

REPORT ON THE CERTIFIED SEED
POTATO INDUSTRY IN MONTANA

Orville W. McCarver

Extension Horticulture Specialist, M. S. U., Bozeman, Mont.

In 1965, 3,727 acres of potatoes were entered for certification. Of these 3,385 acres have passed certification standards. We sold approximately one half million cwt. of certified potatoes from our 1964 crop.

We have three grades of certified seed. The Blue Tag is comparable to U.S. No. 1 grade, except for size and other adjustments to fit seed trade requirements, and the Red Tag grade is comparable to U.S. No. 2 grade. The Purple Tag, or Foundation Grade, is somewhat different, because they go on potatoes from foundation fields. Foundation potatoes must pass more rigid tests than the Blue and Red Tag grades do. We sell very few Purple Tag grade. The main reason for the foundation grade is for the growers to have almost absolutely perfect tubers for their own field plantings.

In 1965 we passed 3,385 acres. Rejections were due primarily to blackleg disease. No ring rot was found in any Montana fields in 1965. We took many tubers from hills diseased with blackleg, fusarium and soft rot, and tested them at Montana State University by black lamp and gram stain, and all were negative.

We have a very fine Botany and Bacteriology Department. The well trained personnel in that Department has given us excellent cooperation in examining tubers from certified fields.

With the exception of approximately 125 acres grown in Eastern Montana all fields received at least three inspections. Special inspections were made in some fields. In addition one storage inspection was made at every cellar.

In the Flathead Lake area nearly every grower used Di-Syston in 1965; and several growers in the cooler areas of the state used the Di-Syston. In addition to the safeguard with Di-Syston we have had two relatively cool seasons in 1964 and 1965. Neither of the past two seasons were conducive to aphid activity. All of this along with an intensive rouging program has reduced the incidence of leaf roll to near zero, and as low as I have ever seen it.

With these facts, I earnestly feel that all possible has been done to have no incidence of bacterial ring rot or any significant amount of virus leaf roll in Montana Certified Seed Potatoes.

Foundation Seed Stocks

Over one half of our growers have foundation seed stocks. They

send tubers in for winter greenhouse indexing annually. Field inspections for foundation seed are much more rigid than for Blue and Red Tag grades. We believe that this part of our program is of vital importance in controlling diseases. We will continue and strengthen this part of our certification program in the future.

Associations

There has been some complaints about several local potato associations in our state. I do not feel that such complaints are justified; instead quite to the contrary. Potato problems and those that go with the production of "good" certified seed can be tackled and met head on only by joint effort. Let us be glad that our certified seed growers meet and bring in educational help on controlling diseases and insects and alleviating many other problems which seed growers must face. Other states have Association, so why not Montana?

Potato Breeding and Improvement

Although there is a long history of potato variety and clonal selection trials in Montana, breeding work was begun only in 1958-59 so it is yet a young and developing program. The volume of seedlings being handled is much less than in some other states in the Northwest - approximately 3,000 per year.

The objectives of the Montana potato breeding program are as follows:

1. Development of a Russet Burbank type potato that is earlier in maturity and more disease-resistant than Russet Burbank, with at least equal culinary and processing qualities.
2. Development of an early-maturing, scab-resistant, red-skinned potato with quality at least equal to that of Norland.

Thus far, about 15,000 seedlings have been raised. The retention rate has been about 0.3%. None of our selections have yet been evaluated for verticillium resistance, but we hope to place a few in Dr. Hoyman's wilt plots at Prosser for evaluation during the 1966 season. It is doubtful that any of our selections will be ready for release prior to 1970. However, we have been able to make some progress in finding selections that combine acceptable yielding ability with high specific gravity and scab-resistance. Without being able to offer definite proof, we suspect that low specific gravity and scab-resistance may be genetically linked, as a good many of our better-looking, more scab-free selections have had to be discarded on account of unacceptable specific gravity.

On the more basic side of potato genetics research, we have had a graduate student investigate the relationships between a number of

wild potato species as revealed by comparative patterns of the hydrocarbons occurring in the inflorescences (determined by gas-liquid chromatography).

The synthesis of these hydrocarbons appears to be under the control of a relatively stable genetic system. Genetic control of normal-chain hydrocarbons may be different from that of branched-chain hydrocarbons. Further, the production of branched hydrocarbon chains having even numbers of carbon atoms may be controlled by a different enzyme system than that which catalyzes the synthesis of branched hydrocarbon chains having odd numbers of carbon atoms.

Species showing one very large hydrocarbon peak are in general those that taxonomists have considered as the more primitive. The general effect of polyploidy and evolutionary advancement seems to be a "leveling" of the relative amounts of material discerned in the diploids. Species which are morphologically similar but widely separated in natural geographic occurrence usually show similarity of hydrocarbon pattern (e. g. some Mexican and Argentine species). Similarly, series ecologically separated but morphologically similar show similarity of hydrocarbon pattern. (cf. Mecklenburg, Helen C., 1965. Inflorescence hydrocarbons of some species of Solanum L., section Tuberarium (Dunal) Bitt., and their possible taxonomic significance. Ph. D. thesis (Genetics), Montana State University, Bozeman).

While we have not yet been able to find a source of support for continuation of this basic research, we hope to be able to check the applicability of the results thus far obtained in terms of crossability between certain wild species and selected named commercial varieties. The first attempts at this will be in progress in our greenhouse this winter.

Commercial Potatoes

In 1965 there were less than 8,000 acres of potatoes in Montana. The 8,000 acres includes both certified and commercial potatoes. Of these, 3,727 acres, or 42 percent, were planted for certification.

Montana produces less than one-half of one percent of the nations potato crop, and there is no evidence that it will increase that figure. Therefore, our commercial tonnage is at the point of insignificance on the national scene. Oversize tubers in a certified field are inevitable, and without an opportunity to market such potatoes, our growers could not stay in business.

Our Position in the Industry

We have no large population centers such as Seattle. We have no processing plants other than chippers. We have no low freight rates, hence we are not in a competitive position to produce and sell

commercial potatoes. About the only hope in sight is the production of Certified Seed Potatoes. We look to other states for our market. We are orientated to supply the large commercial potato states with Certified Seed.

We are here today to find out what the industry wants of us, how we can improve or change to keep in pace with the fast changing potato industry.

Regional Cooperation

Potato diseases and insects have no respect for political boundaries. This makes it necessary for very close cooperation among all of us here. The certified seed grower has an obligation to ship only high quality seed. The commercial grower has an obligation to the whole potato industry and his state to keep the stock clean after he receives it.

Cooperation among officials is vitally important. We depend upon Dr. Hoyman, Mr. Bakes and others for help.

Certification officials, Extension and Research personnel can help out only when we receive factual information. During the summer months (June, July, August and September) we are busy day and night and weekends on potato certification. Why must we have to break away from essential duties and investigate situations because of false alarms? We have enough to do with factual information alone. Listening to loose reports about disease situations is interesting as well as sometimes frivolous.

Exaggerations passed by word of mouth from state to state seem to grow and grow. I am sure that exaggerations are detrimental to the whole potato industry.

Cooperation between the buyer and certified seed grower is vitally important. Certification does not remove the necessity for good understanding between the two parties -- especially in this land of free enterprise and individual responsibility.

You Certified Seed Growers must take care of the commercial growers and demand the same of them. Commercial growers must also figure on a long term basis, forever remembering that it takes time and money for a Certified Seed grower to become trained and equipped to produce good certified seed. You are not dealing with fly by night operators.

Seed buying is a form of industrial buying and not wholesale or retail buying. Each commercial grower should know:

1. The source of his seed including where they were grown, and by whom.

2. The source of his cut-seed, including where they were cut and by whom.

To find out these things the commercial grower might well satisfy himself by traveling to the fields where he expects to buy potatoes and to the place where his cut seed are being cut and transported from.

You are invited to visit Montana growers and see their fields with them. Come on over and see your grower. If you have difficulty locating him, just ask the local banker for I am sure he can give you the exact location of his farm and storage.

The Future

We must look at the potato business from a long-range standpoint. Several problems lie ahead. Perhaps you have some of the answers for them.

1. Young people are not greatly attracted to the potato business.
2. Litigations and threats of litigations against the Certified Potato grower is common talk. The Certified Seed Potato business can not and will not withstand much litigation. Certification will not survive under such threats no more than the potato industry can survive an uncontrolled outbreak of leaf roll or ring rot, and let us not fool ourselves. Everything humanly possible is being done to have the finest Certified Seed possible. In Montana we have approximately 60 Certified Seed Potato growers. They are men of high integrity exhausting every resource possible to provide you with what you are supposed to have in the line of Certified potatoes.
3. Getting enough funds for research and other facilities to keep pace with the fast changing potato industry. We are trying to increase facilities as fast as possible in Montana.
4. Adequate capital for modernization of physical facilities -- storage, equipment, etc. Modernization is a goal for nearly all of our Certified Seed growers. Some have achieved this goal, while others are striving to do so.
5. Education in marketing needs increased. More realistic pricing is needed. Some of our finest seed are sold early at relatively low prices, while some of our lower quality potatoes sold late in the season will often bring a better price than those sold early.

This was certainly the situation in 1958 when some of the lower quality stocks brought approximately \$4.00 while some of the better stocks brought \$2.00, some less than \$2.00 and some brought nothing at all. This is a problem our well trained economists may work on. It cannot be over-stressed that our problems are mutual, and that each of us has an important role to play. We are like cogs in wheels. We can and will work jointly in solving them.