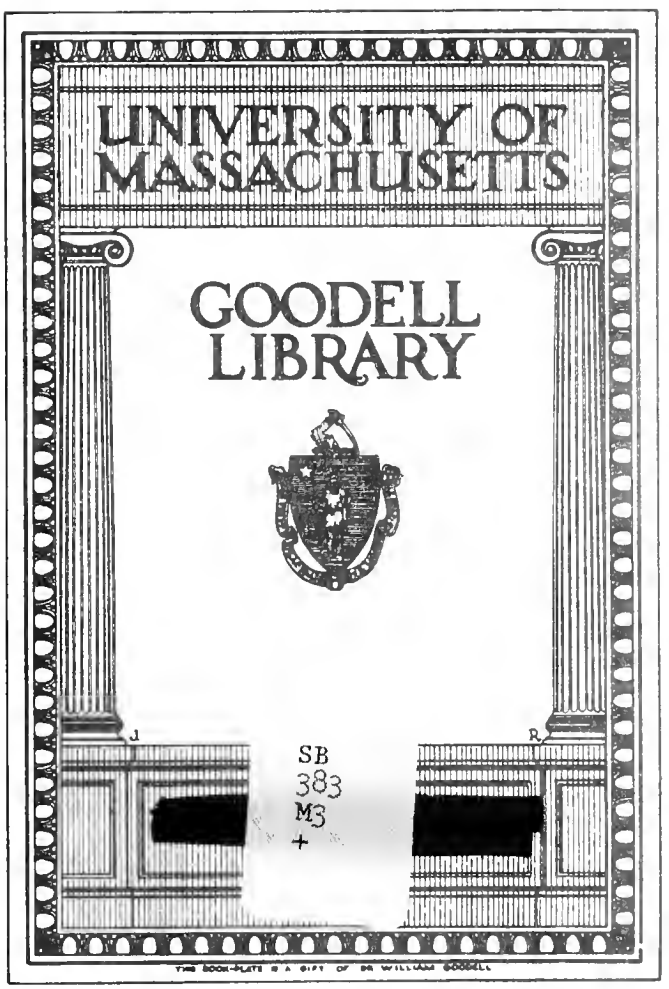
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Financing The Cranberry Crop

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FINANCING THE CRANBERRY CROP

by

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CHAPTER I

INTRODUCTION

The cranberry industry in Massachusetts, New Jersey and Wisconsin is an old one, while the industry on the west coast can measure its history in a few decades. Cranberry culture is a highly specialized phase of agriculture. Cranberry growing requires particular skills and knowledge.

The small group of cranberry producers has long been recognized as having more than average alertness and forward looking leadership. The industry flourishes in those parts of the states and on a type of land where it is not competitive with other types of agriculture. Hence, it geographical distribution is quite unlike that of any other crop.

This study covers the history of cranberry culture in the five commercial producing regions of the United States. Cranberry cultivation requires sizeable capital investments for bog construction and maintenance. From three to four years are required for a newly planted bog to mature before the grower can normally expect a return upon his investment. The normal value of cranberry bog acreage is very high when compared with the value of the acreage devoted to other specialized branches of agriculture. Successful cranberry cultivation requires great care in selecting the proper location for the bog. The marsh land used must be highly acid, the water supply slightly acid, the humus of considerable depth and the source of loam free coarse sand accessible nearby.

The cranberry harvest is described from the picking of the fruit to its preparation for the market. Suggested ventures for the cranberry grower into the production of an interim crop, which would enhsnce the value of the property and be a source of additional income are presented for the consideration of the industry at large.

The production and marketing of the crop is portrayed as it existed in the stabilized market of 1951. It is beyond the intent of this paper to dwell upon the problems which faced the industry in recent years principally because of large crops. The marketing of these crops presented problems, however, these problems were greatly intensified by the actions of the people within the industry. The cranberry industry has been dominated by a few

individuals, whose actions apparently were not always for the common good of the industry. There exists in the industry today, especially between the principal cooperatives, a great rivalry for new members in order to control their crops. The problems between the cooperatives are accentuated by the clash of personalities of their leaders.

The creation of the Cranberry Growers' Council was the result of a compromise between the cooperatives. The Cranberry Growers' Council is empowered only to make recommendations to the cooperatives. The cooperatives and the great majority of the independents followed the Council's recommendations during the last crop year, which resulted in a stabilized market. Since the cooperatives cannot find a common ground for consolidation, they have approved extending the life of the Cranberry Growers' Council for another year.

The writer has not made use of any observations or information obtained in the course of examing banks, unless specific permission for such use was first obtained from the banks. The information pertaining to the financial aspects of a great part of the cranberry industry is public information. The writer has set down for the use of the bankers throughout the country, who are engaged in extending credit to the cranberry grower, a realistic method of approach in appraising cranberry bog property. This appraisal method weighs the many factors involved in arriving at a fair normal value for loan purposes.

In most all agricultural endeavors there is a common denominator - the struggle with the natural elements. The cranberry industry is much better prepared to cope with these elements than are some other branches of agriculture. The industry has developed effective tools for frost prevention and the control of some insects. The degree of control sought in controlling the natural elements, which are harmful to the industry, has a direct relationship upon the net returns to the cranberry grower.

The future outlook of the industry is predicated upon the continuance of a stabilized market. The cranberry industry appears upon the threshold of a bright and prosperous future. Cranberry cultivation, if forces within the industry act for the common good, will once again become the profitable industry that it formerly was. If these forces pull away from the organized effort to market the crops, they can easily wreck the cranberry industry as it exists today.

CHAPTER II

ECONOMIC IMPORTANCE OF THE CRANBERRY INDUSTRY

The industry is comparatively compact as to the number of primary operators and as to the total of bog acreage under cultivation. It is estimated that there are slightly over two thousand cranberry growers in the nation.[1] These growers cultivate 27,020[2] acres of cranberry bogs, with the other acreage used for sand banks and water facilities estimated at over 300,000 acres not taken into consideration. The land brought into use for cranberry cultivation is for the most part submarginal in quality, being composed of swamp and bog lands; hence, it does not enter into competition in land utilization with any other agricultural crop. Clarence Hall, editor of the trade magazine "Cranberries," estimates that the cranberry industry gives employment to more than 40,000 people throughout the season; surely then, the regions where cranberries are grown would be economically poorer without this form of agriculture. In the final analysis, we are dealing with a fruit that is primarily a luxury item in our diet, nevertheless, through tradition, custom and advertising a demand has been built up over the years to a point where the markets of this country and Canada consumed the 1950 crop of 984,300 barrels.[3] The ten-year average return to the growers (1938-1947) from these crops was better than $11,800,000.[4]

Two-thirds of the world's supply of cranberries is grown within fifty miles of Plymouth Rock in Massachusetts. In a difficult situation now following a sizeable war expansion

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[1] "Cranberry Skin Keeps Its Shine A Fair Parable," Food Marketing in New England (November, 1946), Vol. 7, No. 3, p. 1.

[2] United States Department of Agriculture, Agricultural Statistics, 1950, Table 247, p. 205.

[3] United States Department of Agriculture, Bureau of Agricultural Economics, Release, January 4, 1952.

[4] United States Department of Agriculture, Agricultural Statistics, 1950, loc. cit.

cranberry growers are bothered by prices which are less than one-third of parity, by the shortage of tin cans in which more than half the crop is packed, and by higher production costs this year. The grower's income in 1950 was said to be only one-half his expenses.[5]

The opening price per barrel for the 1951 crop, set by the American Cranberry Exchange, was $15.00. The market was stabilized at the opening price and remained that way throughout the season, and at times reached $20.00 a barrel. The 1951 crop of 932,500 barrels was the third largest on record, being surpassed only by the 1946 and the 1950 crops. Almost all the cranberries are sold by two national cooperative organizations which push their products by vigorous advertising and merchandising. Despite the uncertain transition, growers are confident the future of this highly compact industry looks brighter.

The cranberry industry, during the past season, succeeded in working off its heavy carry-over of earlier crops, and wound up in good condition. Aggressive advertising and marketing by the two cooperatives were responsible in 1951 for reducing inventories.[6] The degree of success in disposing of this year's crop in its entirety will leave its impact upon the growers of Massachusetts, New Jersey, Wisconsin, Oregon and Washington. Today, leaders in the industry foresee a shortage of processed fruit for the "off-season" months. The Cooperatives expect that they will have to ration the available supplies during the summer months. If their predictions are borne out, the industry will face the coming season with a strong, steady demand, provided they do not set their opening prices too high and let competition from within the industry once again upset the market. These leaders in the industry are planning for a 1,000,000-barrel crop. The immediate future looks bright for the cranberry industry, provided that the various groups within the industry do not once again fall back into the disastrous errors of the past few years. Cranberries can now be considered a thirty million dollar industry.

The Cranberry Plant

The Indians had a word for the bright red berries that provided Cape Cod tribes with fruit and medicine - sassamanesh. These berries probably have always grown here in the wild state.

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[5] "The New England Farmer in 1951, His Position, His Problems, His Prospects." New England Newsletter, June 1951, No. 327, p. 17.

[6] "New England - 1951," New England Newsletter, December 1951, No. 333, p. 18.

The writer observed some few years ago that wild cranberries grew far back in the fastness of the deep Maine woods. A natural patch at Gay Head, on Martha's Vineyard, sanded and watered by the ocean, has been producing annually as far back as there is recorded history, and probably well before the white man came. By an act of the General Court of the Commonwealth of Massachusetts, these cranberries are for Gay Head Indians in perpetuity.

The Indians knew and valued the berry. They gathered the fruit wild from the lowlands, ground it into a pulpy mixture with dried deer meat and made "pemmican," which provided a complete diet. The dried cranberry-meat diet is used extensively by Arctic explorers. At the present time, the Army is experimenting with this mixture as a perfect dietary component for the Alaskan soldier's fare.

The cranberry is our only native American fruit. It is rich in Vitamin C (the anti-scurvy vitamin), being fully one-half as rich as orange juice in this regard. The Vitamin C is retained to a large extent when the berries are made into whole-fruit sauce. There is also present a small amount of Vitamin A, the cod-liver oil vitamin. The cranberry, therefore, besides possessing an attractive appearance and flavor, possesses merit, as well, from a nutritional viewpoint. This is the rich heritage passed by the Indians on to the Pilgrims, who made the native berry into a traditional American dish at the first Thanksgiving.

How and when the name "cranberry" was first derived is not a historical fact. The cranberry, to begin with its day of christening, was so named because its sponsors fancied that its bud resembled a crane; and, in truth, just before the bud expands into the perfect flower with stem, calyx and petals, it resembles the neck, head and bill of that ungainly bird. Hence, it was called "Craneberry," later popularized into the word "cranberry."

The cranberry of commerce - vaccinium macrocarpon - is a native of North America only, although a closely related specimen - vaccinium oxycoccus[7] grows in Northern Europe and Asia. This species, however, has much smaller berries that are not suitable for cultivation.

The cranberry plant is a trailing vine with many upright branches and roots. Both the runners and the uprights have leaves, but only the latter bear fruit. The leaves are evergreen, but turn brownish in winter. The vines make a mat all over the surface of a cultivated bog. They blossom in late June and early July, and the fruit ripens in September and October. The flowers depend mostly on insects for pollination;

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[7]Franklin, Henry J. "Cranberry Growing in Massachusetts." Massachusetts Agricultural Experiment Station, April 1948, Bulletin No. 447, p. 1.

and, while wild bees are usually plentiful, the grower usually owns or rents apiaries for this purpose. The set of the fruit is not affected by night coolness short of frost during the blooming period.

History of the Cranberry of Commerce

The commercial potentialities of the native cranberry were overlooked for two hundred years; but, in the meantime, the Cape Cod women folk picked and stewed wild cranberries each fall. Sea captains sailing to the far corners of the world, carried barrels of cranberries with them to prevent the dreaded scurvy. Apparently, the Cape Cod men were, at that time, busily engaged in other pursuits and were content with nature's offerings. However, they were not unmindful of the berries' inherent goodness or possibly they were more concerned with the moral goodness of their neighbors for they were opposed to picking the berries on Sunday. They caused to be enacted this ordinance in the Town of Provincetown on December 7, 1773:

> "Voted that any purson should be found getting cranberys before ye twentyth of September excedeing one quart shall be liable to pay one doler and have the berys taken away."
> Voted, "That they who shall find any purson so gathering shall have them and the doler."
> Voted, "That any purson should be found get- cranberys on the Sabboth shall be liable to duble punishment."[8]
>
> Samuel Atwood,
> Town Clerk

It was not until 1812 that Henry Hall of Dennis began experimenting with the wild cranberry. He transplated a few hardy wild vines in a little patch near his home, and found that the berries grew much larger and had a better flavor than the wild ones. This is the recorded beginning of domestic cranberry cultivation in North America. Out of these beginnings has grown the commercial cranberry industry as we know it today.

Here, indeed, is an old, old, agricultural industry especially in view of its somewhat specialty nature. Old industries, like old ships' bottoms, tend to gather barnacles, and the cranberry industry has had its share. It has paid well from the start and because of its promise of profits, backed by actual delivery of the same, has, at times, enlisted those antidotes for barnacles - leadership, vision, energy and initiative. The efficient marketing program developed has evolved the use of better methods. These novel methods are regarded by some other agricultural groups with envy.

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[8]The Cape-Tip Breeze, Provincetown, Mass. Mid-Summer 1951, p. 4.

Growth of the Industry

First attempts were made to cultivate cranberries in Southern New Jersey between 1830 and 1840. Other states became interested in this branch of agriculture; Wisconsin in 1835, Oregon between 1880 and 1885 and Washington in 1923.

From such modest beginnings in 1812-1813 the cranberry worked its way out of obscurity to a point at which, at the turn of the century, the cranberry bogs of Massachusetts, New Jersey and Wisconsin produced the then staggering harvest of 318,000 barrels. During the first half of this century the annual harvest has increased steadily to a point where a 932,500-barrel harvest is looked upon as an almost normal expected harvest. Massachusetts now contributes 590,000 barrels, or 63.4% of the crop; Wisconsin contributes 190,000 barrels or 20.4% of the crop; New Jersey contributes 76,000 barrels or 8.1% of the crop; Washington contributes 56,500 barrels or 6.0% of the crop; Oregon, the other principal producer, contributed to the harvest a total of 20,000 barrels or 2.1% of the crop.[9] It was not until the middle of the twenties that the far Western States became quantity producers. From such modest beginnings where the income of the family bogs was first used primarily as a means of raising the yearly taxes, until today, the crop produces an average gross return of better than $16,000,000.00. The day of the 1,000,000-barrel harvest is in the not too distant future.

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[9]United States Department of Agriculture, Bureau of Agricultural Economics, Release, January 4, 1952.

CHAPTER III

THE CRANBERRY BOG

Land

When one considers the energy of the cranberry, and how it develops the resources of hitherto waste land, one may well wonder why a more vigorous effort is not made to cultivate it in new territories. This will be easily discerned when one learns that certain descendents of the family - its Ishmaels, so to speak, roam wild in sections of the country not known to its civilized brethren. The cultivated cranberry thrives well in the same localities where its wild predecessor did, due to the fitness of the climate and soil. The soil must be acid. All attempts to divert the cranberry's preference for peaty and alluvial soils have proven a failure, for it knows no compromise and will either have these or perish. The depth of the soil need not be great, a few inches of peat or one layer of turf over sand or clay often giving good results.

Role of Soil in Crop Production

The soil serves as a mechanical support for crop plants. It likewise serves as a reservoir for certain plant nutrient elements. The substances used by living plants are called plant nutrients or plant nutrient elements. The nutrient elements generally recognized as essential to normal plant growth for most plants are as follows: carbon, hydrogen, oxygen, phosphorus, calcium, potassium, magnesium, sulphur, iron, nitrogen, copper, manganese, boron, zinc, and perhaps two or three more so-called "minor elements." In soil culture all these nutrient elements, with the exception of carbon, oxygen and hydrogen, are supplied to the plant through the medium of the soil.

Upland Soils vs. Bog Soils

Well-drained soils have developed under a heavy forest cover. Rainfall has been moderately heavy and soils which develop under these conditions, regardless of the parent materials from

which they were derived, acquire certain similar properties. Organic matter accumulates as a layer on the ground as a result of the annual fall of leaves and accumulation of the remains of dead parts of trees and other forms of vegetation. This layer of organic matter or "raw humus" often reached a depth of a foot or more. The layer did not build up indefinitely because rapid processes of breakdown or decomposition were going on in these well-aerated soils at the same time that fresh material was being added to the surface. A point was reached at which the accumulation was evenly balanced by the rate of decomposition or destruction. When this point was reached the depth of the organic matter layer became constant.

Decomposing organic matter released plant nutrient elements which were then taken up by the roots of living plants to again be built up with plant tissues. Thus, a continuous cycle was set up, which under natural conditions could have operated almost indefinitely.

Some products of organic matter decomposition, when carried down through the mineral horizons of the soil by rain water, exerted a strong leaching action on soil minerals. Much of the calcium, magnesium and potassium, as well as other elements, were brought into solution and, if they were not taken up by deep-rooted plants, were lost from the soil in the draining water. Note, therefore, that the accumulated layer of organic matter and not the mineral soil represented the accumulated reserve or store of fertility. When the forests were cut down and the land brought under cultivation, the soils remained fertile and productive just so long as the reserve of organic matter lasted. When that was gone, supplementary application of manures of one kind or another became necessary.

Bog land soils, the soils which support the growth of cranberries, either developed under water or under conditions of very poor drainage. The type of vegetation was different from upland soils and the conditions under which these plants grew were different. A similar process of organic matter accumulation and decomposition took place, and now because of the absence of air or quantities of free oxygen, the accumulative processes greatly overbalanced the destructive processes. The result was that great quantities of organic matter in the form of peat and muck accumulated in the ponds and lowlands. Gradually, the ponds disappeared leaving behind these vast deposits of "stored up" fertility. It is these deposits which constitute the soils which supply most of the fertility to the cranberry plant.

How Plants Feed

The fine collodial clay particles of a mineral soil and the fine collodial particles of an organic soil are negatively charged. The negatively charged particles have an affinity for positively charged elements such as hydrogen, calcium, magnesium, potassium and other elements. A single particle of clay

or humus may have several of these differently charged elements "attached" to its surface at the same time. When a plant root hair comes in contact with a clay or humus particle an "exchange" can take place whereby a positive hydrogen (produced by living processes within the root) from the root hair can be traded for a positive calcium or magnesium or potassium element on the clay or humus particle. In this way the reserve of these elements on the soil colloids is gradually reduced and the reserve of "replaceable" hydrogen is increased. When the supply of calcium, magnesium or potassium in the soil is replenished, hydrogen on the clay or humus particles can again be replaced and the reserve of "replaceable" hydrogen reduced.

The base exchange mechanism not only explains how certain elements are taken up by the plant but also explains why many of these same elements in the soil are not easily leached or washed away. It explains why the fertility of cranberry bog soils is not rapidly lost as a result of frequent flooding.

Why Cranberry Plants Grow on Acid Humus

The base exchange capacity or the total quantity of positively charged elements which can be absorbed depends upon the total quantity of collodial clay or organic matter present in a given quantity of soil. Soils with high content of collodial matter can "store" much larger quantities than soils with low collodial content. Since cranberry soils are mostly organic matter, their "storage" or exchange capacity is very large.

The total exchange capacity for cranberry mucks and peats is ten to thirty times greater than that of many productive upland soils. Because of this very large "storage" capacity, it is possible to have a large amount of "exchangeable" hydrogen present which makes the soil acid and also to have a large quantity of calcium, magnesium, potassium and other positively charged elements present which the cranberry can utilize. A cranberry soil with a pH of 4.0 may actually have much more available calcium than an upland soil with a pH of 7.0.

The Nitrogen Cycle and the Cranberry Plant

In upland soils the natural source of nitrogen is from decomposition of organic matter. Complex proteins are broken down to give simple amino acids. These acids in turn yield ammonia, and ammonia, in turn, is changed to nitrite nitrogen and finally to nitrate nitrogen. In productive upland soil the most important form of nitrogen is the nitrate form.

In the cranberry soil, because of the lack of aeration or free oxygen, it is difficult to explain how much nitrate nitrogen would ever be formed. New Jersey experiments indicate that

the cranberry plant can use nitrogen in the amino acid form and also in the ammonium form. Hence, it would appear that the complete nitrogen cycle is not essential to the normal functioning of the cranberry plant.

Location

The cranberry bog should be on or near a stream large enough to flood it at any time. If the stream is too small, its capacity for flooding must be increased by making a reservoir above the bog location. It is desirable that the bog location not be hemmed in by hills or heavy woodland. In the open locations there is usually a movement of air on the cooler nights reducing the element of frost risk.

Water

A water supply for flooding as much as is necessary at any time especially for flooding by gravity, adds greatly to the value of the cranberry property. It is often difficult and costly to arrange for such a water supply in developing a new bog. In several of the producing states there are special laws favorable to cranberry growers in this connection.

Many fine bogs are flooded by pumping from streams or ponds at lower levels, over a third of the acreage in Massachusetts being treated in this manner. The service of reservoirs is often greatly extended by pumping the water used in flooding back into them again and again. The Atwood Bog Company of South Carver, Massachusetts, one of the larger growers of "Eatmor" cranberries, uses an International P-30 stationary power unit belted to a centrifugal pump. This unit has the power and the capacity to handle the requirements of a 60-acre bog.

The main use of this power unit is to "flow" the bogs. The Atwood acreage, as it happens, is below the surrounding water level, so it is necessary only to raise the gate in the water channel at the pump house to "flow" the bogs. In a very short time the bogs can be covered with a foot of water to kill insects or prevent frost damage. As soon as the emergency is past, the water must be pumped off quickly so that the cranberries will not be damaged from a lack of oxygen for too long a period.

That is also where International stationary power units come in. These units have proved to be dependable starters, ready to meet these emergency calls at any time of the year, night or day. At the rate they operate, the water is pumped off in eight or ten hours. The unit in use has a capacity of pumping 10,000 gallons per hour.[10] This type of a pumping unit has been found economical to operate.

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[10]Litchfield, L. H. "It's the Cranberries" Powertrax, International Harvester Company, Vol. 7, No. 1, p. 20 (April 1936).

Sand

Another essential for successful cranberry cultivation is an ample, convenient supply of coarse sand. The sand layer lowers the level of fertility. Past experience has shown that growing cranberry vines in muck directly results in heavy vine growth with sparse setting of fruit. Weeds are more troublesome.

Sand is used as a mulch before the vines are set and for resanding in after years. Fine sand promotes the growth of moss and allows weeds to thrive more than coarse sand.

On Cape Cod, where sand abounds around the swamps, it is usually carried into the bog over a line of planks with special wheelbarrows that have a pneumatic tire and balance load over the wheel; but railroads with gasoline locomotives and cars are often used on the large areas. In Pacific County, Washington, where the sand underlies the swamps and is not available elsewhere, growers pump it up in water, with a centrifugal pump, and send it through piping, in some cases over one-half mile.

The sand is spread over the bog to a depth of three or four inches. It has been found that the vines grow faster in the sand when it is no deeper than four inches and that they reach full bearing sooner.

The sand helps check weeds and moss; it gives the cranberry a medium to grow in, which can be drained and aerated better than peat, thus promoting their growth; it serves as a mulch and so ameliorates drought; and it gives out heat at night so as to afford some protection from frost. Its pH (Hydrogen Ion Content) or Acid Content should be no less than 4.5 for a most advantageous growth factor.

Weather

Weather, in its known and unknown relations to cranberry production, has always been a matter of much interest and speculation to growers. The unceasing references to it through years in the reports of the meetings of the cranberry growers' associations and in other papers concerned with the industry are ample evidence of this.

The most recent study of the weather and its relation to cranberry production was completed by Dr. Henry J. Franklin, research professor in charge of the Cranberry Station, Wareham, Massachusetts, in 1946.[11] Temperature, precipitation, and sunshine

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[11] Franklin, Henry J., "Weather and Cranberry Production." Massachusetts Agricultural Experiment Station, Bulletin No. 433, p. 3, June 1946.

were the only elements studied extensively. The available data for humidity and wind seemed to be inadequate and apparently without much significance. The study embraced the cranberry-growing regions of Massachusetts, New Jersey and Wisconsin. The differences in the weather relations of the cranberry crops of the different areas studied are surprisingly great.

Sunlight is necessary for the normal growth of all plant life. The study disclosed that the variation in the amount of sunlight is considerably related to cranberry production in New Jersey. Evidently, reduced sunlight is seldom a limiting factor in that State, probably because of the more direct rays of the sun there.

The Massachusetts findings seem to show that the amount of sunlight in the year before that of the crop has an important effect on the size of the crop and the keeping qualities of the berries. This probably comes about through the build-up of the vines in starch and sugars. It appears to be one of the major influences that determine the amount and characteristics of Massachusetts cranberry crops. This may be due partly to limiting effects of the frequent and persisting fogs that occur along the Massachusetts coast. The same relationship was found between sunshine in the year before, the year of the crop, and cranberry production in Wisconsin.

The studies disclosed no important variation in New Jersey cranberry crops due to temperature. Higher temperatures were found to be more destructive to cranberry production in Massachusetts. High temperatures occurring in March may be partly pathological and may be related to unrecognized frost injury in April. The harmful effect of high temperature in July is probably due to the burning of the flowers and small berries, which occurs rather commonly on the bogs in hot weather.

The effects of spring temperatures on the cranberry crops in Wisconsin are very great. It appears that high temperatures in March of the year of the crop are very destructive. The very favorable effect of a warm spring in the year before the crop year suggests that in the years with cold springs the growing season in Wisconsin is not long enough for best results.

It appears that in all three of the cranberry-growing districts considered, with the possible exception of frost, excessive rain in the growing season has been the outstanding weather factor limiting production.

The weather elements are found to affect the size of cranberry crops, the size of the berries, and the keeping qualities of the berries. It is believed that the relations of those elements that seem to affect all three are most likely to be well established; these being the sunshine in the year before the crop year and the sunshine and temperature of March and the rainfall of July and August of the crop year.

Labor

The cranberry grower requires a complement of full-time employees. Their duties are the maintenance and care of the bogs during the growing season. During the frost season they are always on call to flood the bogs to prevent frost damage and after flooding to drain the flooded bogs lest long water coverage of the vines smother them by cutting off their supply of oxygen. During the growing season they are concerned with insect, pest and weed control, irrigation, maintenance of water ditches, storage dams and the water level in the ditches and also the maintenance of other bog facilities. During the harvest season they supervise the temporary workers engaged in picking, cleaning, grading and packing the crop for shipment. The Wisconsin Survey, made in 1948, reports that about one full-time worker is employed for each 13 acres of bearing marsh. The average harvest crew for the 1948 crop was 19 laborers per farm or about one laborer per acre.[12]

It has proven exceedingly difficult to obtain accurate cost figures, primarily because few growers have made strict accounting of their costs, or that those growers who have made cost studies are reluctant to give their cost figures. The general estimate given by growers and others highly placed in the industry was that it cost between ten and twelve dollars to place a barrel of cranberries on the market. Again, estimates vary as to the amount of this cost that is chargeable for direct labor. Some growers state that their direct labor cost amounts to sixty-five per cent, while others estimate as high as seventy-five per cent. During the past season, the prevailing wage for the migrant worker was $1.50 per hour, which was an increase of twenty-five cents over the preceding year. Wages for maintenance, sanding, weed and insect pest control, together with materials, sprays, etc., have likewise advanced. Labor is the biggest item in cranberry production costs.

Preparation

Fresh meadows and freshened salt marsh sometimes are made into cranberry bogs without turfing, the grass being laid down and covered with about five inches of sand and vines set out without other preparation, except grading and ditching. However, the first step usually is the clearing of the land "turfing," or the removing of all surface vegetation, cutting deep enough to destroy all roots of noxious weeds. Then the meadow or bog is graded until it is level enough to permit inundation without waste of water, and to hold eight or ten inches

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[12] Estes, C. W., Morris, W. W. "Wisconsin Cranberry Production and Marketing," Wisconsin State Department of Agriculture, Bulletin No. 299, p. 24, January-February 1950.

of fluid below the surface of the soil. This operation implies of necessity a system of high dams for water storage purposes; of embankments to retain the flood; and of ditches to draw off the surplus during the season of growth. This flooding with cold water delays the blooming of the plants until the danger of frosts is reduced; it prevents the plants from being "heaved out" by repeated freezing and thawing; it drowns out the eggs of devastating insects. Without flooding, no succession of profitable crops from the same field is possible. Ample water supply is necessary in those localities where late spring frosts threaten and insects swarm. It is necessary to blanket these bogs from November to May with water from a depth of eighteen inches to two feet.

After the land has been cleared of trees and brush, ditched and drained, it is "turfed" or "scalped." Care exercised in this operation will pay dividends later on, for unless all roots of ferns and of all other plants are removed they are likely to give trouble later on, as do wood weeds, such as horse briar, poison ivy, leather leaf, hardhack, sheep laurel, and chokeberry. It is much more expensive to remove the second growth of this undesirable undergrowth after the bog has been planted and the vines are growing. The work in preparation of the new bog should be done late in the summer after the native weeds have passed their seeding period or in the early fall.

The soil thrown out in ditching may be used in grading. The grading is done by the water line in the ditches. All bogs should be made level, so that they may be flooded quickly and with little water, and no swamp that cannot be so graded with moderate expense should be used unless the water supply is very ample. If the swamp is large and much out of level, it is often best to divide it into separate areas, each nearly level, at different elevations according to the lay of the land.

Form and Size

Other things being equal, small bogs pay better than very large ones. Growers in Wisconsin with acreage of 50 to 100 acres report higher yields per acre in 1948 than those growers with either small or larger acreage.[13] Long narrow bogs, after a certain size is reached, are more profitable than compact ones. The care of large compact bogs and the harvesting of their crops are disproportionately costly, because it takes

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[13]Estes, C. W., Morris, W. W. "Wisconsin Cranberry Production and Marketing", Wisconsin State Department of Agriculture, p. 21, January-February 1950.

more time to wheel sand to the center of the bog and to bring berries from the center; also most of the bog operations call for more tramping over, and consequently more injury to the vines on large blocky areas.

Another factor limiting the success of large bogs is the greater prevalence of the black-headed fireworm on them. Flooding favors this insect by destroying a fungus that often attacks it and by killing or driving from the bog most of its enemies, such as spiders and parasites. At the same time, it protects its eggs from the adversaries of the winter. The natural foes of the pest take longer to reach the center parts of a large compact bog again in effective numbers than to reach the center of the small one. If, however, a large bog is long and narrow, none of the factors mentioned are unfavorable.

Drainage

A bog should be well drained during the growing season. Poor drainage favors weed growth and the rose-bloom disease and probably promotes infestations of the black-headed fireworm and diseases which cause berries to rot both on the bog and in storage. It also curtails the growth of cranberry roots. The land below the bog should go down rapidly, so that the water may be drawn from the ditches quickly at any time.

A ditch should be cut entirely around the bog and other ditches dug across it, dividing it into sections. The marginal ditch prevents upland growths from working onto the bog, keeps many crawling insects off, and is some protection as a fire line from forest fires. These ditches should be at least three feet wide and two feet deep. The water in these ditches also helps to create a fog in time of frost danger.

If the drainage from the bog is good, the cross ditches are not important, unless the area is great or the bottom close and springy. They hasten the distribution of water over the entire area in frost-flooding and irrigating. Without them, the water tends to pile up for a time at the end of the bog where it is admitted. They usually should be 100 feet or more apart, and are made about two feet wide at the top, one foot wide at the bottom, and eighteen inches deep. One of them should be wider than the others and run lengthwise along the bog, in the path of the direct flow from the water supply to the outlet, to hasten flooding and draining. No more ditches should be made than are necessary because they waste land and interfere with bog operations.

Few bog owners in Massachusetts have used land-tile to improve drainage, possibly because of its cost, but its use on spring-bottom bogs should be considered. A few tile lines would help distribute water from the ditches during the dry periods which occur in July and August. The tile should be three or four inches in diameter, and lines should be 25 to 30 feet apart and not over 18 inches down. Coarse sand or gravel should cover the tile.

Dams

The reservoir and bog dams usually have a wide core of sand walled on both sides with turf. Sometimes, turf is necessary on only one side. The turf walls are built layer on layer with some sand between for ballast, and pieces of adjoining layers overlapping. The turf is taken quite often from the upland near the bog; but when the swamp itself is scalped, the turf obtained may be used partly in facing the dams.

A trench deep enough to reach below all tree roots should be dug along the middle of the dam location and filled with sand to make a good connection with the soil for holding water. If the dam is to cross very soft land, it must be sheetpiled lengthwise in the middle, with matched boards or planks. It should have sloping sides and be widest at the bottom, with dimensions according to the head of water. The wider it is, the better it will resist muskrats. It should be a foot higher than high water to keep waves from wearing a hole in the top. It may also be used as a roadway. It is well to ditch the bog a few feet from the dam making a berm.

A flume for the passage of the water must be built in the dam - a job which requires an experienced gate builder, for it must be made properly and carefully. It often pays to make the gate of reinforced concrete, but redwood or kyanized cedar lumber is better on soft land. A continuous sheet of matched piling under the middle of the gate and extending out into the dam on each side of it is necessary. Two or three sheets may be needed if the water held is to be deep and the soil under the gate is soft or disturbed by springs. A stream of water from the hose of a power sprayer, delivered under high pressure, through a piece of iron pipe with its nozzle compressed to a very narrow slit, helps greatly in driving the piling by loosening the soil.

The most experienced growers prefer the covered or trunk gate, which is much stronger than the open gate and rots less when made of wood. A concrete bulkhead opening into piping is advisable in some places. The outlet gate must be large enough to carry off the water of the heaviest rains and of flowages quickly. Stop-waters in bog ditches often help greatly in efficient use of limited water supplies in frost flooding.

Varieties of Cranberries

Both Early Black and Howes are much more important than all the other varieties combined. Early Black is the standard early variety and Howes is the standard late variety. These varieties will remain in prominence for a long time, not only because they lead in acreage, but also because their fruit is favorably known by the trade everywhere. The principal

variety grown in Wisconsin and on the West Coast is the McFarlin. Early Blacks and Howes have been widely planted in New Jersey.

Varieties with fine vines, short upright branches, and low seed counts and without noticeable bloom on the fruit are generally superior in production and disease resistance.

A large number of new varieties, selections from the wild, and crosses between cultivated varieties, are being tested for future planting by the Bureau of Plant Industry of the United States Department of Agriculture.

The varieties vary in ripening, the earliest usually becoming well colored the first week of September, and the latest the third week in October. Some berries color well in storage; others will not redden much unless left on the vines. Most cranberries are first green, then whitish, then pink, then light red, and finally dark red. Some wild cranberries are white, when ripe, and some cultivated ones get so dark that they are almost black. The different kinds of berries vary in form, being pear-shaped, fusiform, oval, or round. The round berries are most easily sorted.

No flooding area should have more than one variety. Some of the leading varieties have insect or disease troubles which are especially bad with them, and planting other varieties on the same flooding area complicates controls.

Vine Settings

Virgin meadows are rarely started in any other way than by cuttings; naturally, the plant reproduces itself by offsets. The vines are usually planted late in May or early in June and are usually set eight to ten inches apart each way. With this spacing it takes about ten barrels to plant an acre, depending upon the condition of the cuttings and the efficiency of the setters. The closer they are set, the better they will anchor themselves against the pull of the picking scoops. Fairly close planting seems to favor high yields.

The cuttings should be taken from a bog that is in good condition, being free of variety admixtures, fireworms, gypsy moths, rose bloom, and false blossom. If it failed to yield well the year before, all the better; cutting from such vines seem to come back well. It should possess a record for producing good crops of sound fruit.

Bogs from which vines are cut recover within the ensuing growing season, with no appreciable loss in their productivity.

The cuttings are pushed well into the sand with a wooden or iron dibble. They need not stick up from the sand more than one inch. Again, satisfactory results are obtainable by spreading the cuttings over the bog and disking them in. This saves labor and time, but wastes planting material.

Irrigation

Bogs are too wet oftener than too dry. They do, however, often suffer from drought, especially in August. The berries being reduced in number and size and retarded in ripening and the vines drying in severe cases. Occasionally, light flooding for a few hours at night followed by complete withdrawal of the water is sometimes done, but it is usually better to hold the ditches partly full throughout dry spells. Watering with a sprinkling system, though costly, is effective for bog irrigation and frost protection. Irrigation as practiced on the West Coast is mostly by forced overhead systems in contrast to the other cranberry growing sections of the country, where they depend mostly upon natural gravity flowage for irrigation.

The general experience of cranberry growers in the State of Washington, where sprinkling systems have been used on the cranberry bogs in recent years, is that irrigation, by sprinkling on hot days, helps greatly by preventing sun scalding of the berries and definitely improves their storage qualities.

Cost of Building the Bog

The cost of building a cranberry bog today would be similar to other building costs, that is, it would be sky high. This cost would depend on the natural conditions and locations of the swamp, on the ability and experience of the man who oversees the work, the extent of use of the labor-saving devices and the efficiency with which they are used, and on the wages. A good bog, well located and built, planted with the right varieties, and given good care, should be nearly permanent. There are bogs on Cape Cod and in New Jersey nearly one hundred years old and still in good condition. To own and properly manage cranberry property requires considerable investment and special experience which it takes years to acquire. Costs studies of building Cranberry Bogs in 1948 were estimated as follows:[14]

	Cost per Acre
Land	$ 10 - $ 100
Clearing, ditching, turfing, grading, sanding	800 - 1,800
Ten barrels of vines at $10 per barrel	100 - 100
Planting vines	50 - 200
Incidentals (tools, dams, head-gates, building, etc.)	400 - 800
Total	$1,360 - $3,000

[14] Franklin, Henry J., "Cranberry Growing in Massachusetts," Massachusetts Agricultural Experiment Station, Bulletin No. 447, p. 21, April 1948.

Care of the Bog

Water should be put on right after planting, held near the surface a day or so to wet the vines and pack the sand around them, and then drained to the bottoms of the ditches. If the bog is flowed again the first season, it should only be for a day or two to wet the sand or control the insects.

New bogs should be flooded for the winter as soon as the ground begins to freeze, for frost in the soil heaves new set-outs. The surplus water must be left off at time of heavy rains in winter or early spring. If this is neglected with the vines frozen into the ice, the rising ice will pull them out of the ground. During the first three years, the winter flowage should be left off about May 5, or when the danger of frost has passed.

More weeds grow on a bog the first two or three years than later, for the vines have not grown enough to crowd them. They give relatively little trouble afterward if they are kept down then. A grower should know the weeds he has to fight at this time, for it is enough to mow the tops of some kinds (mostly rushes), and some (rice cut-grass) can be checked by good drainage; while others must be rooted out or killed with salt (ferns, brambles, hardhack, leatherleaf, and sheep laurel) or kerosene (grasses and sedges). Upland weeds often appear on new plantings; they need not be heeded, for they will die in the winter flooding. Weeds along the ditches may be effectively treated with dry salt.

After the first year and before it comes to bearing, the new planting should be flooded several times each season to check insect pests.

Constant roguing is necessary the first three years to remove plants of odd varieties and hills with false blossoms. The new bog should be sanded with two-thirds of an inch of sand right after the first crop is gathered to make the vines develop a strong root system and become firmly anchored.

Fertilizers

Profitable cranberry production requires careful attention to many details among which proper fertilization is of tremendous importance.

The application of fertilizers to cranberry bogs results in the first season in an increase in the number of berries which remain on the vines, in a marked increase in the size of the fruit, and in a better set of fruit buds - the basis for the next year's crop. Cranberries thrive best on acid soil, and under such conditions it is likely that they do not take up any considerable part of their nitrogen in the nitrate form. Recent experiments substantiate this idea. Flooding of the bogs is unfavorable to nitrification as the air is excluded from the soil. Water and organic matter

both destroy nitrates. The cranberry thrives best when it gets its nitrogen in the form to which it is naturally adapted and to which it is accustomed to use.

The flood waters readily carry away soluble plant foods from the soil, and for this reason the annual application of fertilizer to cranberry bogs is necessary. Furthermore, fertilizer applications should not be made in the spring until after the last flooding, for greater yields are only obtainable then, and when applied as evenly as possible when the vines are dry. Some growers are experimenting with fertilizing in the fall after the crop has been harvested and they are claiming satisfactory results.

Re-Sanding

Sanding cranberry marshes had been a common practice in the eastern states long before it was introduced in Wisconsin. According to Andrew Searls, the first sanding in the Berlin region of Wisconsin was done by Ralph Smith about 1890. Sanding has been done in the Washington-Oregon districts since they began commercial production in the mid-twenties.

As the cranberry roots form a dense growth in the sand over the peat, they become soil bound, and resanding gives them more soil to grow in. Largely on this account, re-sanded vines are generally thriftier, tend to improve the quality of the fruit, increase yields as well as improve the bog surface. Moss and fallen cranberry leaves are poor conductors of heat. Bogs not re-sanded regularly are commonly well covered with such material and are very liable to frost injury.

The oftener re-sanding is done, the more it protects against frost, the girler, the green spanworm, and the tipworm. However, bog conditions should determine the frequency of re-sanding. Bogs with little water for reflooding should be re-sanded lightly every year; those with plenty of water for frost and insect flooding and with moderate vine growth should be re-sanded every three or four years. Bogs with ample water supplies and heavy vines should never be re-sanded. Re-sanding is done to a depth of a quarter of an inch to an inch, and is mostly applied during the winter, when the bogs are frozen, to permit trucks to drive over the bog.

The cost of applying the sand varies from $30.00 to $100.00 an acre, depending upon labor cost, the availability of the sand bank and the method used to get it onto the bog.

A new hydraulic bog-sanding machine is under development by Professor Herbert N. Stapleton and Professor Earle Cox of the University of Massachusetts. The machine mixes sand with a heavy flow of water which is distributed over the bog by means of jets. It is expected that when this machine is perfected it will save growers almost two-thirds of their cost for sanding.

Disease, Weed, Insect and Pest Control

The cranberry grower like all other farmers had to content himself with an ever present crop of weeds. However, he has ways and means not generally available to the average farmer of doing something about their growth. For example, by holding the flood waters on the bog until late in the spring, weed growth is reduced; also, at the same time, the fruit worm, the false army worm and fungus disease are controlled. As in all farming, there is the ever present specific for weed control know as "hand weeding." New bogs until they have obtained a heavy growth of vines must be kept relatively free of weeds. Fall weeding of the wood vines is practiced in the Massachusetts region.

Recent developments in the use of insecticides and fungicides have made a great contribution to cranberry production. New techniques in the application of these disease and insect controlling materials are being perfected. Today, dusting and spraying the cranberry bogs with the use of helicopters and airplanes is practiced on larger bog acreage. Ground equipment is used advantageously with the newer developed chemicals on the smaller bogs. Such new chemicals as DDT, PDB, and the older sodium cyanide, rotenone, cryolite, arsenates, arsemites, sulphates, bordeaux mixtures, fermate, water white kerosene and Stoddard solvent are enlisted in waging war against the enemies of successful cranberry production. Each chemical has its worth in varying degrees of effectiveness. It is beyond the purpose of this paper to describe the technical phases in the use of these chemicals in insect, disease and weed control measures.

Research is being carried on toward developing a uniform droplet for insecticide sprays. A uniform droplet would prevent waste of spray materials.

Cash Outlay Before Initial Harvest

A new planting comes into bearing the fourth year. We have seen that it costs the grower in 1948 from $1,360 to $3,000 an acre to build the bog. It further costs him from $100 to $200 an acre each year to care for the bog until it crops. There is then invested in a new bog before it begins to give the owner a possible return on his investment from $1,800 to $3,800 an acre.[15] With normal crops it is estimated that the bog will pay these costs in a ten-year period.

Today, in the Massachusetts and the New Jersey districts, there are few new bogs being made and put into production. Increased

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[15] Franklin, Henry J., "Cranberry Growing in Massachusetts," Massachusetts Agricultural Experiment Station, Bulletin No. 447, p. 21, April 1948.

bog acreage is reported yearly in the States of Washington, Wisconsin and Oregon.

In the eastern-growing regions bogs nearly 100 years old are being operated profitably, but many of this age are in too poor a condition to produce well. The difference may be due to personal and physical factors. Good property may deteriorate through mismanagement, or a property may be unsatisfactory because of an unwise choice of bog site. Yearly a greater emphasis is being placed on bog renovation of these older, unprofitable bogs. The making over of an old bog that is in a good location may call for the destruction of all growth on the bog, grading, draining, sanding, and complete replanting. Unproductive bogs can sometimes be returned to a profitable condition by merely following good management practices. Complete bog renovation costs range from $500 to $1,000 an acre now depending on the work required.[16]

Cash Costs of Bog Operation

B. D. Crossmon, research professor of Farm Management at the University of Massachusetts, in a recent study of actual direct costs for the 1948 crop season, revealed that the actual cash outlay for the part-time operator having an 8.5-acre bog and doing all of his own labor, excepting that required for the harvest, was $4.20 per barrel; for the commercial owner-operator having a 13-acre bog was $3.15 per barrel; for the commercial owner employing two regular men, having a 20-acre bog was $5.79 per barrel; for the commercial operator and employing 2 regular men but having a bog of 30 acres, this cost was $14.60 per barrel; for the commercial operator employing an operator and four men on a 58-acre bog, the cost was $9.15 per barrel; for the corporation employing ten regular men plus the required seasonal labor on a bog of 184 acres, the cost was $7.00 per barrel.

The annual cash costs of bog operations covering Six Case Studies, (See Appendix A, Exhibit 1), amounted to $1,720 for the part-time operator who did his own labor, a non-cash item, to $70,425.00 for the corporation which was required to hire all its labor.[17]

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[16]Tomlinson, Bertram, "Renovation of Cranberry Bog," Cape Cod Extension Service, Special Circular No. 55, p. 6, April 1946.

[17]Crossmon, B. D., "Production Costs - The Area of Owner Control," Cranberries, Vol. 15, No. 9, p. 7, January 1951.

CHAPTER IV

CRANBERRY HARVEST

Picking Season

The cranberry picking season is relatively short, extending from mid-September through late October. The harvest period is so short that many growers, especially if the season is late, have to begin when the fruit is only partly colored. The berries grow sweeter and larger as they ripen, so that the later they are picked, the better the sauce they will make and the greater the yield. Cranberries should be gathered only when the vines are dry. A frosty night compels the flooding of the bogs, and usually little harvesting can be done the following day. Berries picked late in the afternoon have better keeping qualities than those picked in the heat of the day. However, there is a definite period when certain varieties should be harvested, for experience has shown, over the years, that the keeping qualities of the berries depends in a large measure upon the time and the humidity conditions when they were picked.

Methods of Picking

Cranberry picking was done by hand until fifty years ago in the eastern-growing regions and in Wisconsin. The methods of harvesting vary somewhat throughout the growing regions. In Massachusetts and in New Jersey the picking is largely done with the use of "scoops." The pickers move through the bogs on their knees, pushing scoops before them. They proceed with a rocking motion as the wooden prongs comb the berries from the vines. An experienced picker, one who harvests fast and yet is careful of the tender vines, can average as many as one hundred pounds an hour. The record for individual picking with the regular scoop was made a number of years ago when an unknown Portugese, who worked in the Pleasant Lake District of Massachusetts, picked 54 barrels of cranberries. A barrel weighs 96 pounds, so, in pounds, this Unknown Cranberry Harvester picked 5,184 pounds, or more than two and one-half tons.[18]

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[18]Dickey, Arthur G., "Cranberry Picking Prowness of Unknown Portugese Legendary," Reprint from the Cape Codder - Food Marketing in New England. (November 1951), Vol. 12, No. 3, p. 10.

After the picking season is completed in the above states, the bogs are flooded to a depth of six inches, so that the cranberries dropped from the scoops during the harvest, can be gathered. In this operation, the resourcefulness of the cranberry grower is brought to the fore - they make use of a boat to gather the final berries!

The boat is shallow, has an airplane engine and propeller and is steered with a long rudder. The boat is raced at a speed of about forty miles an hour over the bog to agitate the water enough to release the berries caught in the vines during hand harvest. The breeze made by the propeller of the craft blows the berries to the edge of the bogs and the workers pull them in with long-handled rakes. The gathering of these "floats" which are carefully screened and made into cranberry sauce within a few hours after they are gathered, represents an important saving for the growers. Sometimes by flooding, and with the use of the race boat, a grower retrieves as much as 10% or 20% of his crop which otherwise would be lost. This part of the harvest is not of premium quality and, accordingly, the returns are correspondingly less.

In Wisconsin, the cranberry bogs are flooded so that the tips of the vines are above the water and the berries float near the surface. Pickers then wade through the water, raking the berries from the vines with a scoop using long sweeping motions. Because of the dry Wisconsin air, the berries dry off in a few hours.

In Oregon and Washington most of the berries are water scooped. This is a cheaper method of harvesting when the berries go to the cannery. This is little loss of berries when harvesting is done in this manner. On the other hand, when the berries are sold in the fresh market, they have to be dry scooped or picked with a mechanical picker, both of which methods entail a loss of at least 10% of the berries left on the bog.

Mechanized harvesting, although in the experimental stages, is gradually being perfected and is finding greater use on the bogs of Massachusetts. One of the reasons for retarded mechanization on the bogs of Massachusetts and New Jersey may be the large numbers of small, individually owned bogs, with their irregular shapes. Machinery for the limited use on the small bog might require excessive capital investment. The WesternPicker, delivered in the East at the present time, requires a cash outlay of $1,050.00. Most operators estimate annual repairs and depreciation at one-tenth of the machine's purchase price. A related reason for the retarded mechanization in the East may be the unwillingness of manufacturers to go through the heavy initial expense of producing a machine for which there would be only limited sales.

Mechanization of the harvesting has found greater use in Wisconsin, Oregon and Washington, where the bogs have been better laid out, and the machines can be used to a better advantage. Again, their yields per acre generally are greater than in the East.

Yields

The yields of cranberries per acre vary over the several producing regions, as set forth below:[19]

	Acreage Harvested			Yield per acre			Price for Crop Received by Grower		
	Average 1938-47	1948	1949	Average 1938-47	1948	1949	Average 1938-47	1948	1949
	Acres	Acres	Acres	Bbls.*	Bbls.*	Bbls.*	$	$	$
Mass.	14,220	15,000	15,400	30.8	40.3	33.8	16.80	9.90	8.70
N. J.	7,970	7,800	7,500	9.6	8.8	8.9	16.40	10.20	8.50
Wisc.	2,610	2,800	3,100	42.2	85.0	64.5	17.70	10.90	11.20
Wash.	680	700	700	44.1	60.6	57.1	15.70	8.05	7.40
Oregon	169	260	320	64.0	51.2	41.9	16.80	9.30	8.50
5 states	25,649	26,560	27,020	25.9	36.4	31.1	16.80	10.10	9.20

*Barrels of 100 pounds

The average production for the 1938-47 period was 665,230 bbls.; for 1948-967,700 bbls.; for 1949-840,400 bbls.; while for 1950 it was 984,300 bbls.; and the production for 1951 was 932,500 bbls. The price received for the 1950 crop by the grower was $10.60. The 1951 crop opened at $15.00 per barrel and reached $20.00 per barrel before the marketing of the crop closed.

The average annual acre yield of cranberries in Massachusetts ranges from 30 to 40 barrels, but well-managed bogs, with the proper facilities, probably average over 50 barrels in a series of years. The average yield is somewhat larger in Wisconsin, Oregon and Washington. The differences are due partly to natural conditions for the industry and partly to methods of culture. All the cranberry bogs of Massachusetts are sanded and most of those in Wisconsin are covered with sand. New Jersey, Oregon and Washington bogs are only partly sanded because of the relative lack of suitable and accessible sand banks. The climate is rather unfavorable in New Jersey, promoting more weed growth and fungus troubles than in other cranberry districts. These factors are, in a large measure, responsible for the low acre yield in New Jersey.

Wisconsin is well placed in the industry and may be a long-term rival of Massachusetts in its annual production in spite of its troubles with drought and summer frosts; its geographical location

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[19]United States Department of Agriculture, Agricultural Statistics, 1950, Table 247, p. 205.

gives it an average freight advantage in the delivery of the fruit to the markets of the country as a whole; its Searls variety, partly because of its large berries, is more productive than any other cranberry variety largely grown; the crop is harvested more completely with less injury to the vines than elsewhere by water-scooping, yielding in 1948, 99.4 barrels per acre. Then again, Wisconsin shows greater new bog acreage under production yearly than do the Eastern regions. The new bogs are principally planted with the Searls variety, which yield heavier returns than the old ones. The other high yield variety planted in Wisconsin is the Howes which averaged 90.2 barrels per acre.

The cranberry crop in Washington and Oregon has no pressing cultural problems. The climate there is not a hazardous one for cranberry growing, because the climate has few extremes in temperature. The problem of frosts must be contended with. However, a method of control was devised in 1925-26 by sprinkling, which has proved very satisfactory. The bogs are not flooded as in other growing regions, but when frost threatens and the temperature reaches 32°F, the bog operators start the sprinklers and operate them continuously until the temperature gets back to 32° or 33°F. This method takes care of temperatures as low as 25° and that is about as low as they are concerned with. These factors coupled with control of insects and disease, together with good soils are the principal reasons for their crop yield averages per acre of over 52 barrels, over a twelve-year period.

Labor

An army as numerous as the legions of King Frost must be hired for the short picking season. This mustering of the needed pickers presents a serious and difficult problem. The cranberry grower's staff of full-time workers, who take care of his bogs during and after the growing season has on hand a nucleus of trained workers who are capable of supervising the pickers. These pickers are employed on a temporary basis during the harvest season.

In the cranberry industry on Cape Cod, the people of Portugese blood play a large part. These latter, unlike those on Provincetown, who mostly follow the sea, are known as Bravas, descendants of part-Portugese, part-African inhabitants of the Cape Verde Islands, who were brought to the Cape as labor for the cranberry bogs in the latter part of the last century. Of course, it cannot be expected that these people will sit around idle just waiting for the annual cranberry picking season for employment. The vast majority of these people operate small truck farms, or are otherwise gainfully employed in the other seasons of the year. Of recent years, the imported Puerto Rican laborer has been used with satisfactory results.

The New Jersey grower depends for his seasonal help in a large measure on the importation of Italians from nearby cities, such as Philadelphia. In Wisconsin, Oregon and Washington the crops are to a large degree harvested with hand rakes, after the bogs are flooded. However, these growers depend upon the local Indians and migrant farm laborers as the principal source of their needed harvest labor.

All growers are interested in cheap labor, relative to the selling price of the fruit harvested. Cheap labor is not the complete solution, for this labor is more likely to be available when prices and business confidences are falling. Labor generally shies away from picking cranberries, for picking cranberries with the "hand scoop" is hard, back-breaking work, and the toil of harvesting has been practically confined to strong men. The grower to get his help today must enter into the high cost labor market, which directly results in a lower net income per barrel of cranberries.

Important factors in maintaining a labor supply on cranberry bogs are: (a) A plan for bog improvement that will increase yields per acre. In all branches of farming anything that improves yields tends to improve the labor situation. (b) A satisfactory solution of the housing problem for the imported laborer. (c) More use of labor-saving equipment and methods so that men commanding higher wages can be used profitably and more work can be accomplished per man-day worked. (d) A strong, active maintenance program will provide work for more year-round men, which will improve the quality of the work done, and the crop also.[20]

Cost of Hand Harvesting vs. Cost of Mechanical Harvesting

Cranberry crops for the past three out of four years have yielded few dollars over harvesting expenses. For some bog operators it has meant deficits. In some cases the choice of operation yielding the least loss has been the most profitable one. An example of this is the case where a deficit for the total cranberry crop is certain, but the value of the harvested crop is more than the cost of the harvest. Here, the margin of value over harvest cost can be used to reduce the total crop deficit.

The most expensive operation in cranberry culture is the harvesting of the crop. Part-time operators and those having small bogs may be able to do all the work prior to the harvest without hiring labor. However, these operators know that the time for harvesting is limited and they must normally hire labor for this operation.

Operators of the large bogs tend to hire considerable labor for the operations prior to harvesting. Even on the larger operations harvest labor may be over 25 percent of the total labor bill. The total labor bill, in turn, may be between 60 percent and 70 percent of the total cash expenses.

The high cost of harvesting relative to costs of other cranberry operations, and low return for berries in recent years are factors to be considered in determining how the crop should be harvested. When cranberries sold for $30.00 a barrel, the operator

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[20]Doehlart, Charles A., "Looking Ahead to Some New Cranberry Research," New Jersey Agricultural Experiment Station, p. 7.

had less objections to a high price for seasonal labor. Recently, however, cranberry returns have been low and this situation has influenced the operator to risk more efficient methods in harvesting.

Another reason calling for a change in harvesting methods is the difficulty in obtaining good experienced hand scoopers. Laborers, who formerly worked several months of the year on the cranberry bogs, have sought other employment becuase of the curtailment in the use of regular labor on cranberry bogs in recent years. Also, rising wages outside the cranberry industry have attracted workers from the bog operations. Therefore, it is difficult for the small bog operator to locate skilled scoopers for the limited time during which he needs them, and for the wages he feels he can afford to pay. The large bog operators have some advantage in hiring labor because they can promise longer employment.

The need for the bog operators to curtail certain uses of labor or to substitute machinery for men is obvious. Mechanization has been slow in the cranberry industry as compared with other agricultural enterprises. Reasons attributable for this lag in mechanization are the large number of small bogs, their irregular shapes, and the cost of the necessary machinery are the chief factors in the Eastern growing regions. Here, this problem has been partially solved by cooperative ownership and custom operation of machinery on a rental basis

During the fall of 1951, Professor Bradford Dean Crossmon, research professor in "Farm Management" at the University of Massachusetts, made a study of the cost of harvesting by the Western Picker as against the cost of hand methods of harvesting. In this study, comparative costs were obtained, which embraced the use of this mechanical picker on the operator's own bogs; on other bogs using custom operators. Comparative studies were diligently made on the factors of owning the mechanical picker outright and using it on a rental basis. The findings were generally satisfactory. All operators were pleased by the savings in labor expense and the lesser dependence upon hired labor. The summary of opinion was that there is no serious bruising by the machines, if the operator is careful and does not attempt to operate the machine at high speed, such as 4.8 hours per acre. Mechanical breakdowns, as was to be expected, did occur, but because of dealer replacement policy the major cost was loss of time.

Two points stand out in this study. First, the machine harvests an acre almost at a constant rate, regardless of yield. This means an acre under normal conditions, not with wet or frosted berries or extra long, heavy uprights. The normal rate seemed to be about ten hours for the machine to harvest an acre. The range was from 4.8 hours to 20 hours. Barrels harvested per hour per machine varied from 3.6 to 18. The yield is important in determining this figure, e.g., ten hours to harvest an acre yielding 75 barrels would mean 7.5 barrels per hour. The second point which standsout is the advantage in barrels per hour for the machine against hand scooping. Over a short period of time and on heavily yielding bogs a hand scooper might keep pace with the machine, but the human being tires and the machine can continue at its nearly constant rate. Even the lowest figure for the machine, 3.6 barrels per hour, is nearly two and one-half the 1.5 barrels per hour commonly expected from hand scoopers.

Translated into dollars at a rental figure of $200 an hour, a machine hired for ten hours, or $20.00, should harvest a bog yielding

48 barrels. Adding the cost of gasoline at five cents an hour or fifty cents, and an operator at $1.50 an hour would give a total of $33.50 or about seventy-five cents a barrel. Hand scooping would have required approximately thirty hours at a cost of $42.00 or ninety-three cents a barrel. In either case, wheeling the berries to the shore and screening would be extra. At lower yields, there would appear to be an equalizing point between the machine and the hand scoopers. Actually, that would be true, if the human scooper could maintain a harvest of 1.5 barrels per hour, regardless of the lowness of yield per acre. But this is not supported by evidence obtained. Total costs of machine harvesting per barrel ranged from twenty-eight cents to $1.54. In the latter case, the yield was only 28 barrels to the acre and it is doubtful if hand scooping could have done the job anywhere near as reasonably.

Two small operators liked the flexibility possible with the machine. It left them largely independent of hired workers. Working alone, a quantity of berries could be quickly picked by the machine, wheeled to the shore and screened. Plans to extend the harvest could be made without having to cope for extra workers on certain dates. More of the labor becomes a non-cash expense, either that of the operator or his family.[21]

Storage

The berries as they are picked are dumped into bushel boxes on the bog, the boxes having slits in the sides and bottom for ventilation and slats at the ends for handling and for spacing and stacking. These boxes are promptly removed from the bog and taken to the packing house (screen house). The building, if tightly constructed, should be kept closed on damp and warm days and be well aired on cold nights, with forced ventilation. The more modern storage sheds are lined with insulating material to maintain moderate temperatures. Cold storage for this fruit is practicable. The berries keep best at a temperature of 35° Fahrenheit, but they color best at from 45° to 50°. The berries seem to have better keeping qualities in those years when the general crop ripens late or when it is made up of small berries. Care is exercised to avoid too great a change in the temperature during storage lest the berries sweat, increasing the incidence of rot, and generally impairing their keeping qualities. It has been found that berries keep better after cold storage than after common storage. If there is a larger crop than the fresh market will take, the berries are frozen and stored until needed. The fruit, once frozen, can only be used for canning.

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[21] Crossmon, B. D., "Harvesting Dollars or Deficits," Cranberries, October 1951, Vol. 16, No. 6, p. 14.

Preparation, Standardization and Grading

In preparation for market, the berries first go through a separator, which forces air through them, blowing off the stems, and rubble gathered in the harvest. The next step in the cleaning process is the separating of the decayed fruit from the solid fruit. This is done by rolling the berries down an inclined plane where the sound fruit bounces over the bounding boards, and the imperfect fruit is trapped at the base of the bounding boards. This method of separating the sound fruit from the imperfect is unique to the cranberry industry. The remaining step in preparing the fruit for the market is the grading and the packaging. Most of the berries, however, must be hand sorted. Experiments are being conducted toward solving the problem of mechanical grading. It has been found that cranberries are responsive to a magnetic field and once the method is perfected, it will go a long way to reduce the grading costs. Packaging is done by automatic machines.

Interim Crops

The cranberry grower, who cultivates ten or more acres of bog has a full-time job in taking care of the day-by-day work and is not free to give his attention to the growing of other crops. However, the smaller grower, who does most of his own work, usually is engaged in raising some other crop, that matures when the demands for his time and labor are not required in the bog operations. We have seen in New Jersey that cranberry growers have branched out into blueberry culture, while in Massachusetts this side line has not been developed to the extent that it has been developed in New Jersey. Strawberry culture has been highly developed in the Cape Cod region in Massachusetts, both by the cranberry grower and the part-time employee. In this region, where the land is fertile, both the part-time operator and the part-time employee are engaged in truck gardening. Again, we find the part-time operator and the part-time employee engaged in the poultry business.

It is difficult to assess the value of these side lines of the cranberry grower or the part-time employee, as their produce is principally sold at road-side stands and no records or reports of such sales are generally made. There can be no question about their value to the individual, for they keep their same road stands year after year. These interim crops also serve as an anchor in holding the small grower in the cranberry business and likewise keep the part-time employee from seeking employment in other fields. It is an asset to the cranberry grower in these days of a mobile labor to have available experienced part-time employees.

The cranberry grower could add to his annual income by placing idle sub-marginal land into production by planting the fringe areas around the water supply and the sand banks with a species of the pine tree. The grower could plant the fast growing slash pine seedlings, which often attain a growth in height of twenty-four inches during the first year. Again, consideration and thought could be given to the possibility of planting these areas in a variety of the pine suitable

for Christmas trees. This type of pine has a slower growth than the slash pine or the white pine. However, in the long run, this Christmas tree type of pine would result in another cash crop. Planting of either type would also tend to hold the water in the land and reduce soil erosion.

Through state nurseries, the growers could obtain seedlings for fifty cents a thousand up to 5,000 and at $2.50 a thousand for additional requirements. Mechanical planting of these seedlings costs $7.50 per thousand, which is the number of seedlings used per acre. Thus, for the first five acres, farmers could replant their idle land for $8.00 per acre. Since the Production and Marketing Administration makes a payment of $5.00 an acre to farmers to encourage tree plantings, the net cost for five acres would be only $3.00 an acre. Above five acres, the net cost would be about $5.00 an acre.[22]

That this is a good investment can be seen from the fact that the value of the land goes up immediately, to more than offset the cost of planting. Moreover, it is estimated that $15.00 an acre, land on which $3.00 an acre is spent in tree planting will sell for $30.00 to $35.00 an acre in five years. It is further estimated that within a period of eight to ten years, that under normal growth conditions, the spruce tree will have reached a height of six to ten feet where thinning can be started and the trees become available for the Christmas market. It is estimated that from the first thinning, at the end of twelve to fifteen years, in the pine plantings, that $10.00 to $20.00 an acre can be realized from the sale of fence posts and pulp wood. Out of 1,000 fast growing pine trees an acre, about 450 are cut at the first thinning. Additional cuttings are made at subsequent five-year intervals, to be used for telephone poles, piling, and eventually saw logs. After these thinnings, the mature trees left standing will drop cones and reseed the tract without additional plantings. If cutting is restricted, this assures a permanent woodlot.

A tree-planting program of this type would tie in very well with the cranberry grower, for the planting would be done during the winter months, when there would be little work on the bogs.

Again, another consideration is that a tree planting around the fringes of the reservoirs of the cranberry bogs would enable the operators in the future to borrow more per acre for their credit needs.

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[22]Pye, Herbert H., "Fostering A Crop of Tree Farmers," Burroughs Clearing House, (December 1949), Vol. 34, No. 3, pps. 31 and 68.

CHAPTER V

PRODUCTION AND MARKETING

Growing Areas

The 1951 cranberry crop in the United States is estimated at 932,500 barrels, compared with the record crop of last year of 984,300 barrels, but well above the 1949 crop of 840,400 barrels. The ten-year (1940-1949) average production is 728,800 barrels. In each of the three eastern states (Massachusetts, New Jersey and Wisconsin) production was below last year, but above average. In Washington and Oregon production was above last year and above average. No economic abandonment is indicated for the 1951 crop.[23] (See Appendix A, Exhibit II). From 1949 through 1951 the crop average has been 881,800 barrels, which is a substantial increase in comparison with that of the ten-year period (1930-1939), of 603,600 barrels, or the ten-year period (1940-1949), of 728,800 barrels.

The three large crops in succession are without precedent in the industry. They were the results of a combination of favorable weather, better agricultural techniques, and the results of the efforts to increase production during the preceeding years, when the prices of cranberries were favorable to the growers.

The present developed cranberry area of 15,400 acres in Massachusetts is only thirteen percent of the land classified as muck soil.[24] The extent of undeveloped muck lands in the state shows that there is much room for expansion as far as available soil is concerned; but flooding facilities, sand supplies, and drainage possibilities are as important as the matter of soil. The combination of all these factors are not always available where cranberry culture could be successfully carried out. The choice locations have been taken up, and expansion would tend in the long run to be marginal producers. However, if the returns over the next few years are such as would warrant increased production, more acreage could be developed, and the best of abandoned acreage could be put back into production.

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[23] United States Department of Agriculture, Bureau of Agricultural Economics, Release, January 4, 1952.

[24] Massachusetts Department of Agriculture, "The Cranberry Industry in Massachusetts," Bulletin 139, 1948, p. 5.

In New Jersey, increased production is rather doubtful. The 1951 production was slightly in excess of the ten-year (1940-1949) average of 75,400 barrels, and 29,000 barrels less than the ten-year (1930-1939) average of 105,700 barrels.[25] The damage done to the bogs by the false blossom disease has been severe, the prevalence of weeds resulting in high harvesting costs and lower yields per acre; the abandonment of marginal bogs; the tendency of growers to turn to blueberry culture and truck garden produce. The downward trend in New Jersey production over a twenty-year span indicates a slow and continuous decline that will probably continue during the coming years.

Wisconsin has more non-bearing acreage that has not come into production from plantings in the recent years than any other producing region. In 1950, 413 acres came into production for the first time and, in 1951, 181 acres came into production for the first time. It is reported that 70 new acres are due to come into production in 1952 and an additional 46 acres are scheduled for the first harvest in 1953.[26] Since it takes four years after a new bog is planted before it is ready for harvesting, cranberry production can only slowly climb. Wisconsin may in the next decade become the dominant producing region in the entire cranberry industry. There is ample room for new bog expansion in Wisconsin because this state has available many acres of suitable marsh lands, ample supplies of sand and sufficient water of the proper quality.

In Oregon, a limiting factor to increased cranberry production through bringing new acreage into production is the water supply. Many growers have thousands of dollars tied up in dams, pumps, pipelines, sump reservoirs and sprinkler systems. Many acres planted in 1946-1947, which have been neglected during the low prices of the past few years, could be put back into quick production with prices holding where they opened this past season, e.g., $15.00 per barrel.

Washington has no pressing cultural problems and we can look for a steady growth there during the coming years. The operators have favorable weather for growth, proper muck and peat soils, and ample supply of water. However, proper sands are available, but for the most part these sands are not near the marsh properties. The growers also have a reasonably good market on the West Coast.

The cost of building varies from $2,000 to $3,000 per acre and has not changed materially during the last twenty years. Previously, the work was done by hand, but now much of the work is done by power machinery. The greater efficiency of the machine has held the cost of development from climbing as in most other construction. With bog acreage throughout the country selling at $1,500 to $2,000 an acre, there is no incentive to build additional bog acreage for possible profit from sales. With prospects of better berry prices in the immediate season ahead, bog values will undoubtedly rise, and their sales values will be more in line with the initial investments.

The general expectation in the industry is for a considerable future increase in the national cranberry crops. There are three basic reasons for this spirit in the industry:

1. Land under cultivation is still increasing in Wisconsin and on the West Coast.

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[25] United States Department of Agriculture, Bureau of Agricultural Economics, Release, (January 2, 1952).

[26] Estes, C. W., and Morris, W. W., "Wisconsin Cranberry Production and Marketing," Wisconsin State Department of Agriculture, (January-February, 1950), Bulletin No. 299, p. 18.

2. Yields per acre are becoming improved due to better growing, flooding and sanding methods, to improved cranberry breeding and research, and to new chemical developments in insecticides.

3. The basic consumer market for cranberries is still responsive to further promotion so that it is capable of absorbing larger average and peak crops; especially as better processing techniques make it possible to spread sales of canned cranberry products over a full calendar year.[27]

Therefore, the high degree of concentration is explained by the fact that the peculiar requirements of the crop are met in only a limited number of locations. Outside these most favored locations, expansion of acreage runs up against steeply increasing costs. Furthermore, even where high net returns seemed to warrant such expansion, high initial investment costs tended to discourage and delay the opening up of new bogs in locations in which the soil and climate do not offer assurances of permanent profitability.

The factors which made for geographic concentration and restricted entry were also responsible for concentration of bog holdings into fewer hands. The remarkable increase in yields during the past half-century was made possible only by more costly methods of production, involving higher outlays for bog construction and maintenance, and more expensive equipment for the protection of the bogs from frost, insects, diseases and weeds. This increase in fixed costs, coupled with an appreciable risk factor, which is characteristic of all specialty crops, has given a decided advantage to large-scale producers. In all, there are at present probably not more than 2,000 commercial producers in the United States.[28]

Channels of Distribution

Approximately 56% of the two thousand odd growers in the country are members of at least one of the five major grower-cooperatives of the industry; namely, the three so-called "state sales companies" in New England, New Jersey and Wisconsin, the American Cranberry Exchange with common membership to theirs, and the National Cranberry Association which operates in those growing areas as well as in the Pacific Coast area.

The Growers, members of these five cooperatives, produce about 70% of the crop. The other 30% is raised by the 44% of the growers commonly called the independents.[29]

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[27]Booz, Allen & Hamilton, "Report of Survey American Cranberry Exchange", Wisconsin Cranberry Sales Company, April 1945, p. 1.

[28]"Cranberry Skin Keeps Its Shine, A Fair Parable," Food Marketing in New England, November 1946, Vol. 7, No. 3, p. 1.

[29]Booz, Allen & Hamilton, The Cranberry Industry, April 1945, p. 4.

Also cooperatives controlled almost 70% of the crop in each of the prior ten years. Of the total 1950 crop of 984,300 barrels, of which 579,300 barrels were sold or shipped fresh by all shippers, the independents shipped 271,688 barrels, or approximately 46.9% of all fresh berries produced in the United States.[30] Preliminary figures for the 1951 crop as to what percentage was controlled by the cooperatives, and the percentage controlled by the independents are not presently available; however, it can be reasonably assumed tha the general percentages will hold true for the season.

Individual

In recent years the trend has been away from the grower to market his own berries. The vast majority of growers do not have the facilities for preparing their berries for the market, nor the set-up to carry on the normal marketing functions. Today, the percentage of the total crop is so small that it does not exert any great influence on the price obtained. The majority of the individual growers, either are members of one of the cooperative marketing agencies, or, they sell their berries through one of the several private distributing agencies.

Private Distributing Agencies

The independent distributing agency buys berries from the growers, who are not members of one of the cooperatives and does the marketing of these berries together with those they have produced themselves. All standardization and grading is done by the grower and the berries are delivered to the shipping point upon instructions from the agency. They handle the berries of the growers on a commission basis.

With the independents marketing approximately one-half of the fresh fruit yearly, they are in a position to influence the market by selling their berries in a weak market, in order to obtain the best price. They have been accused at times of making sales by selling on consignment. In deals of this kind the berries sent to the jobber, or wholesaler, were sold at whatever price the dealer could unload them. The dealer would deduct his commission from the proceeds, and the freight, if shipped f.o.b., and remit the balance to the shipper. Practices such as this were very detrimental to orderly marketing, as espoused by the cooperatives.

Naturally, the members of the cooperatives always felt considerable resentment toward the independents, whose position permits them to derive most of the benefits of cooperation without sharing in any of the expense or responsibility. The independents grow and

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[30] American Cranberry Exchange, Annual Report, Crop Season 1950, p. 5.

sell their own berries, and anything they obtain through the cooperative efforts of member growers is incidental to their prime purposes. Often, the jobber's commision, with adjustments that often had to be made, exceeded the costs of handling the fruit through a cooperative; so in the end, they lost money by such sales. They stand to benefit financially from cooperative effort only as long as the cooperatives control sufficient production to maintain the market. It is usually contended that those, who do not belong to the major cooperatives move their berries by underselling the major cooperatives, and, that they are able to exist only because they do not set up an advertising budget, identical and proportionate to that of the major cooperative. Such criticism, of course, cannot be indiscriminately applied to all independents.

The independent producer and marketer serves a very useful purpose in providing yardsticks and checks upon the larger cooperatives, in providing a performance by which the larger organization can measure its own. The existence of the independent allows for experimentation in merchandising methods. Again, no one organization, no matter how successful or how well operated, can satisfy all growers. Differences constantly arise, leading to withdrawals. The independent agencies stand ready to offer these growers a service that keeps them in organized marketing. Again, just as no one marketing agency can satisfy all growers, no one marketing agency can satisfy all potential customers. Some customers are willing to buy from and do a job for an independent agency where they would not be willing to do the same job for some other marketer. In that way, the existence of the independent agencies provides more outlets for cranberries than would be provided by a single agency. This is to the benefit of the entire industry. Again, the competition of the independent agencies acts as a check to keep marketing costs in any one organization from getting out of bounds. Certainly, the competition of independent agencies acts as a stimulant and a prod to other marketing agencies to do a better job under the threat of losing customers or losing members, if a better job is not done.

There is no question of the sincerity of those who operate these private distributing agencies and those who sell through these agencies, for they are certainly convinced of the righteousness of their position.

The Cooperatives

In most cases the berries are delivered directly from the bog to the packing houses of the cooperatives. This relieves the growers of any further responsibility in the handling of the fruit. When a lot is screened, if it is to be consigned to the fresh fruit market, it is packed and delivered to the trucks or cars which will take the berries to their destination. This service is based upon actual costs of handling the berries for the grower.

Today, the preparation, standardization and grading to rigid specifications and the marketing of the fresh and processed fruit are primary functions of the cooperatives. The industry came into the 1951 season with no carry-over, no apparent surpluses and a strong consumer demand.

To reach this point, however, the cranberry grower had to take positive action in order that the marketing system he had developed and supported for these many years did not bog down.

This action took shape in an overall organization, the Cranberry Growers' Council, to coordinate the work of the cranberry cooperatives. The main task for the Council was to bring order into the cranberry marketing.

Cooperatives have been important in marketing cranberries for many years. The American Cranberry Exchange, with its central office located in New Bedford, Massachusetts, sells over 50% of the fresh cranberries, and was the first cranberry cooperative. It is a federated cooperative selling agency for the local cooperatives in each state, and sells under the Eatmore Brand. The National Cranberry Association, East Hanson, Massachusetts, a centralized cooperative processor, has grown to be the largest processor of cranberries. It operates canning plants in all producing areas, and sells under the Ocean Spray Brand. Both of these organizations have conducted effective consumer advertising and merchandising for years.

In no small measure, the continuing aggressive advertising and sales program of these two cooperatives has been responsible for the increased demand for both fresh and processed cranberries. The associations have helped extend the marketing season from the traditional holiday season to a year-round business. In 1949-1950, for example, fresh cranberries were sold from September through May.[31] Processed cranberries were available to the consumer in every month. Many food stores have featured canned cranberries during the spring and summer months in connection with the chicken and cranberry advertising program of the National Cranberry Association.

During the period immediately following World War II, the cranberry growers faced serious problems in spite of the strong organisation within the industry. Production was increased from an average of 715,000 barrels in the 1939-1948 period to 980,300 barrels in the 1950-1951 season, an all-time record. The production for the 1951-1952 season being 932,500 barrels.

During the war there was a scarcity of cranberries. The fresh fruit lost much of its appeal to the housewife because she could not purchase the large quantities of scarce, rationed sugar required. Thus, many potential customers were lost to the market. The price of cranberries rose because of short crops and bidding among marketing agencies to get the available supplies. The apparent boom in processed cranberries then brought in many independent canners, and record packs of cranberries were turned out.

By 1948, it became apparent that canned cranberries could not be sold in the quantities packed and under the many unknown and unadvertised brands that had spring up. These supplies backed up in the

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[31] Capel, George L., "Opinions of Buyers on the Marketing Program of Cranberry Cooperatives," Farm Credit Administration, United States Department of Agriculture, Miscellaneous Report No. 154, p. 16.

channels of distribution and the prices fell to disasterous levels. A surplus of berries for canning increased to nearly 500,000 barrels. As this surplus grew, it acted as a drug on both the fresh and processed markets. The burden fell on those with fresh crops to sell unusually large quantities. Here, the industry came into competition with itself.

The cranberry is a food item which retailers often use as a "sales leader." This is known by the figures indicating that the overwhelming majority of it is sold during the fresh fruit season. These sales indicate that the canned product is good enough for a very large percentage of the population. Thus, a profitable price cannot be commanded for the fresh fruit in competition with a low priced can. Furthermore, when the price of the can is low and the trade realizes that it can get neither price nor volume from fresh fruit sales, they are inclined not to handle cranberries in any form. The advent of the cheap can proved to be another "millstone" for the industry.

By using a cheap can to push sales of the canned product during the fresh fruit season, both the market and the consumer are diverted away from the fresh fruit. The unit sales are then made in terms of the canned product instead of the cellophane consumer package of the fresh fruit. When a package of fresh fruit is sold, one pound of cranberries is sold. The processed can contains but one-third of a pound of cranberries, the rest being sugar and water. It then appears that the industry has been attempting to promote one-third pound sales at the expense of one-pound sales when there are not enough potential sales units to absorb this dilution. The adultering of the crop on a 3 to 1 ratio only makes the "millstone" more burdensome for the industry to carry.

To solve this paradoxical situation the growers again turned to their cooperatives. In analyzing the situation, it was seen that the need was for orderly marketing of the cranberries and to build back the lost demand. Only by close cooperation between the two cooperatives could these ends be attained. Instead of a hit or miss method of determining the amount of berries sold fresh or processed, the situation called for orderly distribution to all channels of marketing. This required a system whereby the growers' representatives would decide what part of the crop could be sold fresh and how much would be processed.

Out of this need grew the formation of the Cranberry Growers' Council, an organization of grower-members of the two cooperatives and other growers. These growers charged the Council with determining how much of the crop to sell fresh and how much to process and with approving advertising budgets. The American Cranberry Exchange was made responsible for marketing the fresh fruit and the National Cranberry Association was made responsible for handling the berries to be processed and for conducting their advertising and merchandising program. In 1950, the first decision was to market 50 percent fresh, 30 percent canned, and the remaining 20 percent to be used as the Council determined during the season. The 1950 crop was of record size. It was determined that the market could not take the large crop and the best solution was to divert 10 percent from the market. The Council allocated, for the current season, a division of 40 percent to each channel with 20 percent to be divided later.

The two-year operational experiment of the Council has produced some encouraging results. The large carry-over has been eliminated. Sales of the fresh and processed fruit have increased, while much of this increase has been due to increased merchandising activity of the cooperatives and

a relatively low price level for cranberries, the Council can also take its share of the credit. It has justified its reason for existence by restoring order and confidence to cranberry marketing, by assuring the trade that most cranberry growers are working together to solve their problems. The division of the crop between fresh and processed is no longer on a hit or miss basis. Continued research is needed into all phases of cranberry buying habits and in the manner cranberries and cranberry products are used before the Council's work can be put on a near-scientific basis.

Another controversial problem is that growers and distributors not in the Council can direct their actions to take advantage of the policies of the Council. For instance, if the Council decides that fewer cranberries should be sold in any one marketing period, it is possible for those outside to ship more fresh fruit than they might have otherwise done, thus nullifying the benefits that might have been derived from the action of the Council. The outsiders for the most part are for everything the Council is trying to accomplish, they reap the rewards, but are reluctant to share their part of the burden.

Along with the efforts of the Council, the cooperatives have increased sales activity. The National Cranberry Association has increased sales of the canned product during the late winter, spring and summer months. This has been done as part of an overall program to promote the use of processed cranberries with chicken and other meats. The American Cranberry Exchange continues to widely advertise, making use of tie-ins with nationally known products, such as General Mills "Betty Crocker Gingerbread Mix," Hormel's "Spam" and others.

Cranberry growers are alert to the continued need for improvements in the marketing system. They recently organized a Cranberry Mutual, a cooperative venture aimed at promoting fresh cranberries. Thus, the cranberry grower is becoming increasingly aware of the necessity of cooperative effort in marketing his product, if he is to reap normal profits from his labor. Cooperative effort in disposing of his crop appears as the only practical way for the solution of this problem. It appears that they must adhere to the cooperative plan through not only the years of large crops, but likewise in those years when the crop is short in supply. This is quite necessary if he is to remain in the cranberry-growing business.

Some high placed members in the cranberry industry believe that by combining existing cooperatives and forming a national pool will solve their problems of disposing of all crops. Care here is necessary, because by such an amalgamation they could easily run afoul of the Federal law in regard to monopolies, especially so, if they handled fruit of non-members.

Others have espoused that by "orderly marketing" the National Cranberry Association regulate shipments during the summer months of the canned product, in order that dealer stocks will be at a very low point, when the coming fall shipments of fresh fruit reach the market. They contend, if the canned fruit is not available, greater attention will be given by the retailer to push fresh fruit sales, at prices which will be more satisfactory to the industry. They likewise contend that a better price would normally follow for the canned product. They believe that sales of the canned product should be pushed to the extreme during the late winter and spring months to sell that part of the pack which was held off the market. Attempts to juggle the law of supply and demand are

hazardous at best, and such efforts would be reason and evidence for Federal prosecution under Monopolistic Practices.

The operations of a cooperative do not result in profits or losses in the same sense that these terms are applied to a commercial enterprise. Their efficiency is measured by the amount of money made available to the members for the products they have sold and, by comparison of such amounts received with the prices paid by other outlets available to the grower. These outlets are the independent canner and various independent sales agencies functioning in the fresh fruit fields.

The American Cranberry Exchange, the principal fresh fruit marketing organization, remits to the shipper the proceeds of the sales after deducting the cost of selling the fruit. The f.o.b. returns to the Exchange in 1950 were $10.62 per barrel. The expense of selling the fruit amounted to 13.35% of the f.o.b. price received by the Exchange. The cost of the Advertising and Marketing Program of the Exchange amounted to fifty-five cents per barrel, or 5.127% of the total selling expense and the Operational Expense of the Exchange, which included brokerage fees of eighty-five cents per barrel, accounted for the balance of this expense, or 8.223% of the total selling expense. The net proceeds remitted to the State Shipping Unit were $9.20 per barrel, or 86.65% of the f.o.b. received by the Exchange.

The National Cranberry Association, the principal processing cooperative, distributes to its members for the berries turned into the company the proceeds from the sale of the processed products, less the manufacturing, selling and administrative costs of processing. These amounts then disbursed as dividends or set aside for special purposes in properly authorized and reasonable reserves.

Deductions made from the sale of the processed product include not only the expenses incident to processing as such, but also the various other expenses incurred by this Cooperative. These include expenses for such activities as growers' service (including therein educational and advisory services, and the administration of central purchasing and financing plans), together with the advertising, administrative and other costs related to the many activities of this cooperative, which are an important part in the long-term development of the cranberry industry as a whole.

Any comparison of the amounts paid to growers of the processing cooperative with the amount available from the independent canners will be erroneous, unless consideration is also given for the many constructive efforts made by the cooperatives. The cooperative contributions made in the interest of the industry over a period of years have no counterpart by the commercial canners or the independent marketing agencies in degree or kind.

For the fiscal year ending May 31, 1951, the National Cranberry Association reported that the Net Total Composite Cost per case was $2.1793; (one barrel of cranberries makes 11.07 cases of the processed product) giving a Net Return per case of $.7983, and a net return per barrel of $8.836 to the members.

Cost Against Selling Price

The average annual crop of cranberries for the years 1945-1949 was 822,100 barrels for which the cranberry grower received an average price of $17.84 per barrel. The highest price received during that period was in 1946, when the return to the grower was $31.90 on a crop of 856,100 barrels. The lowest return in the same period was in the 1949 season with a harvest of 840,400 barrels, the return to the grower was $9.23 per barrel.[32] The average price received by the grower for the 1950 crop of 980,300 barrels, of which 308,929 barrels were sold as fresh fruit by the American Cranberry Exchange, and 271,688 barrels were sold as fresh fruit by the independents, 340,000 barrels were processed, the balance of the crop did not reach the market, was $10.62 per barrel.[33] A return of $12.00 a barrel is indicated for the 1951 crop.[34]

The average grower has made little or no attempt to learn his actual cost figures. Interviews with prominent people in the industry lead the writer to conclude that a segment of the industry is not anxious to divulge their actual growing costs, lest they fall into the hands of Federal and State authorities. The general round figure of production cost obtained varied from ten to twelve dollars a barrel for the period 1945-1950. These figures are at variance with Dr. Crossmon's findings. (See Appendix A, Table 1.) They likewise estimated that production costs would be up an additional $1.50 per barrel for the 1951-1952 crop.

The estimated production cost figures compared with the annual returns per barrel in the years 1949-1950 indicate that the growers, as a whole, lost money. However, the writer has observed that many of the Massachusetts growers made money during those years, although not in the amounts which they received from the high price crop year of 1946.

The average cranberry grower appears prone to reckon his profits on the years in which he enjoyed his best return, and those years in which the returns were less, he lost money. In several instances, the writer has observed that these growers have continually improved their bogs after the "loss years," by building additional flowage facilities, re-sanding and buying mechanical harvesting equipment. It is the knowledge of the writer, that these growers did not put new money into the bog improvements or equipment purchases, but used their non-claimed profits for these purposes. Clearly, then, at least for these growers, the estimated production costs appear high, for these bogs of about eighty acres are not the most efficiently managed or most productive bogs in the Cape Cod area.

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[32] United States Department of Agriculture, Bureau of Agricultural Economics, Agricultural Statistics, 1950, Table 246, p. 205.

[33] American Cranberry Exchange for Crop Season, 1950, pps. 4, 5, and 12.

[34] Cranberry News, September 1951, Vol. XII, No. 9, p. 1

Price Fixing

The opening price for each crop is set by the American Cranberry Exchange and is announced about the second week in September. The figure set is the highest which, in the findings of the economists of the Exchange in their market surveys and in the judgment of the Exchange, the market will pay for the quantity of fruit which is expected to be offered for sale.

The factors which made for geogrpahic concentration and restricted entry were also responsible for the concentration of bog holdings into fewer hands. It is clear that these conditions provide a favorable setting for marketing control and other monopolistic practices.[35] On the other hand, it must, in fairness, be admitted that highly variable yields, the perishability of the product, and the lack of complementary sources of income combined to make cranberry production one of the most hazardous of agricultural enterprises. It is, therefore, not surprising that producers at an early stage awoke to the possibility of protecting their relatively high investment by means of "Organized Marketing."

The three Sales Companies united in 1907 to form the National Fruit Exchange. After several years of price cutting with Growers Cranberry Company, a consolidation with the latter was effected in 1911, under the name of the American Cranberry Exchange. In 1919, to conform with the Clayton Act, (which exempts from the Sherman Anti-Trust Act all agricultural cooperatives of a non-stock type) this organization was put on a non-stock, non-profit cooperative basis.

The three Sales Companies, like the American Cranberry Exchange, are subject to all privileges granted to cooperatives under the Capper-Volstead Act of 1922. (See Appendix A. Exhibit III.) Membership certificates in the three state organizations are held by a total of 468 individuals and corporate growers. Each state company acts as an intermediary between the grower and the American Cranberry Exchange.

Since it began, the American Cranberry Exchange has never handled less than 50% of the total of fresh cranberries marketed in the United States. After fluctuating during the first two decades of its activity, this proportion gradually increased in the third decade from 59% to 72% in 1942 and in 1950 decreased to 54%.[36] During this period the American Cranberry Exchange spent as high as five and one-third cents of every dollar received for cranberries,

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[35] Compare the following candid statement by the President of Cranberry Canners, Inc.: "We are fortunate in that the area in which cranberries can be grown is limited. This places a natural restriction on overproduction. It also confines growers to small areas where they can become acquainted with one another. The cranberry industry is probably outstanding for the friendly feeling and the lack of competition among growers. This has played a great part in further cooperation." Cranberry Canners, Inc., Report for the Fiscal Year ending May 31, 1943, p. 27.

[36] Booz, Allen & Hamilton, Report of Survey American Cranberry Exchange, 1945, Exhibit XI, and American Cranberry Exchange Annual Report, March 31, 1951, p. 5.

which meant that during the 1950 crop season, it cost the grower approximately fifty-four cents for every barrel of berries sold through the American Cranberry Exchange.

In 1930, the three leading processors, also producers of berries, decided to pool their facilities and formed a new company known as Cranberry Canners, Inc., (reorganized in 1946 as the National Cranberry Association and added the selling of fresh fruit to their activities), with Mr. M. L. Urann as its first president. Cranberry Canners, Inc., in turn, entered into contracts with the three state sales companies providing that each deliver a minimum of ten percent of the cranberries grown by its members to Cranberry Canners, Inc. In practice, appreciably more than ten percent of the berries are delivered each year for processing. In addition, a substantial quantity of cranberries is delivered to Cranberry Canners, Inc., from members not affiliated with the American Cranberry Exchange. Members have purchased (through agreement or otherwise) quantities of cranberries from nonmembers.

About one-third of the voting stock of Cranberry Canners, Inc., is now owned by a member company, the United Cape Cod Cranberry Company. The majority of the voting stock of the United Cape Cod Cranberry Company is owned or controlled by Mr. M. L. Urann. Approximately 13 % of the voting stock is held by another member company, the A. D. Makepeace Co.[37] The three state cooperatives of growers and individual stockholders own the rest of the stock. From the time of its incorporation, Cranberry Canners, Inc., has been eligible for the privileges given under the Capper-Volstead Act and the Farm Credit Act of 1933.

The two dominant cranberry marketing organizations, the American Cranberry Exchange and Cranberry Canners, Inc., are closely tied together in a system of interlocking directorates by virtue of which, in effect, they form a marketing monopoly controlling more than 75% of the total crop.[38]

In October 1941, the Antitrust Division of the Department of Justice instituted criminal proceedings against the Cranberry Canners, Inc., the American Cranberry Exchange, the United Cape Cod Canners Company, the A. D. Makepeace Company and thirteen individuals, charging them with having entered into and engaged "in an unlawful combination and conspiracy" in violation of Section 1 and Section 2 of the Sherman Anti-Trust Act of 1890. As "a part of said unlawful combination and conspiracy," the charge further specifies the defendants "determine the quantity of cranberries to be manufactured

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[37]These two companies, owners of large bog holding in Massachusetts, turned over to Cranberry Canners, Inc., in 1942 over 22% of the total production of the state, or more than one-half of the quantity processed in the United States in that year, some of which was purchased from small bog operators. Each of these two large companies is a member of the American Cranberry Exchange and Cranberry Canners, Inc. This may serve to illustrate the extent of economic control which a few growers can exercise within selling organizations as in the industry as a whole.

[38]Hyson, Charles D., Sanderson, Fred. H., "Monopolistic Discrimination in the Cranberry Industry," (Harvard) Quarterly Journal of Economics, Vol. 59, pp. 330-369. (1944-1945)

and sold as cranberry products," agree upon . . . . the prices to be charged for cranberries and cranberry products," "restrict, limit and control the quantity of cranberries to be marketed and sold as fresh berries," "control and regulate the manufacture and sale of cranberry products," and "suppress and prevent competition between cranberry products and cranberries."

It is alleged, furthermore, that the defendants "compelled, persuaded and influenced growers, not members of the defendant American Cranberry Exchange or stockholders of the defendant Cranberry Canners, Inc., to sell cranberries at the prices fixed and determined as aforesaid; purchased large quantities of cranberries from growers not members of the defendant American Cranberry Exchange, or stockholders of the defendant Cranberry Canners, Inc., for the purpose of preventing . . . the sale of cranberries in competition with cranberries marketed by the defendant, American Cranberry Exchange, Inc.," refused to sell cranberries to independent canners and influenced and persuaded growers, not members of the defendant, American Cranberry Exchange, Inc., or stockholders of the defendant Cranberry Canners, Inc., to refuse to sell cranberries to independent canners," and "purchased large quantities of cranberries from growers, not members of the defendant American Cranberry Exchange, Inc., or stockholders of the defendant Cranberry Canners, Inc., for the purpose of preventing . . . . the manufacture of cranberry products by independent canners."[39]

On November 2, 1942, a plea of nolo contendere was entered for the corporate defendants. The case, therefore, did not go to trial, and full evidence appears only in the secret records of the grand jury proceeding. Fines imposed by the government amounted to a total of $32,000. (See Appendix A - Exhibit IV).

The lack of adequate control of the market has so far prevented the effective manipulation of the supply. The charges concerning attempts by the American Cranberry Exchange and the Cranberry Canners, Inc., to extend their control to non-members are all the more serious for this reason. A very high degree of control, probably more than 90%, is required for effective price discrimination in this market.[40] The general welfare requires that the government step in, either to prevent this degree of control from being attained, or if this is impossible, to prevent it from being exploited for the benefit of a few. However, the failure of the two marketing organizations to increase returns above the competitive levels is, however, readily explained by the lack of adequate control over the supply. There can be little doubt that the two marketing organizations "conspired," that they acted in combination; but they seem to have gained little by so doing. Even if they had complete control of the market and had allocated their sales to maximize returns to members, the cost to the consumer would have been relatively small, particularly if it is compared with the gains available to producers who, with or without overt acts, managed to restrict production.

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[39] United States vs. Cranberry Canners, Incorporated, et al.: Indictment No. 100-389 (Criminal), October 1941.

[40] Waugh, F. V., Burtis, E. L., and Wolf, A. F., "The Controlled Distribution of a Crop Among Independent Markets," (Harvard) Quarterly Journal of Economics, (November 1936), Vol. 51, pp. 1-90.

During the course of the litigation, the changes objectionable to the government were made and the then defendants have since followed ways and means of conducting business as originally envisaged under the Capper-Volstead Act. Again, of recent years, these two marketing agencies have not controlled as much of the crop as in previous years. With the advent of strong consumer demand, stabilization in the industry, short crops, and increased returns, they could revert to their former practices.

The directorate of the Cranberry Growers' Council, Inc., is composed of directors of the American Cranberry Exchange and the National Cranberry Association. Again, the two organizations are being investigated for this interlocking relationship. From a standpoint of those in the management of the cooperatives, this appears to be a battle between the lawyers, in view of the fact that their attorneys have thoroughly agreed that the procedure followed in the Cranberry Growers' Council is not only legal, but practical as well, and a desirable approach from an industry standpoint. If the court should indicate this procedure is not correct, then the cooperatives will be required to discontinue the activities of the Cranberry Growers' Council, at least in its present form.

CHAPTER VI

FINANCING THE CRANBERRY CROP

The early history of cranberry growing in the United States and particularly in the Cape Cod region of Massachusetts was, for the most part, pioneered by those natives, who were fortunate enough to own suitable bog lands, upon which they constructed the first bogs. Their investment was principally their own labor. The rapid success of these early bog ventures led to larger projects, which required more labor and capital than the individual had at his disposal. The first solution to this problem was by the way of a joint-venture partnership, where the bog was constructed "on shares"; an informal arrangement by which a few friends or relatives each contributed that which he was capable of giving, namely; land, labor, or funds. Each shared then in the ownership of the bog to the extent of his contribution.

The participants in these joint ventures usually held a split-deed of ownership of the bog, the participants having an undivided interest, according to his contribution in the real estate. In many cases, however, there was not even a formal agreement for dividing the real estate or the ensuing crops. In some instances, the verbal arrangements made by the original parties are still being used by the descendants of the original owners. Fortunately, there are but a few of these cases remaining today, for if financing was sought, some difficulties would certainly arise in obtaining a clear title, especially so, when only very meager and often inaccurate descriptions of the property lines appear in the deeds of ownership.

In a large measure, the early growers who planned to extend their holdings sought financial help from individual lenders. Here was the beginning of large concentration of holdings by the grower-lenders. The terms of their loans were such that they were largely favorable to the lender, a breach of contract meant speedily foreclosure and a new bog for the lender. It is not the purpose of this paper to trace the origin of the larger bog holdings in Massachusetts; suffice it to say, that several of the large bog holders today are also in the cranberry finance business.

The building of a bog is a three- to four-year proposition before a crop can be raised where the return can normally be expected to be over the costs of maintenance. In the years past, it was considered that a bearing bog would repay its costs of building and maintenance within a ten-year period. Today, with taxes eating more heavily into earnings, increased maintenance costs and living expenses, it is rather doubtful that full mortization could be accomplished

within the old ten-year period. Financing for construction purposes is then in the nature of capital lending and not within the functions of commercial banking. Some financing for construction purposes has been done by savings banks where the mortgage was written to cover not only the bog and the bog facilities, but also the other real estate of the borrower.

For many years the commercial banks were very reluctant to make loans on established bogs, due in part, to the rather hazardous crop prospects from year to year and to the lack of an organized market for the crops when harvested. Today, with the increased use of scientific knowledge in cranberry culture and with the means of controlling, in a large measure, the natural risks that made the annual crop uncertain, the commercial bank is more willing to consider the Bog Loan Application upon its own merits and not reject it per se. An additional reason for this considered attention by the bank is the more orderly marketing program for the industry.

Methods of Financing the Grower

From a survey of the lending policies of the banks situated in the cranberry-growing regions of this country, it was found that all extended short-term credit with satisfactory results. All made crop production loans to cranberry growers generally supported by the financial responsibility of the borrower, with repayment predicated upon estimated income from the operations, and all required full liquidation each season. In a very few instances the banks added further support to these loans by taking a crop mortgage to assure themselves of receiving all returns from the cranberry sales and, if sold through a cooperative pool, they request an assignment and an acknowledgement of the assignment from the cooperative. However, the banks in all the growing regions were generally unanimous in reporting that the responsibility of their customers has been such that this procedure (securing the loan by a crop assignment) has not been necessary. The notes under which these short-term lines are usually drawn have a maturity to coincide with the date funds will be available from crop sales to effect liquidation.

An acre of producing cranberry bog represents quite an investment and is generally regarded as the most expensive per acre land used in any agricultural endeavor. It has been noted elsewhere in this paper that the cash outlay before the initial harvest was from $2,000 to $3,000 per acre, with costs being greater in the western regions where they use sprinkler systems as a protection against heat and frost. In the years immediately following World War II the cranberry bog was selling from $3,500 to $4,000 an acre. Due to the depressed price of cranberries in 1948 through 1950 it has been difficult to appraise the value of bog property for loan purposes. The 1951 season was not impeded with a depressing "carry-over," the markets were firm both for the fresh fruit and the processed product, with an anticipated return for this year's crop reaching $18.00 per barrel, a firmer and more realistic value can be placed on the producing cranberry bog. The National Cranberry Association can present bona fide sales showing prices per acre in 1951 from $2,000 to $2,500. These sales apparently were made in the Massachusetts growing region, for reports from the other growing regions are silent as to recent bog sales.

Today, the banks in the cranberry growing regions are more willing to review applications for the purchase of existing bogs. It is notes that the banks contacted, which are the principal banking connections for the growers in those regions, that they have never experienced a loss in any loan made to a cranberry grower. One of the Cape Cod banks contacted, reported that they have never been forced to foreclose on any bog loan, although they did state, that they "waited" for a few. This bank handles the bulk of the cranberry financing that is done by banks in the Massachusetts region.

The Wood County National Bank of Wisconsin Rapids, Wisconsin, which handles over ninety percent of the cranberry business in Wisconsin likewise reports satisfactory performance. The National Bank of Commerce of Seattle, Grays Harbor Branch, Aberdeen, Washington, and the Ilwaco Branch, Ilwaco, Washington, report their experience as reasonably satisfactory, but that they are now operating on a much more conservative basis after experiencing some very difficult workouts. These workouts can be in part ascribed to a more generous appraisal of $3,000 an acre, whereas it was the policy in the East, even when the cranberry bogs were selling from $3,500 to $4,000 an acre, never to exceed an appraisal of $1,800 to $2,000 an acre for bogs of top quality. Again, in the East, the banks expect the borrower to put in of his own funds as much or more than the bank itself is willing to risk. The owner then having a greater financial interest in the bog will be more inclined to protect his investment through good seasons and poor ones, by not neglecting to car for it properly. Also, in the East they have a hard and fast rule of extending credit for bog purchases only to experienced growers.

Apparently, in the state of Washington, the banks were not as selective in their credit risks to bog owners, nor were they as conservative in their appraisals as were the eastern banks. The banks holding mortgages made on the basis of an unrealistic appraisal, found when the going became hard and the growers' income was not sufficient to repay the loan as agreed, the bank, in fact, had bought themselves a cranberry bog. The difficulty, in most cases, was that the owner became discouraged over the price structure and, when he found that he was unable to make a living from the property, he was forced to seek work elsewhere. In many cases, the bog would not receive the care required and, in a matter of a year or two, it would revert back to weeds. Sometimes it is not feasible to attempt to bring back these bogs after only a few years of abuse. The personal factor which enters into this type of loan varies much and that is something which is very difficult to predict at the time the loan is granted.

Today, their policy is to grant loans only to experienced growers who have demonstrated their ability and willingness to keep their bogs in proper shape. Furthermore, they also insist that a sprinkler system be installed on the bog property and also that there be a home and a warehouse on the property and that these buildings be in good repair and fairly modern. They now hold their appraisals to about $1,000 an acre. In the transition from the very liberal aporaisals of a few years ago to the ultra-conservative and unrealistic appraisals of today, it readily becomes apparent that the growers in that region will be forced to seek their credit needs from governmental agencies or the cooperatives.

The First National Bank of Portland, Oregon, Coquille Branch, reports that they are not presently financing the cranberry grower

through long-term real estate loans but, if the opportunity offered itself, any such loan would be predicated upon the financial responsibility of the borrower, income from the bog, analysis of recent sales of this type of property in the area and the nature of the improvements.

In discussions and writings with leading bankers and spokesmen for the industry, the conclusion could not be escaped that the cooperatives were actively taking care of the financing needs of the industry and that their policies were such as to preclude successful bank competition. With one of the cooperatives discontinuing financial services to its members, another restricting those services, the growers are perforced to look to their banks, governmental agencies or private sources for their credit needs. Now, that the industry apparently is on the threshold of a brighter future, it becomes readily apparent that if the industry is to thrive and be prosperous in the future, credit must ba available and if such credit is to be soundly based, it must flow from banks.

In no producing area is the entire crop sold locally, but in every region the far greater part of the crop is exported to other sections of the country. Certainly, this inflow of money into the growing regions for their crops has an important bearing on its economy.

It would appear that an industry producing annually a crop which has seldom, within the last twenty years had a farm value of less than $6,000,000, is a sufficiently valuable segment of the economy to merit the active support of those whose business is the formulation and administration of sound lending policies. The banks have not appeared hesitant to extend deserving credit to businesses in these regions, which depend indirectly upon the cranberry industry for their well-being. If one is to accept the principle that the banks have an obligation to supply the areas in which they serve with all justifiable and worthwhile credit requirements, serious thought and study of the cranberry industry and its potential new business offerings, would appear as in order for the bankers in the five cranberry-growing areas. Unless this is done, they will be paving the way for greater government encroachment into their lending spheres.

From the study the writer has made of the cranberry industry, it has been determined that there is no uniform method of appraisal of bog property used by the bankers, governmental agencies or individual lenders. The principles of agricultural lending currently advocated by the American Bankers Association can readily be applied as a basis for a sound policy. Proper appraisal of the man and of the land, methods of operation and income-producing ability of the enterprise, considered in the light of probable economic conditions during the life of the loan, are factors for consideration which apply equally as well to the cranberry grower as to the citrus or potato grower. Recognition of the fact that the farmer's living expenses are the first claim on agricultural income, the necessity for arranging terms to fit the particular needs of the borrower, adjustment of maturities to coincide with the sale of crops, consideration of loans with a view to their effect on the borrower, the community and the banks should all be features of a good lending program for the cranberry grower. Of course, complete loan files are a necessity and, probably most important of all, there must be someone in the bank to carry out the program, who is intimately familiar with the cranberry industry and its economic import to the area, and who sincerely believes in its future.

Much of the trouble that befell the cranberry grower of recent years has been due in a large measure to the over-granting of credit based upon unrealistic appraisals of bog property. The study the writer has made of this phase of the industry leads the writer to conclude that the appraisals made in the past certainly did not conform to any conservative pattern. There is recited below a method of appraisal used successfully over the years by a commercial bank and two independent growers and financiers. (Names upon request.) This is presented in the spirit that it may be of help to others engaged in financing the cranberry grower. Cranberry culture, as has been noted before, is a very specialized form of agriculture and, as such, requires a more comprehensive method of appraisals than is generally necessary for other agricultural pursuits.

Bog Appraisal:

Preliminary review of the completed loan application by the Loaning Officer, who then passes it along to the Real Estate Committee for further consideration.

1. The applicant:

a. Experience	- 20%	
b. Character	- 10%	
c. Capacity	- 10%	
d. Capital	- 10%	50%

2. The Bog Property: 50%

The Real Estate Committee views and examines the bog property. At least one of the members of this committee being an experienced cranberry grower. The maximum percentage values alloted to the following bog properties are:

Water Supply - 5%
Quantity - Sufficient for all season purposes or, is it ample for early season requirements?
Quality - Alkaline or Acid? (Litmus Paper test)
Does the owner have uncontested rights to the water supply?

Sand - 5%
Quality
Quantity
Availability
Date of last sanding?

Bog Condition - 10%
Depth of peat. pH content of humus
Minimum pH requirement of 4. Field test __pH.
Shape of Bog. - Is it level? Is it well adapted for the use of mechanical harvesting equipment?
Age. May reflect on bog condition if there is evidence of neglect.
Type of bottom - (Hard bottom requires fertilizer.)

Location - 5%
Does the location permit easy gravity flooding and draining?
Does the location require water pumping facilities? If so, can the water be handled economically?

Plantings - 5%
Standard of mixed varieties.
Condition of the vines.
Evidence of disease.
Evidence of insect damage.

Production - 20%
Record required of the last 5 to 10 years' production. (If this record is not available from the grower and he has been selling the berries through a cooperative, the required information can be obtained from that source.)

The level of bog values being tied to the average annual per acre yields. There are costs common to all bog operations, regardless of the per acre yields but there is a diminishing return to the grower as production goes down.

The bog being classified according to its average annual per acre yield:

Over 60 bbls.	Over 50 bbls.	Over 40 bbls.	Over 30 bbls.
20%	15%	10%	5%

If the average annual production record of an established bog is under 30 barrels per acre, it is considered as not having a sufficient earning potential to warrant further consideration.

If the present production is below average, is it the fault of the management, the fault of the bog, or a combination of both?

If the property being appraised is comparatively new and without a production record, comparisons are made with similar properties having approximately similar conditions, to estimate it's probable per acre yields. Bog production classification is then made on the basis of the estimate yield.

Size of Bog: A six to an eight-acre bog can be properly cared for by the owner with a minimum of hired help. Larger acreage requiring additional help.

Bog facilities - kind, condition, suitability.

The foregoing method of bog appraisal is a more realistic approach in determining the fair value of cranberry bog property for mortgage loan purposes. With cranberry bog property having a value of $2,500 to $3,000 an acre, the maximum amount the bank will advance is 50% of the per acre value, and that amount is only advanced when the Real Estate Committee gives a 100% rating to the bog property. Other advances being based proportionately upon the percentage rating determined for the bog.

The basic appraisal would, of course, be necessary if the applicant were an individual or a company engaged in cranberry growing. Of course, if the applicant were a company, incorporated or not, the

procedure before the granting of the loan would not be quite as simple as that of a loan to an individual grower. The bank would request, in the case of a loan to a company, certain other information and documents defining the conditions of the loan which would be incorporated into the Loan Agreement.

The bank would normally ask as security for a mortgage loan to a company, a chattel mortgage covering all equipment used in the operations of the bog, together with a real estate mortgage covering the bog property, land, water rights and real estate incidental thereto. Possibly, they would ask for a pledge of the stock of the company and the personal endorsements of the principals, if the statements of the concern warranted such precaution. The Loan Agreement of the company would contain covenants which would prohibit or limit the company in doing any of the following things while the mortgage note from the company to the bank remains unpaid, except with the written consent of the latter:

a. Sell or mortgage any of its physical assets;
b. Borrow any money after the date of said note;
c. Issue or agree to sell any stock of any class;
d. Declare or pay any dividends.
e. Make any change in or amend its Charter or Articles of Organization or vote to dissolve;
f. Make any lease of its personal or real property which cannot be terminated by the bank, or its successors or assigns;
g. Pay any salaries or compensation to its officers, executives or officials of the company beyond the rate now being paid, with defined limits as to the maximum salaries allowable;
h. Incur any obligation or make any contracts which are not in the current and ordinary business of operating said company.

Additional requirements would be; certificate of clerk of the company that the loan was properly authorized at a regular or special meeting of the stockholders of the company, and duly recorded in the minutes of the company; that the by-laws contain no provisions inconsistent with the above vote; that the president was duly elected; that the certificate of the vote has not been altered or amended and is still in full force and effect. In all instances, the bank would insist upon a clear title to all properties.

Methods of Financing the Private Distributing Agencies

The private distributing agencies not only market the berries which they themselves grow but also the berries bought from other growers who are not members of a marketing cooperative. These agencies are, for the most part, financially capable of taking care of their own seasonal needs and seldom require outside assistance. Ample bank credit is available to these agencies on an unsecured basis.

Methods of Financing the Fruit and Produce Wholesaler

The cooperatives and, as far as can be ascertained, the independent sales agencies have been very selective in their choice of distributing channels in the marketing of the cranberry crop. The crop moves from the fresh and processed sales agencies through the basic trade channels, which finally get the cranberries to the ultimate consumer's table. The five main steps in this latter distribution process take the fruit through (1) the brokers, (2) primary receivers of fresh foods, (3) wholesalers and jobbers, (4) the chain stores, or (5) the various retailers of fresh and canned foods.

The cranberry sales by these outlets represent but a very small percentage of their annual business volume. The financing these outlets need is usually available through their regular banking channels. A study of the financial reports of the fresh and the processed sales agencies over the last four years reveals gross sales of over $60,000,000 with a net charge-off for the entire four years of less than $8,000.00. This is slightly more than 1/100 of 1% of total sales, which is very nominal, indicating careful credit extensions by these agencies and a splendid collection policy and financial responsibility of the customers.

Methods of Financing the Industrial Users

The by-product end of the cranberry-processing business has not yet been developed to a point where the sales of these products are a factor of any great consequence in their annual sales. The chief deterent to the development of this line of business is the cost factor in recovering useful commercial by-products. Again, it is questionable if these products can, in the immediate future, be produced in volume at a cost comparable to what similar products are obtainable from other sources. Also, it is questionable that from the volume of these products obtainable each year they could be sold at a profit, which would justify the expense of additional plant facilities required. There is under discussion plans for a Pilot Plant development of these products. Presently, no special financing is being considered.

Methods of Financing the Cooperatives

It is not within the intent of this paper to delve into the problems of the financial difficulties which the cooperatives largely brought upon themselves by venturing into fields which were outside of their normal functions, and which they were not equipped to properly handle. This paper attempts to portray the picture of the cooperative as of today and as they are likely to look in the immediate future.

Ample credit for the sales companies in their normal operations has, in the past, been available from the banking system, and the experience has been satisfactory. Their seasonal needs being beyond the legal limits of the Country Banks, they obtained this credit from the City Banks.

The large processing cooperative, the National Cranberry Association, canners of the "Ocean Spray" brand have for many years

used the facilities of the Springfield Bank for Cooperatives for their credit needs. It is interesting to note that Marcus L. Urann, the President of the National Cranberry Association has been one of the seven directors of the Springfield Bank for Cooperatives since shortly after the beginning of this relationship.

The National Cranberry Association has at present with the Springfield Bank for Cooperatives a Working Capital Loan, which is a seasonal self-liquidating loan and is based more upon the financial condition and the operating record than upon the security available. As of November 30, 1951, these borrowings were in the amount of $3,600,000[41] which will be paid out before the 1952 crop comes into the market. These seasonal loans have been paid out yearly with the exception of the three years, 1947, 1948 and 1949, when there was a heavy carry-over.

In addition to the above loan, they also have a Facility Loan with the Springfield Bank for Cooperatives. This loan is in the form of a mortgage covering the real estate and fixed equipment of the canning plants located in the five chief producing areas. As of November 30, 1951, the balance of this loan was $2,400,000[41] and present indications are that the loan will be paid out before its maturity in 1935.

The Springfield Bank for Cooperatives reports satisfactory performances in the above two loans and maintains that they are better equipped to service the needs of this cooperative than are the commercial banks, because of their special knowledge and experienced personnel engaged in servicing this branch of agriculture. Furthermore, they claim a more sympathetic attitude toward agricultural pursuits, an attitude not generally shared by commercial banks.

In addition to the above, the Cranberry Credit Corporation, a wholly owned subsidiary of the National Cranberry Association was formed in August, 1942, with a capital of $100,000, which took over the bog loans. This capital was substantially increased later, as demands for credit increased, and the corporation expanded its activities to other purchasing areas. Loans were made to members primarily against bog mortgages, on a three-year basis, and some seasonal crop loans were made on an unsecured form. This paper is discounted with the Springfield Intermediate Credit Bank. Satisfactory performance is now claimed, although many of these loans are definitely work-out propositions with higher taxes, increased cost of bog supplies, high labor costs, and the additional cost of preparing the berries for market does not permit rapid amortization of these mortgages.

In the present form this is not a proper commercial bank credit. Properly operated, this type of loaning could be a joint venture between the City Banks and the Country Banks. Salvage value of these loans is little unless there is an active market for the bogs. Today, the Cranberry Credit Corporation is not overly active in soliciting new business, preferring to have its members seek credit from other sources.

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[41] National Cranberry Association, Financial Report, November 30, 1951. Idem.

CHAPTER VII

CREDIT EXPERIENCE

In most all forms of agriculture there is always the ever present problem of the struggle with the natural elements, and the cranberry culture is no exception. Most agricultural products are a staple in the diet of man or beast and consequently command a ready market. Cranberries, in the final analysis, are still a luxury crop, possessing no properties in the diet of man that cannot be supplied by other fruits. Cranberry culture is a very specialized form of agriculture that requires special knowledge and skills for its successful cultivation.

The banker, to make successful credit extensions to the grower and to those engaged in the marketing of the crop, must have more than a passing knowledge of this branch of agriculture. Hence, in financing the cranberry grower and the distributing agencies, we are dealing with a specialized form of agricultue, the amount of the end-product which can never be accurately predicted much before the actual harvest. Again, consideration must be given to the remote possibility that the food-buying habits of the public could change, and the demand for cranberries and cranberry products, would soften to a point where there would be diminishing returns to the grower.

Risks of the Industry

The chief risks of the industry are the weather elements. Probably no other branch of agriculture has made so much progress in effectively controlling these elements as has the cranberry industry. The cranberry grower, by the use of water for flooding and sprinkling, can control frost, the ravages of some insects and the burning of the fruit by the hot sun. Again, the cranberry grower, who has an adequate supply of water can irrigate his bogs during the season, if normal rainfall is insufficient for that purpose.

A frost-warning system has been in operation for many years, first by the use of telephone when the danger of frost was imminent and later by the use of radio to give up-to-the-minute warnings and a more complete coverage. These warnings, in a large measure, now take much of the guesswork out of flooding for frost protection and accordingly save this expense for the grower.

Specialty farming such as cranberry culture requires the mastery of frosts. One of the most promising and revolutionary developments in recent years is a new type of heater which protects from frost up to an acre of growing crops. In the next decade, it will undoubtedly

become one of the most valuable tools for protecting the cranberry blossom and the growing fruit susceptible to frost. Basically, the principle of the new frost protection is an oil-burning lamp, which is placed on a platform or on a tall metal tripod in the growing area. The infra-red ray is the scientific basis of the new frost controller. The cost of operation should be much less than the cost of flooding the bogs, and there are no residual problems as in the case of flooding for frost control.

The control of insects and plant disease is a constant subject of research by the several State Agricultural Schools and by the United States Department of Agriculture. The newer insecticides and herbicides have been very effective in controlling pests and diseases of the plant.

The cranberry industry can control, in a large degree, the ravages of the natural elements upon their product. However, this can only be done at a price, and the greater the protection sought, the greater the cost. The extent of control of the elements that is made has a direct bearing upon the net receipts to the grower.

The large crops of the last three years cannot be explained because of the new bogs coming into production for the first time. Some new acreage came into production in the Wisconsin region during these years, but this in itself did not account for the large crops. The answer appears to have been a combination of favorable weather and better agriculture techniques. The results of the new growing techniques which were used previous to these years became evident in larger per acre yields during this period.

Probably, the greatest risk now confronting the industry is the possibility of over-expansion of production facilities. Such increased production is not likely to come upon the industry in any one year. Several successive years with prices which produce profits for the growers would be an incentive to build new bogs. Both in Wisconsin and on the West Coast there is ample and suitable marsh land available for expansion. The high initial investment required to bring a bog into production will not be a deterrent if there are prospects of future profits.

Conversely, if there should be several successive years of short crops and the distributing agencies were not able to supply the demand, a possibility could occur where the public would become accustomed to doing without cranberries and cranberry products. The effectiveness of the cooperative advertising programs could conceivably create customer ill will, if they were unable to satisfy consumer demand. Customer demand for this type of an agricultural product is not like a water faucet that can be turned off and on at will, as there must be berries or berry products to sell at all times and consumers willing to buy.

Another risk of which the industry must be constantly aware is the danger of pricing their products too high. Over-pricing these products would divert the consumer to cheaper competitive foods. Over-pricing would be a calamity to the industry.

Banks with the Grower

From the correspondence received from the banks in the principal growing regions of the country, one must conclude that the credit experience of the banks with the growers has, on the whole, been mainly satisfactory. Only two of the banks reported having experienced a loss from any loan to the cranberry grower. Several did report that they have had some bothersome workouts. These workouts were loans that probably should not have been made by a commercial bank or possibly not in the amounts originally advanced. The short prices received by the growers during the 1948-1950 period did not give a sufficient margin to allow for the amortization requirements called for in those notes. Prior to 1948, the banks in the western-growing regions appraised bog property much higher than was the practice in the East. The unsecured crop mortgages were like wise dependent for their payment on the proceeds received by the grower. Hence, if the net return to the grower was insufficient to cover his living expenses, taxes and other current demands upon that income, there would be little or no surplus left to pay his loans to the bank.

Banks with the Distributing Agencies

The distributing agencies herein referred to are the private growers and companies engaged in the distribution of the fresh fruit. In the cranberry industry these individuals are referred to as the independents. The troubles which beset the organized industry in the years 1948-1950, which were in a degree caused within the organized industry, were aggravated to a considerable extent by the actions of certain independents. The independents claimed that since they had no advertising program to support, they could sell their berries cheaper than the cooperatives, and still make a profit. The actions of a few of the independents in selling their berries from fifty cents to one dollar a barrel under the price asked by the cooperatives, together with the practice of some of the independents in selling their berries on a consignment basis were important contributing factors in demoralizing the markets in those years. The low prices received for cranberries in those years were generally felt by the industry at large. The organized growers blamed the low prices received upon the independents, and the independents, in turn, blamed the cooperatives for the low prices. The independents, competitors to the cooperatives, shipped, in 1950, 271,688 barrels of cranberries to the fresh fruit market, or approximately 46.9% of all fresh berries produced in the United States.[42] Hence, it can easily be seen that the independents in acting alone exert a powerful influence upon the fresh cranberry market. There were few reported instances in 1951 of the independents straying away from the organized price set and received by the cooperatives.

The apparent philosophy of the independents in those years of the large crops was to sell their crops as quickly as possible at

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[42] American Cranberry Exchange, Annual Report, March 31, 1950, p. 5.

the best price a distressed product would bring in a buyer's market. The actions of a few of the independents were deliberately planned to hurt the organized industry because of an animosity they held for the cooperatives.

However, in spite of the reasons for, or the methods used by the independents to market their crop, the overwhelming banking experience has been favorable. It has been the observation of the writer, gleaned in the course of examining banks throughout Massachusetts, and from conclusions drawn from conversations with some of the growers referred to above, that they have gone out of debt each year. As a matter of fact, some of these independents have not requested banking accommodations for several years. The writer has no reliable means of knowing whether some of these independents seek their credit requirement from sources other than commercial banks.

From the interviews the writer had with several bankers in the Massachusetts-growing regions, the impressions were conveyed that they stand ready and willing to extend financial assistance to these independents, either on a secured or an unsecured basis.

Banks with the Cooperatives

The National Cranberry Association, the large processing cooperative, has a line with the Springfield Bank for Cooperatives, under which it borrows for operating requirements and for working capital purposes. The seasonal short-term loans are liquidated through sales of the processed fruit. The working capital loan is arranged on a direct reducing basis extending over a period of years.

On May 31, 1951, the amount owed to the Bank for Cooperatives by this processing cooperative included $1,000,000 on an operating loan and $2,500,000 on a term loan which is secured by first mortgages on the real estate located throughout the United States. On November 30, 1951, the working-capital loan had increased to $3,600,000, while the term loan was reduced by $100,000. This latter obligation was reduced $350,000 in 1951.

The agreement under which the processing cooperative borrows from the Springfield Bank for Cooperatives requires that it maintain an investment in stock of the Bank, the amount of which is related to the amount of outstanding loans on November 30, 1951, the company showed $300,000 invested in such stock, which security was pledged as additional collateral to the loan.

Operating loans are obtained from the bank by the National Cranberry Association in the autumn of the year when processing operations are begun, and are repaid when realization of the year's sales has been attained. As of the fiscal year end, May 31, 1950, these loans amounted to $1,750,000 and as of May 31, 1951, these loans amounted to $1,000,000. However, these working capital loans had increased to $3,600,000[43] as of November 30, 1951. The agreement

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[43] National Cranberry Association, Financial Report, November 30, 1951.

under which these loans are granted contains the usual warranties and covenants which are usual on loans of this type.

The loans granted by the Springfield Bank for Cooperatives to the National Cranberry Association are, strictly speaking, demand loans. They do not represent long-term financing of the working and equity capital requirements of the processing cooperative.

Under the loan agreements, the management control of the National Cranberry Association today is largely in the hands of the bank rather than the company's officers. No important business action can be taken by the operating management without the approval of the Bank.

Interviews with executives of the Springfield Bank for Cooperatives indicated that a friendly and cooperative attitude was shared with the management of the National Cranberry Association. The president of this borrowing cooperative is also a director of this bank. These same officers consider their bank is better equipped to handle the needs of an agricultural cooperative than are commercial banks. Similarly, they feel that they are closer to agriculture's basic problems, and having studied these problems thoroughly, they are so situated that they can view the problems of the cranberry industry more sympathetically than can a commercial bank. The Springfield Bank for Cooperatives is in a large degree responsible for the continued improvement of the borrower and they expect that the real estate loan will be liquidated before maturity. They are satisfied with the performance of the loans to the National Cranberry Association and do not expect to lose this business to commercial banking now that the company is in a much stronger financial position.

The Consolidated Statement of the Financial Condition of the National Cranberry Association as of November 30, 1951, the date of peak debt position, shows Cash, Receivables after adjustment for Doubtful Accounts, Inventory after allowance for Inventory Adjustments, together equal $9,080,793.12 and more than covers the Total Liabilities of $7,214,166.05.[44] The National Cranberry Association's statement at the close of its current fiscal year, May 31, 1952, is expected to show continued improvement.

The credit experience of the banks with the so-called "sales companies," The New England Cranberry Sales Company, The American Cranberry Growers' Association (New Jersey), and the Wisconsin Cranberry Sales Company has been satisfactory for all seasonal loans. These "sales companies" experience no difficulty in obtaining their seasonal credit requirements from the commercial banks.

Only the New England Cranberry Sales Company ventured into fields of endeavor beyond the latitude of its original objectives. The purpose of this organization being defined in Article I of its By-Laws:-"to do business at cost for the benefit of its members and promote the interests of growers and consumers of cranberries by cooperating in packing and distributing, and by standardizing packing

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[44] Idem. p. 98.

and quality under reliable brands." This company - following the practice of the National Cranberry Association - in order to obtain new members and to retain members began lending financial assistance to the growers both on an unsecured and a secured basis. The funds used for this purpose were diverted from the Operating Fund (The Company's Working Capital) which was accumulated by withholding for a ten-year period a percentage of the growers' gross sales. The funds so acquired were sufficient for normal operations. However, when this company started lending financial assistance to the growers, the Operating Fund in time became tied up in bog mortgages and unsecured seasonal loans. The bog mortgage loans were written on a demand basis, but with the understanding that they would be liquidated at the rate of ten per cent per year. Consequently, in order to maintain adequate working capital, the company resorted to bank credit, the original intention being to hypothecate the mortgages as collateral for the bank loans.

Many of these mortgages offered as collateral were found to be unacceptable to the bank because of faulty titles to the mortgaged property. Credit arrangements were worked out on a short-term basis secured by mortgages on the company's physical properties and the cooperative mortgages were held as additional collateral.

It is beyond the intent of this paper to discuss the financial complication that arose within the company because of the improper use of credit. Suffice it to say, that these loans became troublesome workouts for the lending bank. Slow progress was made in liquidating these loans during the very recent years of bumper crops, when the entire crop could not be sold and large carry-overs developed. However, during the last two years, with more favorable prices being received for cranberries, the bank indebtedness was reduced $241,000. Mr. John W. Wales of the First National Bank of Boston estimates that this loan will be entirely liquidated in another two years, provided satisfactory crops are raised and prices hold.

CHAPTER VIII

FUTURE OUTLOOK OF THE INDUSTRY

The future of the cranberry industry in the United States would be difficult to project. The 1951 crop was disposed of at prices which were quite satisfactory to the cranberry growers. The better returns for this crop have created optimism among growers, and the winter sanding operations have been reported in all the cranberry-growing regions. This sanding should result in higher yields and even better returns for the cranberry grower in this and succeeding years.

From a production standpoint the outlook is indeed optimistic. Throughout the growing regions, the conditions of the bogs are good and the growers are hopeful of harvesting a large crop in 1952, the preliminary estimates being based on heavy budding and new acreage expected to get into full production this year. Again, the existing bogs will be more intensively cultivated this year with the promise of a profitable harvest. The cooperatives will gear their sales and merchandising programs to sell the crop at or above the stabilized opening prices. Their objective first will be to name a price, which will be high enough to get the most the market affords while keeping the buying support of the ultimate consumer, yet low enough so that it will not have to be cut during the peak marketing season.

The working agreement between the American Cranberry Exchange and the National Cranberry Association will be continued for an indefinite period through the Cranberry Growers' Council. The Council's program for allocating a percentage of the total crop to the fresh fruit market, and the remaining part of the crop set aside for processing proved successful this past year. If the pattern developing from that year's marketing program of both fresh and canned cranberries is used as a basis for future policies, it will result in the most successful decade for cranberry growers that has ever been experienced.

The success of the Cranberry Growers' Council Programs will be dependent to a large extent upon the adherence to its recommendations by the several contracting parties. The Council is made up of members from the Board of Directors of the two cooperatives. They are all men of character, ability, responsibility and have large financial interests in the cranberry business. They feel a tremendous responsibility for the whole industry. They know that the whole industry must succeed if any grower in it is to prosper. The program they recommended last year proved a success. However, one year's results are hardly enough to chart a true and fast course for the coming years. The 1951 program proved that the various factions within the industry could cooperate and maintain a spirit

of unity throughout the industry. This limited working together of the cooperatives in 1951 is one of the most important happenings to the entire cranberry industry in recent years.

Specialized farming, such as cranberry culture, will have occasional poor years and ups and downs in the price structure, but successful operations can be assured if this industry does not encounter major difficulties. These difficulties are internal. If the fresh fruit industry develops attitudes whereby they antagonize the processors, the industry will lose ground and all growers will suffer. By the same token, if processors attempt to dominate the cranberry industry at the expense of the fresh fruit, the entire industry will be adversely affected. If the fresh fruit marketing agencies start antagonizing one another, there will be chaotic conditions within the industry. If the various processing groups start jockeying for position, trouble is bound to ensue. Regardless of where the internal friction might develop, it is always the grower who suffers. If the cooperatives can work in harmony during 1952, it will possibly prevent internal conflict from wrecking the industry. If the Council's recommendations are followed by the industry at large during the next few years, the industry will grow and prosper.

The guiding hand of John C. Makepeace who has been closely identified with the cranberry industry for over fifty years will continue to be the "stabilizing" influence of the Cranberry Growers' Council. The influence, control and respect this gentleman enjoys throughout the industry will continue to exert a strong restraining influence on people within the industry, who would act other than for the common good.

The new General Manager, Harold E. Bryant, of the American Cranberry Exchange has been much more successful than his predecessor in requiring all members to adhere to the Council's recommendations which greatly contributed in stabilizing the industry during the past year.

The future outlook for the cranberry industry is decidedly bright for the years to come. The problems that confront the industry are those of its own makings which can only be solved through the subordinating of personal ambitions to the common good of the industry. The lessons taught to all the industry during the last few years were that more cooperation means more stabilization and better prices. The value of cooperation was effectively demonstrated in 1951 when the two cooperatives adhered to the Council's decisions.

The future of the industry depends upon the cooperatives working harmoniously for the well being of the industry through their active support of the decisions of the Cranberry Growers' Council.

CHAPTER IX

CONCLUSION

With the passage of time, there will be fewer growers engaged in cranberry culture. There is a tendency on the part of the larger operators to acquire the properties of the small part-time operator and accordingly increase their cranberry bog acreage. Higher production will be obtained through a more intensive and scientific cultivation of existing bogs. The cranberry grower will be forced by the scarcity and high cost of skilled labor to resort to a far greater degree of mechanization in all phases of cranberry cultivation. It requires mechanization coupled with the increased use of scientific knowledge today for success in cranberry culture.

It is within the realm of possibility that Wisconsin may, within a few years, surpass Massachusetts by becoming the largest producer of cranberries in the United States. The cranberry production of Washington may, in a few years, exceed the production of New Jersey. Wisconsin and the West Coast States have ample suitable marsh land available for expansion. Further, the weather in those states is quite favorable for cranberry production and the yields per acre exceed those obtainable in the eastern states growing regions.

There appears no immediate possibility of a consolidation between the cooperative engaged in processing cranberries and the cooperative engaged in marketing the fresh fruit. The best interest of the cranberry grower can be served only by a true consolidation between these two cooperatives. The price relationship between the two is so closely related that they cannot advertise, merchandise, sell or move cranberries in one form without having a direct effect on the other organization. The passage of time will remove any dominating influence in the cranberry industry and when that occurs, lasting harmony and stabilization should come to the cranberry industry.

The two cooperatives have extended the working contract with the Cranberry Growers' Council for an indefinite period. This relationship between the two cooperatives proved successful this past year in bringing stabilization to the industry. The stabilizing influence of the Cranberry Growers' Council was Mr. John C. Makepeace and as long as he remains active in the affairs of the Council, it will augur well for the entire industry.

The banks have an obligation to supply the areas they serve with all justifiable credit requirements. Today, the cranberry industry is for the most part financially sound and the

future of this industry is bright. The cranberry industry is preparing to raise and sell an annual million barrel crop. To raise crops of this size will require greater mechanization and the employment of the latest scientific techniques in cranberry culture. The mechanization of this industry will create a large potential of new business for the commercial banks in the several growing regions. The cranberry industry appears ready to offer these commercial banks an opportunity to make constructive and profitable short-term loans. However, these commercial banks will be required to compete with the aggressive lending policies of governmental lending agencies and the Cranberry Credit Corporation for this business. The commercial banks to compete for this business must recognize the necessity for arranging terms to fit the particular borrower and adjust maturities to coincide with the sale of the crops.

Conservatism and caution are indicated for all long-term loans to the cranberry industry until a greater degree of harmony exists within the industry and the markets for cranberries remain stabilized.

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This thesis has not treated at length upon the research presently being done in the cranberry industry toward developing new varieties of cranberries and disease-resistant vines and berries. It is not within the province of the writer to suggest new channels of thought to those engaged in this research. However, exploration of the use of X-Rays and atomic radiation in treating vines to develop new varieties and disease-resistant strains should merit consideration. These newer approaches in scientific research have proved successful in other branches of agriculture, so possibly they would likewise be helpful to the cranberry industry.

APPENDIX A

Exhibit I
1

CASH COSTS OF BOG OPERATION

CASE NUMBER TYPE LABOR FORCE	I PART-TIME PART-TIME OPERATOR	II COMMERCIAL OWNER - OPERATED	III COMMERCIAL OWNER AND 2 REGULAR MEN	IV COMMERCIAL OPERATOR AND 2 REGULAR MEN	V COMMERCIAL OPERATOR AND 4 MEN	VI CORPORATION 10 REGULAR PLUS SEASONAL
Acreage	8.5	13	20	30	58	184
Expense Items - 2						
Regular Labor - 3			4200	6754	8378	17820
Harvesting - 4	355	1404	1620	2216	4734	21360
Sanding	220			342	1159	8480
Other Labor		49			483	
Insect Control	74	79	370	220	1215	
Weed Control - 5	4		155		2732 & supplies	2780
Rot Control						
Coop Services - 6	205	281 & supplies	750	1700	865 supplies	
Sand	175	344				
Fertilizer		24			382	
Gas, Oil, Electricity (incl. trucking)	15	93	578	314	637	5180
Mach. Repairs	74		325		680	4230
Bldg. Repairs	5	2	85		200	2395
Taxes	113	140	568	1147	3604	4510
Insurance			36	440	705	3490
Interest - 7	480				335	
Total Cash Items	$1720	$2416	$8687	$13133	$26109	$70245
Bog Yields, bbls.-8	410	766	1500	900	2855	10100
Cash Cost	$4.20	$3.15	$5.79	$14.60	$ 9.15	$ 7.00

1- Values have not been assigned to the operator's labor, family labor, interest on owned investment accrued depreciation, as these would be arbitrary, tending to confuse costs with desired returns.
2- An effort has been made to include all major items. A few minor ones like frost service may be in with telephone and electricity or omitted. In general reliance was placed on the operator's record.
3- Labor for some seasonal operations appears in case IV and VI.
4- Includes costs for floats where harvested.
5- Some weed control expense is obviously under regular labor.
6- Supplies occasionally included insecticides, containers and herbicides.
7- Interest shown on indebtedness is included.
8- Based on 1948 yields rather than normalized ones.

Source: Crossmon, B. D., "Production Costs - The Area of Grower Choice," Cranberries, (January, 1951), Vol. 15, No. 9, p. 7.

APPENDIX A Exhibit II

CRANBERRY PRODUCTION IN THE UNITED STATES

(Barrels)

State	Av. 1930-39	Av. 1940-49	1949	1950	1951
Massachusetts	412,400	468,600	520,000	610,000	590,000
New Jersey	105,700	75,400	67,000	108,000	76,000
Wisconsin	68,600	137,000	200,000	219,000	190,000
Washington	12,300	35,100	40,000	33,000	56,500
Oregon	4,600	12,100	13,400	14,300	20,000
TOTAL	603,600	728,200	840,400	984,300	932,500

Source: United States Department of Agriculture, Bureau of Agricultural Statistics.

APPENDIX A Exhibit III

PROVISIONS OF THE CAPPER-VOLSTEAD ACT

The Capper-Volstead Act of 1922 grants the right of collective bargaining to members of agricultural cooperative organizations which meet the following requirements:

Sec. 1 "That no member of the association is allowed more than one vote because of the amount of stock or membership capital he may own therein, or that the association does not pay dividends on stock or membership capital in excess of eight percent per annum,
and
that the association shall not deal in the products of non-members to an amount greater in value than such as are handled by it for members. Cooperatives satisfying these requirements are, moreover, exempted from both State and Federal Income Taxes."

Sec. 2 "Authorizes the Secretary of Agriculture, after complaint, notice and hearing, to issue 'cease and desist' order when he finds that 'price of any agricultural product is unduly enhanced' by reason of such association restraining trade."[1]

Exhibit IV

"The opinion of the Court in these (Sherman Act) cases constantly refer to monopoly in the sense of control of the market, but little examination of evidence pertinent to the question of market control is ever undertaken. . . American Courts have in this class of cases been willing to accept the contract itself as evidence of restriction and, consequently, of an attempt to monopolize without inquiring further into the question of how great a control of the market is secured by the contracting parties.[2] Although 'undue' or 'unreasonable' control of the market is constantly inserted in judicial decisions as to the meaning of monopoly, the data capable of indicating this control are almost universally ignored by the Courts."[3]

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[1]Nourse, L. S., "Legal Status of Agricultural Cooperation," Institute of Economics, (MacMillan, New York, 1927), pp. 252-261.

[2]Mason, E. S., "Monopoly in Law and Economics," Readings in the Social Control of Industry, (Philadelphia, 1942), pp. 25-47 - Reprinted from Yale Law Journal, 1937.

[3]Ibid, p. 40.

BIBLIOGRAPHY

Reports and Pamphlets

American Cranberry Exchange. Annual Reports 1946-1950 inclusive.

American Cranberry Growers' Association. Annual Reports 1940-1950 inclusive. Pemberton, New Jersey.

Booz, Allen and Hamilton, The Cranberry Industry. Report presented to Joint Meeting of Directors of the American Cranberry Exchange and Cranberry Canners, Inc. New York, April 24, 1945.

Booz, Allen and Hamilton, Survey of the American Cranberry Exchange. Report presented to the Board of Directors of the American Cranberry Exchange. New York, April 23, 1945.

Booz, Allen and Hamilton, Survey of Cranberry Canners, Inc. Report presented to the Board of Directors of Cranberry Canners, Inc. New York, April 23, 1945.

Doehlert, Charles A., "Looking Ahead to Some New Cranberry Research," New Jersey Agricultural Experiment Station, Pemberton, New Jersey.

Estes, C. W. and Morris, W. W., Wisconsin Cranberry Production and Marketing. Wisconsin State Department of Agriculture. Bulletin No. 299. January-February, 1950.

Franklin, Henry J. and Cross, Chester E., Weather in Relation to Cranberry Production and Condition. Massachusetts Agricultural Experiment Station. Bulletin No. 450. July 1948.

Franklin, Henry J., Cranberry Growing in Massachusetts. Massachusetts Agricultural Experiment Station. Bulletin No. 447. April 1948.

Franklin, Henry J, Weather and Cranberry Production. Massachusetts Agricultural Experiment Station. Bulletin No. 433. June 1946.

Frick, G. E. and Weeks, S. B., "When to Hire and When to Own Farm Equipment." The University of New Hampshire Extension Service in Agriculture and Home Economics, Durham, New Hampshire. Extension Circular No. 302, March 1951.

BIBLIOGRAPHY

Reports and Pamphlets - Cont.

Gunness, C. I., Cranberry Storage Investigation. Massachusetts Agricultural Experiment Station. Bulletin No. 378. February 1941.

New England Cranberry Sales Company. Annual Reports, 1940-1950, inclusive.

Stevens, C. D., Piper, W. E., Franklin, H. J. and Chandler, F. B., The Cranberry Industry in Massachusetts. Bulletin No. 139. June 1948.

Tomlinson, Bertram and Franklin, H. J., Renovation of Cranberry Bogs. Cape Cod Extension Service, Barnstable, Massachusetts. Special Circular No. 55, April 1946.

Waugh, F. V., Burtis, E. L. and Wolfe, A. F., "The Controlled Distribution of A Crop Among Independent Markets," (Harvard) Quarterly Journal of Economics, Vol. 51. (November 1936)

Periodicals

"The Cape-Tip Breeze." The Pilgrim Arts and Crafts. Provincetown, Massachusetts. August 1951.

Capel, George L. and Samuels, J. K., "Cranberry Growers Pool Their Efforts." News for Farmer Cooperatives. United States Department of Agriculture, Farm Credit Administration. December 1951.

Cranberries. Published by Clarence J. Hall, Wareham, Massachusetts. May 1946. Vol. II, No. 1 through April 1951, Vol. 15, No. 12.

Cranberry News. National Cranberry Association. January 1949, Vol. 10, No. 1 through January 1952, Vol. XIII, No. 1.

Cranberry World. American Cranberry Exchange. January 1946, Vol. 1, No. 1 through March 1952, Vol. 5, No. II.

"Cranberry Skin Keeps Its 'Shine', A Fair Parable." Food Marketing in New England. November 1946, Vol. 7, No. 3.

Crossmon, B. D., "Production Costs - The Area of Owner Control." Cranberries. January 1951, Vol. 15, No. 9.

Dickey, A. G., "Cranberry Picking Prowness of Unknown Portugese." Food Marketing in New England. November 1951, Vol. 12, No. 3.

"Forestry in An Urban State." Monthly Review. Federal Reserve Bank of Boston. Vol. 34, No. 2, February 1952.

Hyson, Charles D. and Sanderson, Fred H., "Monopolistic Discrimination in the Cranberry Industry." Quarterly Journal of Economics. Harvard University. Vol. 59, (1944-1945).

Litchfield, L. H., "It's the Cranberries." Powertrax. International Harvester Company. Vol. 7, No. 1, April 1936.

Periodicals - Cont.

Mason, E. S., "Monopoly in Law and Economics." Readings in the Social Control of Industry. (Philadelphia, 1942) Reprinted from Yale Law Journal, 1937.

"New England - 1951." New England Newsletter. December 1951, No. 333.

"The New England Farmer in 1951, His Position, His Problems, His Prospects." New England Newsletter. June 1951. No. 327.

Government Documents and Reports

Agricultural Statistics - 1950. United States Department of Agriculture, Washington, D. C.

Crop Reports. United States Department of Agriculture, Bureau of Agricultural Economics. New England Crop Reporting Service.

Bain, H. F., Bergman, H. F., and Wilcox, R. B., Harvesting and Handling Cultivated Cranberries. United States Department of Agriculture. Farmers' Bulletin No. 1882. January 1942. Washington, D. C.

Capel, George L., "Opinions of Buyers on the Marketing Program of Cranberry Cooperatives." United States Department of Agriculture, Farm Credit Administration, Miscellaneous Report No. 154, November 1951.

Hobson, Asher and Chaney, J. Burton, Sales Methods and Policies of a Growers' National Marketing Agency. United States Department of Agriculture. Bulletin No. 1109. Washington, D. C., January 16, 1923.

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