

## POTATO CERTIFICATION IN BRITISH COLUMBIA, CANADA

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British Columbia produces an average of about 11,000 acres of potatoes, of which approximately 3,000 acres are entered for certification each year. This acreage is distributed in widely separated areas. For our own convenience we have divided the province into nine areas or districts. Each of these is separated from the others by mountains or water. Some of these districts are in entirely different climatic and soil zones than others. Conditions, therefore, vary from the wet coastal areas around Vancouver to the dry irrigated areas of the Interior. When we publish our field readings and results of inspection, we list these nine areas separately in alphabetical order. This has been very helpful to us as it quickly identifies the area in which the seed has been produced and we know from experience what to look for or expect in the seed from each area.

This past season seed from four of these areas was shipped into the Columbia Basin. I will first tell you something of these four areas and then a few points about the others which may be of interest to you. I might add at this point that some of the features of climate and topography that are not very helpful for general agriculture have been of great value as far as seed potatoes are concerned, as they provide the isolation and climatic conditions which are so important in the production of good seed.

### PEMBERTON

Perhaps the most important of our seed areas is Pemberton. We have long regarded this district as a supply area for our own potato growers and most of the seed you received from British Columbia last year came either directly from Pemberton or originated in Pemberton. Pemberton is an isolated valley about ninety miles from Vancouver. This valley is about thirty miles long and from one-half to one mile in width. There are steep mountains on each side. The soil is an alluvial or river silt. This soil produces excellent type tubers and Pemberton growers have won many prizes at Provincial and Canadian exhibitions.

Climatically, Pemberton is about midway between the Coast and the Interior, although winter temperatures often go to 40 degrees below zero and colder. Average rainfall is 36 inches. The mean temperature for January is 36 degrees and for July 64 degrees.

At the present time there are about thirty potato growers who produce a total of about 400 acres, all but about 10 acres being of the Netted Gem variety. Some years ago Pemberton potato growers took advantage of an Act passed by the Provincial Legislature and formed what is known as a Seed Control Area. Under the Seed Control Area regulations nobody is permitted to plant anything but Foundation seed of approved varieties. No seed may be imported into Pemberton without the approval of the Seed Control Area committee.

At one time Pemberton seed was free of leaf roll. Several years ago a lot of imported seed contained a considerable amount of this disease, which spread to some other stocks. It is now present in trace quantities in a number of seed stocks. Wherever leaf roll has been observed in even one plant, it has been recorded as a trace on our report.

A number of the better growers are now planting tuber unit seed plots and practicing selection for their own plantings. We feel that this has already resulted in an improvement. This past winter some 18 samples of 200 seed pieces were sent by Pemberton growers for winter testing in the greenhouse. No leaf roll was recorded in any sample. Bacterial ring rot has never been found in Pemberton nor in crops we know of that were produced directly from Pemberton seed. At the present time Pemberton is accessible only by rail. We hope that by tuber unit planting and careful selection Pemberton will once again be completely free of leaf roll. They have the climate, the isolation and the soil to produce a top quality product.

#### VANCOUVER ISLAND

Total potato production on Vancouver Island is about 1,500 acres, of which about 350 are classed as seed. Vancouver Island is actually part of another mountain range. Due to the rugged terrain, agriculture is largely confined to the east coast. This area, like the eastern side of all mountain ranges, has much less rainfall than the west or ocean side. The soil is generally poor. A unique situation occurs on Vancouver Island in that potato production is mainly confined to old swamps and beaver meadows which have been cleared and drained. These are scattered along 150 miles of coast from Victoria to Courtenay. Many of the farms grow nothing but potatoes and due to the fact that these swamps either flood naturally or can be flooded every winter, potatoes are grown on the same land year after year. The flooding seems to take care of all soil borne diseases and insects. Most of these farms, being scattered and generally separated by forests, have excellent isolation.

Leaf roll has been a problem on some farms but we feel that this is due to the spread of leaf roll in the seed stock itself rather than contamination from outside sources. Now that we know more about the control of leaf roll we expect that some of these farms will produce leaf roll free seed stocks. Some of them are very close to having leaf roll free stock now. Nine Vancouver Island growers sent 17 samples of Netted Gem seed for winter testing. Twelve of these had zero readings and only five leaf roll plants were recorded in the 17 samples. Bacterial ring rot has not been recorded on Vancouver Island for several years.

#### KOOTENAYS

The Kootenays represent a rather large area. Until recently seed potato farms were small and widely scattered. Several growers have long established reputations for top quality seed in limited quantities. Several years ago a land reclamation project made some 25,000 acres available for agricultural crops. This is all bottom land and is prevented from flooding by some sixty miles of dykes. It is known as the Creston Flats. The soil is very suitable for potato production and acreage is increasing each year. This past year some 350 acres were passed for seed, practically all of which is Netted Gem. Most of this stock originated in Pemberton, either last year or in previous years. Nine samples of Netted Gem from Creston were included in this year's greenhouse tests. Six of these were free of leaf roll. A total of four leaf roll plants was recorded in the nine samples.

This past year Creston growers voted to have the flats declared a Seed Control Area. This has been approved by the Provincial Government. It is hoped that this action will help maintain or improve the quality of Creston seed.

#### GRAND FORKS

Potatoes are produced in Grand Forks under irrigation. The average rainfall is about 16 inches a year. Cultivated land is concentrated mostly on relatively flat land bordering the Kettle River. Although the bulk of the potato production was sold as table stock, the area was at one time considered a Seed Control Area. However, this is no longer the case. Due to the high incidence of leaf roll the Department now has a policy of classifying Netted Gems no higher than Certified. In Canada there are two classes of seed, Foundation seed and Certified seed. Crops planted with Certified seed are not eligible for inspection. This means that for the time being Grand Forks growers who wish to produce Certified seed of the Netted Gem variety must purchase Foundation seed from some other area each year. It is hoped that by bringing new seed into the area, and by adopting measures to control leaf roll, it will be possible for Grand Forks growers to again produce Foundation seed.

#### CARIBOO

While the Cariboo is a very large area, potato production is confined to bench land along the Fraser River. Winters are severe and summer frosts are not uncommon. Potato growing in the Cariboo is a somewhat hazardous occupation. Drought and early frosts are often responsible for rough tubers and low yields. Production has remained very constant in recent years at about 100 acres. At one time it approached 550 acres and could probably be increased from its present level.

To my knowledge no virus disease, other than witch's broom, has been recorded in Cariboo seed. Certainly not in recent years. By this I mean the area between Soda Creek and Quesnel, which has been a Seed Control Area since 1947. There are crops outside this area included in the reports for the Cariboo where virus has been found, mostly, if not entirely, on imported seed.

Due to high transportation costs, Cariboo growers have been able to obtain very high prices on the local table stock market, usually \$4.00 to \$5.00 per sack. While some seed is shipped out of the Cariboo each year, the volume has not been large due to the fact that potato growers in other areas have not been willing to pay these prices, plus the cost of freight and duty if the buyer is in the United States.

Cariboo seed appears to have better than average vigor. Bacterial ring rot has never been reported either in the Cariboo or in crops produced with Cariboo seed.

#### LOWER MAINLAND AND LULU AND SEA ISLANDS

These two areas are both in the Lower Fraser Valley. We separate them because Lulu and Sea Islands are all dyked land, whereas the Lower Mainland includes both dyked land and upland soil. These two areas have nearly 60 percent of all the potato acreage of the province. Due to the concentration of acreage Lulu and Sea Islands have not produced Netted Gem seed for several years. A few growers by top killing before the flight of aphids - usually about mid-July - are producing very good seed of the early varieties.

The Lower Mainland still has a few farms with good isolation which are producing very acceptable seed, particularly of varieties suited to upland soil. A recent reclamation project in a hitherto undeveloped section of the Lower Mainland has reopened the possibility of growing top quality Netted Gem in this area. Only one potato farm is operating in this area. Last year they grew about 110 acres and will eventually have 150 acres. They are surrounded on three sides by mountains and have excellent isolation on the fourth side. Six 200 tuber samples of Netted Gem seed from this farm showed only one leaf roll plant in the greenhouse tests. This was probably from leaf roll in the seed stock which they planted rather than from outside sources. This farm is starting a program designed to produce leaf roll free stock. They have good production and can ship by truck or rail.

#### OKANAGAN

On our seed reports this area means the Okanagan Valley. A considerable acreage of potatoes are grown there, particularly in the northern part. It is not considered a good seed area and Netted Gem growers have been buying seed from Pemberton and the Cariboo. They do produce some acceptable seed of the early maturing varieties and a few growers have the necessary isolation to produce seed of the Netted Gem variety.

#### CENTRAL B. C.

This is a northern area which may develop later. At the present time they produce a small acreage of seed for local use.

As was requested by Mr. Sandar, I have attempted to tell you something of the various seed areas in British Columbia and the problems and limitations of each. This, of necessity, has been very brief. There are several other phases of our seed potato certification program which I have been asked to discuss. I will go over these very quickly.

#### STANDARDS AND INSPECTION PROCEDURES

Seed potato certification in Canada is a Federal responsibility and standards are the same for every province. There are two classes of seed, namely, Foundation and Certified. Foundation is the higher class and all fields entered for inspection must be planted with Foundation seed. Each field is given a minimum of two field inspections. The inspector counts the diseased plants and calculates the percentage of each disease. He also checks on source of seed, isolation, and other requirements which must be met before a crop is accepted for inspection. The tolerance for disease in Foundation fields planted in tuber units is .5 percent of all diseases and .25 percent for all virus. For mass planted fields these tolerances are .25 percent and .1 per cent respectively. For Certified seed these tolerances are 2 percent and 1 percent. There is no tolerance for bacterial ring rot in either class. If a single ring rot infected plant or tuber is found, all crops on that farm are refused certification. Crops are also refused certification if machinery or equipment is used which was previously used in any crop in which ring rot was found unless it was first disinfected to the satisfaction of the inspector.

### POST INSPECTION TESTING

Under the Federal certification program there is no post harvest testing. Classification is based entirely on field inspection, although the crop must be given a tuber inspection before tags are issued. Tags may be withheld if the tubers show more than 1 percent of necrosis due to leaf roll or cannot be graded due to scab or other defects.

### SEED REPORTS AND THEIR INTERPRETATION

Each year we publish a list of all crops which have passed field inspection. These are listed alphabetically, first by variety, next by district, and third by grower. These reports also give the certification number, the class, and acreage, including the acreage planted in tuber units. They give the field readings on first and second inspection, and any remarks. Every field has a certification number.

### INTERPRETATION OF TAG INFORMATION

Every tag carries the certification number of the field from which the seed originated. It also carries a date. This is the date of the last tuber inspection. In British Columbia it is not possible for us to inspect every shipment or every lot after grading. Distances are too great. Every crop is inspected in the bin. This may be, and usually is, the date on the tag. If the crop passes bin inspection the grower is eligible to receive tags. These may be delivered by the inspector or they may be sent by mail. It is the grower's responsibility to grade according to the regulations. This is stated on the back of the tag. We have the authority to refuse field inspection to any grower who does not put out a satisfactory grade. Official tags for Canadian seed potatoes are of three colors. Red tags denote large seed (3-12 ounces) of the Foundation class. Buff tags denote large seed of the Certified class. Blue tags denote a small seed of either the Foundation or Certified class. The class of seed and the variety are printed on every tag.

In conclusion, may I express my appreciation for being asked to appear on this panel and to tell you something of the seed potato areas in British Columbia and of our seed potato certification.