are constantly in search of new crops which might add to the security of farm income, they recognize that suitability to the area does not alone assure the desirability or success of a new crop. There also is the matter of convenience in handling, utilization, quality, competitive crops, demand and market price. Even though the new crop can be grown, and meets most of the above requirements, to have a lasting appeal for the grower it also must return him a satisfactory income. Commercial production of soybeans in North Dakota, its beginning and subsequent expansion is an interesting story which deserves to be recorded.

It began in the 1930's. Wheat and other farm crop prices had been discouragingly low for several years. Along with this wheat farmers were experiencing other frustrations. In 1934 and 1936 two seasons of crippling drouth occurred. In between these drouths — in 1935 — there occurred a damaging wheat

stem rust epidemic, with Race 56 marking the end for Ceres, the then most commonly grown and generally resistant variety. North Dakota farmers therefore were more interested than usual in new crops and their possibilities.

The rapid increase in the use of soybeans on farms in the corn belt during the late twenties and early thirties was attracting considerable attention. In Illinois the soybean acreage in 1914 was only about 2,000 acres. In 1927 the acreage was about 750,000 acres. This increasing popularity of the crop followed a somewhat similar pattern in other corn belt states, and for much the same reasons. It was the need and desire for an annual legume to substitute for the failing red clover in their cropping program that sparked the early interest. As a legume, the soybean had demonstrated that it could grow well on the increasingly acid soils in that area, and that it would provide a high protein forage which could be used either for hay, silage or even pastured. If not needed as a forage the crop could be plowed under as green manure, thus enriching the soil. In those years soybeans allowed to mature and harvested was mainly to provide seed for sowing next year's crop. Processing the seed for its oil and meal in an important commercial way was to come later.

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The nutritional value and extensive use of soybeans as a food in the Orient was well known. Possible value as a source for a high protein supplemental livestock feed also was recognized. U. S. industry, however, was reluctant to invest in the construction of processing mills without assurance of an adequate and constant supply of beans to process. By the late twenties, and early thirties, this larger supply of harvested beans seemed assured, and some processing facilities were becoming available. Where the production of mature beans in 1925 was less than 5 million bushels, there were about 14 million bushels harvested in 1930. By the late thirties the production had risen to nearly 50 million bushels.

Contributing to the interest in growing and harvesting the crop for mature beans, besides a growing market, was the big improvement in harvesting and other farm equipment becoming available in the thirties. The combine-harvester, along with other mechanized operations, permitted the crop to be harvested more conveniently and efficiently than when depending on the binder and stationary thresher. Better seed producing varieties, which became available, was another factor. With a growing demand for the products from processed beans, and an increasingly attractive market, there was a particularly large expansion in both seed production and industrial utilization following World War II.

The North Dakota farmers early interest in soybeans was not the same as in the corn belt — not as a substitute for red clover, and only slight interest as a forage crop or for soil enrichment. For these purposes field peas, which could be sown early, thrived under moderate temperatures and ripened early, were suited better to the relatively short grow-

ing season in this area. Field peas came into some use in the twenties and early thirties, particularly as a hog pasture and to a lesser extent for general forage purposes. If harvested as ripe peas, and there was no attractive market, the peas might be ground, providing a valuable high protein supplement for livestock feeding. With field peas there was a good choice of varieties, including varieties desired for commercial soups. However, the unusual drouth of 1934 and 1936 brought to a quick stop the orderly expansion of this crop, and World War II and the farming changes which followed, did not encourage its resumption. The interest and desire from then on was for a crop which could be harvested and sold for cash, supplementing or taking over some of our wheat acreage.

Could soybeans meet this need? In the mid-thirties there were many questions for which there were no adequate answers. Would soybeans mature consistently enough in this northern area and produce good marketable beans? Even when the crop matured satisfactorily could our farmers compete satisfactorily with the farm yields produced in the areas having a longer and more favorable growing season? Might there soon be an over-production of this crop, a curtailed market outlet, and so a less attractive price? Northern produced seed from early maturing varieties was generally lower in oil content (about one per cent) than the seed produced in the corn belt, thus presumably at a disadvantage when marketed.

The census report for 1934 shows soybeans grown on 36 North Dakota farms, for a total of 439 acres — presumably grown mainly for plowing under to qualify under the AAA program. The earliest known authentic commer-

cial production of seed for the market goes back to 1937. Credit for this venture goes to R. N. Belin, a good farm operator near Mantador and Mr. Adams his landlord, residing in Illinois and the owner of considerable farm land in Richland county. Presumably Mr. Adams, much impressed by the interest and success of soybeans in Illinois, wished to try this crop on some of his Richland county land and had the faith and means to do so.

My first contact with their proposed project was when Mr. Belin came to the office in the late winter or early spring of 1937, seeking suggestions as to cultural practices for that area, variety choices we could recommend, and where seed might be obtained. Having grown soybeans experimentally for some time, we were familiar with the requirements for the crop, also had some knowledge of variety requirements and performance in this area, including the limitations and risks involved because of our relatively short growing season. Minsoy, one of the earliest, yellow, good varieties then available was recommended as offering the best choice. Where seed might be obtained offered another problem. There were a few growers listed for certified seed from southern Minnesota and Mr. Belin made contact with these and obtained some seed. However, the amount obtained in this manner — less than 50 bushels — was not sufficient.

Several visits to extension agents and seed growers in southern Minnesota provided limited additional amounts of Minsoy. No Mandarin seed, the second choice, was available, but a sufficient quantity of Habaro was obtained to complete their seed requirements. Their project involved sowing about 300 acres.

In visiting with Mr. Belin during the growing season and again at harvest time, one had to be impressed with the appearance of his fields, the attention he had given to details and the judgment used in carrying out the best management practices. The result of these good practices, along with a favorable growing season, was that Belin was able to harvest an excellent crop of high quality seed, the yield averaging about 30 bushels for Minsoy and 25 bushels per acre for Habaro. It proved to be an impressive introduction of the new crop into the area. As a result there was considerable interest among neighbors, and others from a larger community, to try an acreage the following year. Mr. Belin and his landlord were to plant an even larger acreage in 1938, shifting largely to Minsoy now that a more adequate supply of seed was available. All in all, it was a most successful start.

While the growing season in 1938 was less favorable for soybeans than in 1937 — more nearly an “average” season — the crop performance was satisfactory, averaging near 15 bushels per acre. This was true also in 1939. The agricultural census for 1939 showed soybeans grown on 187 North Dakota farms, producing about 10,000 bushels. Crop estimates by the U. S. Statistical Reporting Service on soybeans in North Dakota did not begin until 1942, which was not a good soybean year, but it did show 7,000 acres planted, 4,000 harvested for seed, with an average yield of 10 bushels per acre.

During and immediately following World War II, the North Dakota soybean acreage remained fairly constant until 1949. In that year, however, 22,000 acres were planted and 20,000 acres harvested, for a seed yield of 230,000 bushels. Some

earlier ripening varieties, with capabilities of also yielding satisfactorily, became available during this period and in the early fifties. Early Mandarin and two very similar varieties — Norsoy and Pridesoy — took over some of the Minsoy acreage. Goldsoy compared with Early Mandarin in maturity and yielded about as well. Flambeau, which was earlier than Early Mandarin and could yield fairly satisfactorily, came into use in the late forties, and helped to extend production into more northern communities. Kabott, still earlier than Flambeau, lacked capacity for yield and never came into wide use. An early strain of Manchu that yielded well, with about the same maturity as Minsoy, was released for planting in the more favorable areas for soybeans in Richland county. Other new varieties coming into use during this period, and later into the sixties, included Norchief and Capital, followed by Grant, Merit, Hardome and Chippewa.

Along with the wider choice of satisfactory varieties it was possible to grow the crop over an increasingly wider area and range of conditions. Then, too, there occurred, soon after World War II, a large increase in the industrial use of soybeans for oil, meal and many by-products.

In 1946 North Dakota produced 66,000 of the 203 million bushels produced in the United States. In 1956 the production

was 2.3 million of the 455 million U. S. total. By 1966, 234,000 harvested acres produced 5.3 million of the estimated U. S. production of 931 million bushels.

The big change in utilization of the crop since the late twenties is interesting. Before 1929 only one out of four U. S. acres planted to soybeans was harvested for seed. Through the 1930's about one out of three acres was thus harvested. By 1950, however, the proportion of the crop planted and harvested for seed was more than 80 per cent, and in 1955 it was 98 per cent. Of the more than 37 million acres planted in 1966, 36.6 million acres were harvested and yielded 931 million bushels of seed.

What further expansion in soybean production in North Dakota might we expect? The growing season requirements for this crop tend to limit its use to the southeastern and eastern sections of the state. Better seed producing varieties could encourage a greater use of the crop in that area. Earlier varieties, which could mature satisfactorily in some less favorable western sections of the state, probably would not have the capacity for yield to permit them to compete successfully. However, the largest factor in determining what expansion there may be in our acreage is the future industrial demand for seed, and thus the price, which the farmer can obtain for his crop, in comparison with other crops he can grow.

