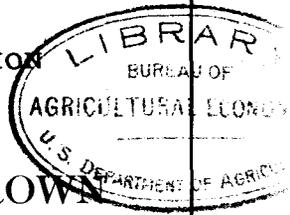


UNIVERSITY OF MINNESOTA
AGRICULTURAL EXPERIMENT STATION



MARKETING LOCALLY GROWN RASPBERRIES IN MINNESOTA

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SUMMARY

The prospective increase in raspberry production in Minnesota requires more consideration of marketing methods by growers than has been given it in the past. The acreage has already reached a point where growers can not expect to sell crops with large yields at profitable prices.

The chief improvements that need to be made in the present system of individual marketing by growers are: Stabilization of the market, chiefly by better distribution and disposition of surpluses; standardization of product and package; development of quality; systematic collection and dissemination of market information; and reduction in farm marketing costs.

Raspberry growers must depend chiefly upon their own efforts if they expect to realize any substantial improvement in marketing. Some progress may be made if individual growers will study market requirements and market conditions more fully, altho better results could reasonably be expected if growers would co-operate to solve their marketing problems. Some of the problems, because of their nature, require co-operation among growers if any progress is made.

MARKETING LOCALLY GROWN RASPBERRIES IN MINNESOTA

H. B. PRICE, O. A. NEGAARD, and W. G. BRIERLEY

The acreage of raspberries in Minnesota has been increased so rapidly in recent years that it is difficult to obtain profitable prices during seasons of large yields. The lack of large markets to which surplus fruit can be shipped makes marketing particularly difficult. The Twin Cities, Duluth, and the rural towns of the Northwest are the principal outlets for fresh raspberries. The canning and preserving industries are not sufficiently developed to offer important opportunities for disposing of surplus products.

Raspberries are produced chiefly in the vicinity of Minneapolis and St. Paul. Small acreages are found in widely scattered communities, but they constitute a relatively small proportion of the total acreage. As the trend in production and the problems of marketing in these communities are similar to those in the neighborhood of Minneapolis and St. Paul, a study of marketing in the Twin Cities will include problems applicable to the entire region. Special consideration will therefore be given to marketing raspberries grown near Minneapolis and St. Paul.

Information was obtained by personal interviews with growers, dealers, and others who were familiar with the facts of raspberry marketing.¹ Probably 75 per cent of the growers in the Hopkins district were interviewed and detailed information regarding prices was obtained from 14 farmers who are producing and marketing under different conditions. Information that has a bearing upon the more general aspects of co-operative marketing organization was obtained from other communities and from the co-operative fruit marketing associations in the neighborhood of the Twin Cities.

TRENDS IN PRODUCTION

Raspberry plantings of bearing age in the Hopkins district totaled approximately 450 acres in 1927. This figure is based chiefly upon statements of 114 farmers who reported their own acreage and that of their neighbors. It does not include the fields planted in 1927, which will not bear fruit until 1928.

The total production for this district in 1927 was about 78,000 crates. This figure is calculated on the basis of 175 crates per acre,

¹K. A. Kirkpatrick, agricultural agent in Hennepin County, assisted in planning the study, as did also T. G. Stitts, assistant professor of Agricultural Economics.

the average reported by representative producers who have 10 per cent of the bearing acreage.

The production in 1926 was about 105,000 crates. The acreage was somewhat smaller than in 1927 but the yield was 270 crates per acre, or 95 crates more than in 1927.

The vicinity of Hopkins is the largest single section growing raspberries for the Minneapolis-St. Paul market and produces approximately 60 per cent of the commercial crop. Afton, Excelsior, and Dayton's Bluff are the other principal producing areas, as indicated in Figure 1. Long Lake, North St. Paul, and a few other communities produce small quantities of raspberries, but the total (40 per cent of the acreage) is sufficient to command consideration in any plan of better marketing.

The relative importance of these communities is somewhat different when the total production is compared, because average yields vary between communities. Rainfall, the principal climatic factor in yields of small fruits, is not evenly distributed and cultural methods vary substantially.

Closely related to this factor is variation in soils, which causes big differences in yields. The cultural methods practiced by growers in the different districts, altho varying widely between producers in each section, seem to be somewhat more productive at Hopkins than in most of the other important areas. This gives the community a somewhat greater relative importance in the market than is indicated in Figure 1.

Yields may also vary between districts because of variations in the age of fields; districts in which acreage is expanding rapidly are likely to have a larger proportion of plants at or near the age of greatest productivity than those in which the production is stationary or declining. Complete data could be obtained on the age distribution of fields for only the Hopkins district. For this area, as indicated in Table I, 87 per cent of the total acreage consisted of fields planted in 1923, 1924, 1925, or 1926; and 54 per cent included fields either 3 or 4 years old, the age of greatest productivity.

TABLE I
AGE OF BEARING FIELDS IN HOPKINS DISTRICT*

Age, years	Per cent of total acreage
2	16
3	28
4	26
5	17
6	6
7 and over	7

* Based on records of 114 farmers.

The trend of production in the Hopkins district as in most other districts is upward. The acreage of bearing fields was 16 per cent larger in 1927 than in 1926, and indications are that it will continue to increase during the next three years at the rate of 13 per cent in 1928, 9 per cent in 1929, and 2 per cent in 1930 (see Table II), as estimated by growers who represent 75 per cent of the acreage in the district, unless market conditions, weather, diseases and insects have more influence than now seems probable.

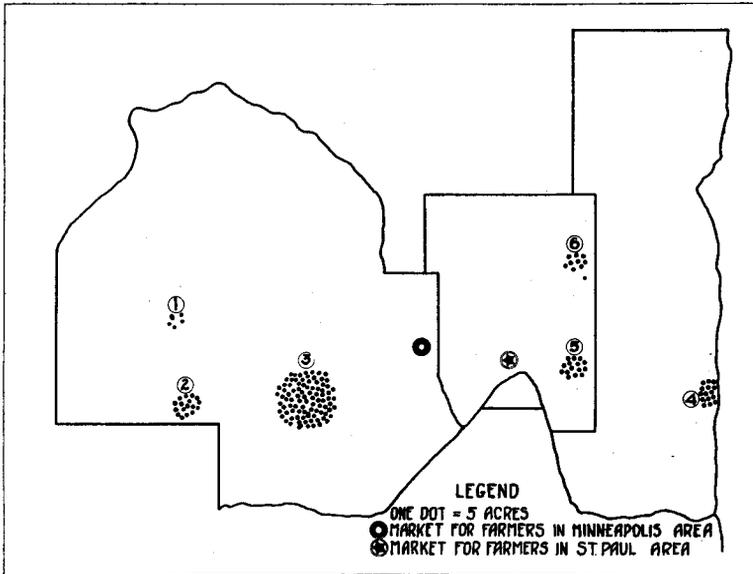


Fig. 1. Acreage of Bearing Raspberry Fields in the Vicinity of Minneapolis and St. Paul in 1927

TABLE II
TREND OF ACREAGE OF BEARING RASPBERRY FIELDS IN HOPKINS DISTRICT

Year	No. of acres	Per cent of 1926 acreage
1926.....	390	100
1927.....	450	116
1928.....	503	129
1929.....	538	138
1930.....	544	140

Data on acreage for other sections were not obtained, but the same general trend toward larger production obtains in other local market areas. The quantity of raspberries marketed by co-operative marketing associations at Long Lake and particularly at Excelsior and Afton has increased substantially in recent years (see Table III).

An exception to this generalization is the decline in shipments by the co-operative association at Afton in 1927, which, however, was

due to the poor crop. There was an increase in quantity marketed at Afton from 1925 to 1926 in spite of variations in growing conditions. Changes in the proportion of the crop marketed by these co-operative associations is not thought to be a reason for the increase in volume marketed, as in every instance the associations probably market 95 per cent of the total commercial production in their communities.

TABLE III
CRATES OF RASPBERRIES MARKETED BY CO-OPERATIVE ASSOCIATIONS AT EXCELSIOR, LONG LAKE,
AND AFTON

Year	Excelsior	Long Lake	Afton
1923.....	4,500		
1924.....	7,000	3,040	
1925.....	10,000	2,760	12,000
1926.....	11,500	3,520	15,000
1927.....	15,000	4,150	7,500

King and Latham are the two important varieties of raspberries grown. Black raspberries are grown to some extent but the acreage is still small. King is the most popular variety in the Hopkins district because its fruit matures early and is firm. It seems to be especially well adapted to the soil there. Growers state that Latham berries are generally larger and the canes are hardier than those of the King variety. Hardiness is not so important in that as in other districts, however, because of the practice among growers of covering the canes as a protection against severe winter weather. The tendency toward a relatively larger acreage of the King and a smaller acreage of the Latham is therefore probably most pronounced in the Hopkins district, where winter covering is most common. Growers in other districts prefer to plant the hardier Latham, altho it ripens later, and they are able to save from \$30 to \$40 per acre per year in labor costs incurred in covering and uncovering. The preference among Hopkins farmers for the King is clear, as is shown in Table IV. Among 114 farmers, only 9.1 acres of the Latham variety were planted in 1926, in contrast to 42.7 acres of the King variety.

TABLE IV
AGE AND ACREAGE OF VARIETIES OF RASPBERRIES GROWN BY 114 HOPKINS FARMERS

Age, years	Varieties		
	King	Latham	Black raspberries
	acres	acres	acres
2.....	42.7	9.1	0.8
3.....	51.5	37.4	2.0
4.....	42.2	38.9	5.7
5.....	34.3	19.5	2.8
6.....	13.5	7.3	0
7 and over	8.0	13.3	0

METHOD OF MARKETING

Raspberries produced in the vicinity of Minneapolis and St. Paul are marketed chiefly on the public markets of these cities, except for the fruit grown near Excelsior and Long Lake. Ninety-five producers, or 85 per cent of the growers giving information on this point in the Hopkins district, stated that their entire output was marketed through the public markets and all but one of the other 16 marketed 50 per cent or more through these agencies. Six growers marketed to a limited extent in outlying towns—shipping by express to relatives or other persons whom they knew, or trucking to neighboring towns, where sale is generally made to retail stores. Six said that they marketed through roadside markets and 5 sold berries to local stores. Only 2 marketed exclusively to local stores and they were raising raspberries on a small scale as a sideline in order to utilize the family labor more fully.

These various methods of sale offer the same limitation for raspberries as for other products. The expense of establishing and maintaining contacts with buyers, making collections, and supplying the needs of buyers with respect to both quantity and quality of berries are the principal obstacles to sale in neighboring towns. Roadside sales are restricted by labor requirements and deterioration in quality of the product. Several growers mentioned the recent regulation of the Minnesota Highway Department prohibiting sale on public highways as an additional handicap to roadside selling, as some farmers are obliged to locate roadside markets in less conspicuous places. Local dealers are not organized to market large quantities of fruits and vegetables, hence they generally buy only such supplies as are needed for local retail trade. The result is that these outlets are necessarily restricted to a very small proportion of the local production.

Raspberries grown near Excelsior, Long Lake, Howard Lake, and Afton are marketed by local co-operative associations. At Excelsior, Long Lake, and Howard Lake they are marketed largely in small towns west and northwest of the Twin Cities (see Fig. 2). These outlets have been gradually developed until now the shipping associations rely upon them to take a large part of their supply, and the Minneapolis and St. Paul markets are looked upon as outlets for only such quantities as can not be sold advantageously in the country markets. In 1927 less than 10 per cent of the berries marketed by these associations were sold in Minneapolis and St. Paul.

Sales in small towns are made chiefly to retail grocers, altho occasional contacts are made with jobbers in the larger markets. These dealers are generally reached by correspondence and circular letters,

which give price and other market and shipping information of interest to retailers. In general, these associations have developed the markets to which they were most accessible. The association at Excelsior serves towns located principally on the Minneapolis & St. Louis and the Chicago, Milwaukee, St. Paul & Pacific railroads; and the association at Long Lake ships chiefly to towns on the Great Northern, Northern Pacific, and Soo lines. On the other hand, there are many points at which they both sell (chiefly towns served by two or more railroads) and a somewhat larger number of towns where business is solicited by both associations. In a still larger number of towns in this territory, especially those with a small population, no sales are made and no business is solicited.

The third co-operative association, at Howard Lake, about 40 miles west of the Twin Cities, also competes with these associations in selling raspberries in the small towns of this area. It markets a much smaller quantity than either of the other associations, however, and offers keen competition at only a few points. The co-operative association at Afton has given some attention to developing markets in towns north and northeast of the Twin Cities, but during recent years it has marketed the major part of the berries in Minneapolis and St. Paul.

Another type of outlet for both producer and co-operative association is the Minneapolis and St. Paul wholesale produce dealers. Since these dealers are not organized to handle small miscellaneous lots on a commission basis, they are not an important outlet for raspberries except for such amounts as they buy for their local or out-of-city retail trade. Such purchases are generally made by the wholesale dealers at the public markets. Nor do growers avail themselves of the direct-to-store method of sale in the Twin Cities to any considerable extent. Growers occasionally solicit grocers in an attempt to dispose of any unsold portion of their loads as they return from the market, but as far as could be observed no considerable number depend upon grocers as an outlet for a substantial part of the supply. The handling of a dependable quantity and quality of raspberries as well as of other products customarily bought by grocers, the establishing of contacts, and the making of collections offer too many difficulties to an important development of this method of sale.

Raspberries are generally hauled by growers to Minneapolis and St. Paul by truck, altho it is not uncommon for those having a small supply to deliver them by automobile, especially those who are also working at a trade in Minneapolis or St. Paul. A grower employed in a trade outside the Twin Cities or without transportation facilities sometimes engages a neighbor to market his berries at the central

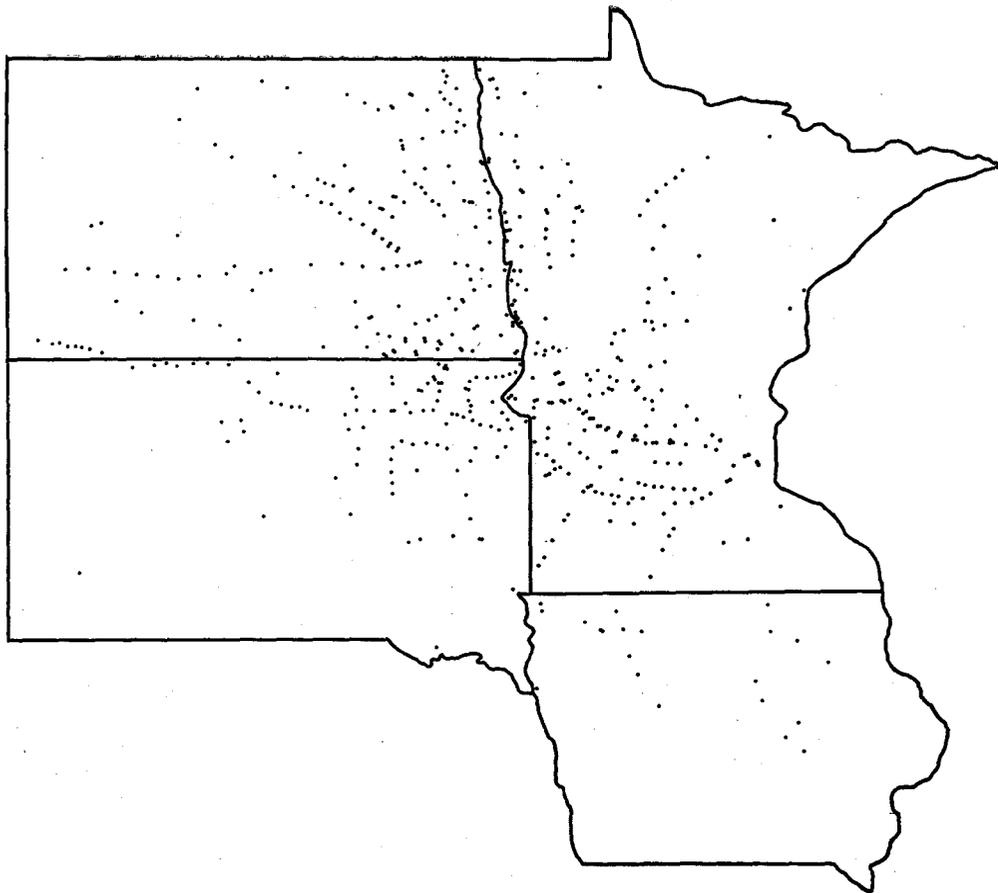


Fig. 2. Points to Which Raspberries Were Shipped by Co-operative Marketing Associations in the Vicinity of Minneapolis and St. Paul in 1927

public market. The cost of marketing in this way is low, generally 25 cents per crate for hauling and selling, but the arrangement is often unsatisfactory to both seller and owner because the seller is suspected of giving preference to the sale of his own product, and of being dishonest if the price received is lower than that received by neighbors. This type of co-operative selling, therefore, is on a very small scale.

PRICES IN THE TWIN CITIES

Prices received for raspberries by growers in Minneapolis and St. Paul have two important characteristics: (1) They open the season at a relatively high level, break very sharply as the supply increases, and continue after the decline at about the same level without much advance as the supply falls off. (2) Prices seem to have a fairly well defined weekly cycle. They are relatively low on Monday, somewhat higher on Tuesday and Wednesday, and then again low during the latter part of the week.

These tendencies are shown in Figure 3 for the crops of 1926 and 1927. Prices started at about \$6.00 per crate the first week in July, 1927, and declined rapidly to slightly less than \$3.00 at the end of the second week. They continued to fall during the two following weeks, altho the rate of decline was perceptibly slower, and then recovered some of the loss, selling at an average of about \$3.25 per crate during the last week in which the volume was fairly large and regular.

In 1926, when the crop was extraordinarily large, prices started at substantially lower figures, the decline was somewhat less precipitate than in 1927, but they reached much lower levels and did not recover as much of the decline as in 1927. The experience with marketing these two crops points out very strikingly the differences in price trends under different conditions of supply.

Probably the principal reason for this seasonal trend of prices is the rate of marketing, altho changes in demand are a factor of some importance. The small amounts marketed at the beginning of the season, as indicated in Figure 4, find a ready sale at high prices. As the season progresses, price concessions are necessary to sell the larger quantities marketed, until the peak of the crop movement has passed. Beyond this point prices recover but they never reach the early season level, altho market receipts substantially decline, chiefly because the demand for raspberries has been largely satisfied and buyers turn their interests to other products.

The seasonal trend of prices also varies from year to year, depending upon differences in the rate of marketing. For example, in 1926

the peak of sales was not reached until the fifth week (see Fig. 4), whereas in 1927 the heaviest marketings were in the fourth week. In 1926 favorable weather for ripening caused the season to be somewhat longer and the supplies larger at the end of the season. These conditions doubtless were factors in causing the price to decline more slowly at the beginning of the season and to recover less fully at the close.

A close examination of the movement of the crop, as given in Figure 4, indicates that the quantity of raspberries marketed daily is an important reason for the weekly movement of prices. Relatively large marketings on Monday are accompanied by low prices, and smaller quantities on Tuesday and Wednesday result in somewhat higher values. Later in the week receipts are still relatively small as compared with Monday but prices seem less favorable for sellers, probably chiefly because of the withdrawal from the market of housewives who are buying in large quantities for canning and perhaps at times to a decline in the demand for berries for table use on Saturday and Sunday when many people go to country homes and resorts for the week-end.

The extent of the weekly cycle of amounts marketed and the relation of prices to the daily quantities marketed is indicated more clearly in Figure 5, where the effect of the seasonal movement on supply is eliminated. Monday receipts, it will be noted, are very large. Tuesday, Wednesday, Thursday, and Saturday receipts are relatively small and Friday receipts are fairly large. This distribution is partly the result of unavoidable circumstances and partly the result of planning by growers. For example, Monday receipts are large because of the Sunday holiday and the accumulation of supplies over the week-end. Friday receipts, on the other hand, are large chiefly because growers consider Friday a good market day. Wednesday receipts are relatively larger than those of Tuesday and Thursday because many producers pick every second day, beginning on Sunday.

Another problem of the producers of raspberries is how to get the best possible price for their product under market conditions of the day on which they sell. That there is a wide variation in the sales ability of growers is indicated by differences in prices received on a given day. An analysis of the daily prices received by 14 farmers, whose average price is shown in Figure 3, shows that a range of \$1.00 in the daily price was not uncommon during the season of 1927 and that a range of 50 cents or more per crate between growers resulted on more than 60 per cent of the market days.

Some of these variations are doubtless due to changes in the daily price, over which the individual grower has little control and which he forecasts only with great difficulty. On the other hand, some growers receive consistently higher prices than others and the range

in prices received is relatively small. Such farmers are not only keen judges of market situations and good bargainers but they also make a special effort in some instances to obtain reliable information as to market receipts of local and shipped-in berries or other information that affects the daily trend of prices.

Other factors affecting the variation in prices received are method of sale, quality of berries, and weight of crates. How important these factors are is difficult to say, since there is no known statistical method of isolating the effect of each factor upon prices. The practice among growers of giving discounts of 15 cents and sometimes 25 cents per crate for quantity purchases is doubtless a factor of considerable importance. Berries also vary in quality and hence in value. No data were obtained that admit a comparison of prices of different varieties, but so far as could be observed at the market there was no discrimination by buyers against the principal varieties of red raspberries, altho at times there seemed to be a preference for berries of the black varieties. The latter are marketed in such small quantities that little consideration was given to their price.

The method of packing and the condition of berries were remarkably uniform. So far as could be discovered, few boxes were so packed as to deceive buyers. Quality, also, seemed to be fairly uniform, as might be expected in a market where only locally grown berries are sold, altho occasional spoilage from rain, heat, or mold was seen. Price concessions were freely made in such instances. Size and quality of berries also varied somewhat with different cultural practices.

The weights of 225 crates selected from a large number of producers ranged from 19 to 22 pounds and averaged $21\frac{1}{8}$ pounds. These variations are partly due to differences in weight of crates, differences in condition of berries (over-ripe berries packing closer than ordinary berries), and differences in varieties, some varieties weighing more than others because of the size of berries or the size of the berry cavity. However, a difference in the method of packing the fruit is the principal reason for this large range. Some growers heap the fruit high in the trays, hoping thus to create good will and to receive a better price. Thirty-five per cent of the crates inspected weighed $21\frac{1}{2}$ pounds or more, or $1\frac{1}{2}$ pounds more than a standard crate in the market is supposed to weigh. On the basis of the net weight of fruit, this is an average excess of 7 per cent of all berries marketed. Other growers, representing 6.7 per cent of the fruit inspected, go to the other extreme and put less than the standard quantity of fruit in containers. But the large majority of growers gave a reasonably liberal measure. Their crates weighed from 20 to 21 pounds and, as indicated in Table V, they represented about 60 per cent of the berries marketed in 1927.

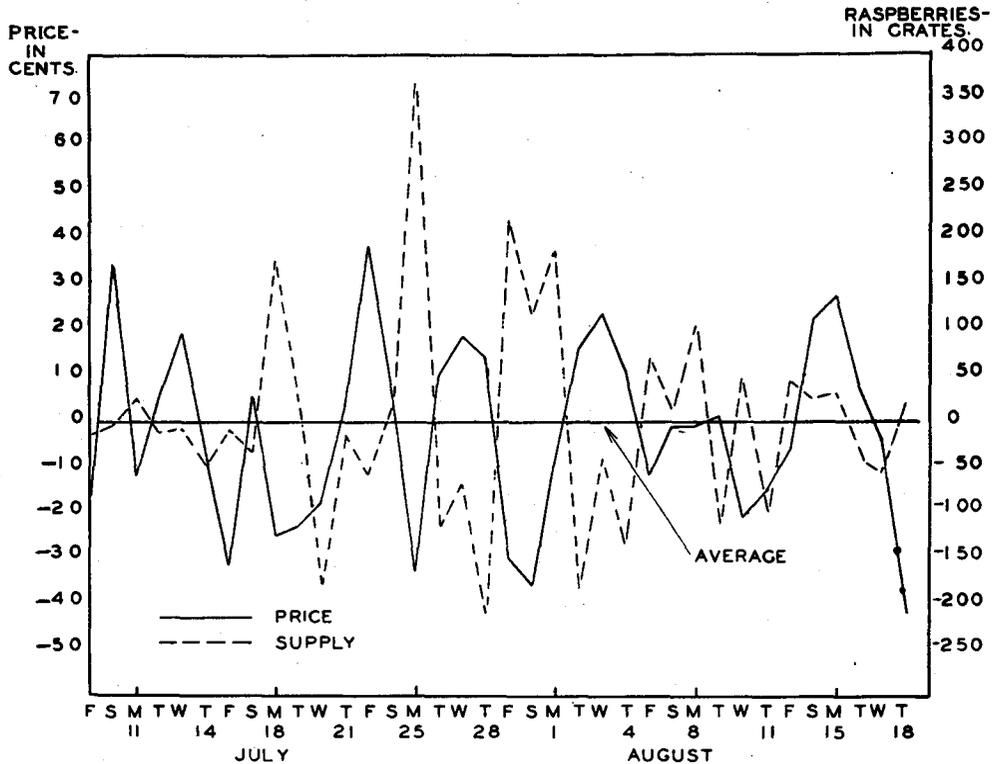


Fig. 5. Daily Variation in Receipts and Prices of Raspberries at Minneapolis, July 7 to August 18, 1927. (Variations are measured from a 7-day moving average.)

TABLE V
DISTRIBUTION OF 225 CRATES OF RASPBERRIES ACCORDING TO WEIGHT OF CRATES

Weight	Per cent of all crates weighed	Deficiency or excess of berries*
lb.		per cent
19.0	1.6	- 6
19.5	5.1	- 3
20.0	14.1	0
20.5	20.4	+ 3
21.0	23.9	+ 6
21.5	20.4	+ 9
22.0	14.5	+12

* Based upon a 20-pound uncovered crate of berries in which the crate weighs $3\frac{1}{2}$ pounds.

SUMMARY OF MARKETING PROBLEMS

The principal raspberry marketing problems of growers may be summarized before proceeding to discuss possible improvements in the marketing organization. These problems are:

- A. Stabilizing the market, chiefly by better distribution and more efficient handling of surpluses.
- B. Standardizing the product as to type of package and particularly as to weight.
- C. Improving the quality, especially as it may be affected by cultural practices, selection of stock, and methods of handling berries on the farm.
- D. Securing information regarding prices, market conditions, trends in market demands, etc.
- E. Reducing marketing costs.

Co-operative Organization

Any substantial improvement in the raspberry marketing organization in Minnesota is largely dependent upon the action of growers. Wholesale dealers in the larger markets are not organized to market locally grown produce on such a scale as to dispose of surpluses. The risks from fluctuations in supply and price are so great, as the market is now organized, that dealers are discouraged from trying to develop outlets other than those regularly established in the distribution of fruits and vegetables purchased from other producing areas. Moreover, the nature of private business restricts the service that wholesale dealers may offer regarding some of the other marketing problems mentioned. Co-operation among growers is the most promising solution. In the smaller cities where there are frequently no wholesale dealers, co-operation among berry growers is even more imperative when production exceeds local market requirements.

Types of Co-operative Organization

Three types of co-operative organization merit consideration for Minnesota conditions.

1. Service organization, which sells no fruit but collects and disseminates market information, advises growers as to good producing and marketing practices, arranges for the sale of surplus fruit, represents the raspberry growers in getting adequate market facilities and solves any other marketing problems that can be better solved by growers as a group than as individuals.

2. Sales organization, which sells fruit in addition to giving the services indicated in the last paragraph.

3. Federation of local associations. This organization may be a service organization that is largely protective and promotional (develops markets, handles surpluses, negotiates for market facilities and fair shipping conditions, attends to legislative matters, etc.), or a sales agency that sells fruit in addition to giving the services enumerated for a service organization.

The second of these three types of organization is probably best adapted to raspberry marketing conditions in Minnesota. Quick distribution is so important for perishable products that a sales organization can doubtless give greater satisfaction than a service organization. It probably would be more effective than a service organization in reducing marketing costs and standardizing quality and pack.

A federation is dependent for its success upon well developed local associations. The immediate attention of Hopkins berry growers and other unorganized communities may therefore be most profitably concerned with a local organization, leaving the federating of locals until existing associations are willing to join in such an organization and until unorganized communities have established local co-operative marketing agencies. Much of the apparent advantage of a federation will doubtless be realized when an efficient marketing association is perfected at Hopkins. Consideration of establishing a federation by growers should probably wait until local associations demonstrate what marketing services can best be handled by co-operation between them.

Possible Advantages of a Sales Organization of the Local Type

Stabilization of market.—Markets for perishable products are generally stabilized by one or more of the following methods: (1) better place distribution, (2) development of new or better market outlets, and (3) diversion of product to other uses. To what extent farmers at Hopkins or any other locality can take advantage of these methods

through a co-operative association to make price changes less extreme and to raise the level of berry prices to growers, can not be stated.

Price comparisons between groups that are marketing co-operatively and other groups marketing individually are hazardous and require careful consideration. A well managed association should have some price advantages, however. Members of the two oldest associations in the state, located at Excelsior and at Long Lake, have received higher prices than growers selling individually at the public market, chiefly because of group selling and the development of markets in the small towns. The advantage was greater for 1926, a season of large production, than for 1927, with its more nearly normal yields.

Associations in other communities would doubtless be obliged to use somewhat different methods to obtain better prices, altho Figure 2 shows that some country points are not now reached by co-operative associations. On the other hand, many dealers in towns are doubtless supplied with Minnesota grown berries by Twin City wholesale distributors and to some extent by wholesalers in the small jobbing centers. Moreover, the increased competition provided by shippers of raspberries in the Pacific Northwest must not be overlooked as the sales area of Minnesota grown berries is extended westward. Some new markets may be found in rural districts and perhaps some of the area now covered by sales from existing associations and wholesale dealers can be worked more intensively, but the effort required to develop such sales is likely to be too expensive to make this an important outlet for large quantities of berries in addition to those already being shipped to that territory. The expense involved, also, would probably not warrant the further development of the country markets merely to dispose of supplies as a protection against unreasonable price recessions in the Twin Cities.

Probably an effort to develop the market in Minneapolis and St. Paul would be more effective than any other measure that could be adopted to improve market outlets for growers in the vicinity of these cities. The Twin Cities are now the principal market for locally grown raspberries, and because of their large population and accessibility they will likely be the principal market for several years. The per capita consumption of locally grown berries is small. Altho reliable data bearing on this point are not available, probably an average of less than one crate of berries per family is consumed, largely because of inadequate information among housewives as to when to buy for canning and preserving.

A well directed sales campaign in this metropolitan center based upon guaranteed weights and quality is worthy of serious consideration as an initial experiment for a co-operative association. Expensive education in the merit of locally grown produce is unnecessary, as

housewives now recognize its superiority. Consumers need to be informed chiefly as to when to buy and to be assured good weights and quality, and perhaps to be informed as to what should be a reasonable price for berries. Advertising need not be prohibitive, because less expensive types of advertising could be used and only for brief periods, and because the volume of business of an association should be reasonably large. A charge of 2½ cents per crate on the raspberries produced at Hopkins in 1926 would have provided an advertising fund of \$2,500.

The feasibility of diverting berries to other uses, the third method of stabilizing the market, is less certain than either developing a market among rural towns or increasing consumption in metropolitan centers.

The manufacture of fruit nectar requires large quantities of red raspberries, but in recent years this market has been practically closed to Minnesota grown berries. The manufacturers in the Twin Cities give preference to berries from the Pacific coast because, so they maintain, the fruit from that section has superior flavor and color and a firmer body. Moreover, fruit from that district can be bought in more dependable quantities. It remains to be demonstrated whether this market can be developed in competition with the Pacific Northwest fruit, either by selling to manufacturers or by freezing, storing, and selling through a co-operative agency. However, a group can doubtless make greater headway with the problem than growers marketing individually.

Diverting some of the fruit to other uses, as canning, seems even less promising at the present time because of the undeveloped state of the canning and preserving industry in this territory. Such enterprises might be undertaken by the raspberry producers themselves, altho enterprises that require so much capital and technical skill probably are inadvisable for newly formed co-operative associations. They can generally be undertaken only with reasonable assurance of success by marketing associations that are well established and adequately financed. Moreover, unless other fruits or vegetables could be preserved in addition to raspberries the cost of operating a canning factory would likely be prohibitive.

Standardization of product.—The advantages of the standardization of the weight of berries are evident from discussion in previous sections. Standardization on the basis of a gross weight of 20 pounds per crate would have effected a saving of 7 per cent for the Hopkins growers in 1927, or an amount nearly equal to the cost of operating either of the associations at Long Lake and Excelsior in the years of highest costs. Inspection and grading of fruit would also doubtless be

advantageous in developing markets and would be especially important if advertising is done.

Improvement in quality.—There is considerable uncertainty as to just how far a co-operative organization may go toward improving the quality of the fruit produced by the members. Information can be passed along to member growers in regard to cultural practices, which generally are reflected in more vigorous plants and better fruits, and growers may be urged to follow these practices. In established fields such cultural practices would include improved methods of soil management, restricting the number of young and bearing canes per plant, field sanitation to control pests, and more care in picking and handling fruit. In planting new fields, growers could be urged to set out only vigorous disease-free plants and space them at proper distances. Standard grades based on size, condition, and maturity of the fruit might be adopted so that each crate marketed would contain fewer undersized, immature, overripe, or otherwise undesirable berries.

Collection and dissemination of market information.—This service is especially important for a service organization. A sales organization need not give so much attention to distributing information altho it obviously must understand market conditions as a prerequisite to intelligent selling. Some dissemination of market news to consumers is also desirable even when the selling is all done by a central agency, for, as pointed out previously, one of the principal weaknesses of the market for locally grown berries is the inadequate information that consumers now have as to probable future supplies and prices. An important function of a co-operative sales agency would be to correct this condition.

Reduction of marketing costs.—A co-operative association should be able to effect some economies in marketing. Most substantial saving would doubtless be realized in the trucking and labor expense incurred in marketing. Table VI shows 85 per cent of the Hopkins growers estimate that they spend an average of from 3 to 6 hours daily on the Minneapolis market and that one-third of them spend from 4 to 5 hours. With modern methods of transportation, this time is spent chiefly getting on and off the market place and selling. If the selling were taken over by a co-operative association the amount of time required in selling would be greatly reduced, and if growers delivered at an assembling station, the time now required in hauling and the trucking expense would be substantially reduced because the hauling distance would be less. Ninety per cent of 101 farmers interviewed at Hopkins live 10 miles or more from the public market in Minneapolis, and a similar percentage live within 4 miles of the local trading point. It is pos-

sible that hauling costs might be further reduced and distribution made more efficient if association trucks collected the fruit at farms.

TABLE VI

ESTIMATED TIME SPENT ON MINNEAPOLIS MARKET BY 95 RASPBERRY GROWERS AT HOPKINS

Hours	No. of growers
2.0-2.5	5
2.5-3.0	4
3.0-3.5	24
3.5-4.0	15
4.0-5.0	31
5.0-6.0	11
6.0 and over	5

It is impossible to forecast how much a co-operative organization will reduce these costs or what the total cost of marketing would be. Perhaps the experience of the associations at Long Lake and Excelsior are the best guide in this regard. These associations have operated on a margin ranging from 5 per cent to 7.5 per cent of sales price in recent years. This is at a rate varying from 12½ cents to 18¾ cents per crate when prices average \$2.50.

Associations with a larger volume of business should operate at a less cost. Moreover, most associations would have no more difficulty in developing sideline enterprises to reduce the costs of marketing raspberries than these organizations. This is an important consideration in setting up an association to market a commodity that must be marketed within a period of six or seven weeks. The total acreage as reported by 114 farmers at Hopkins, for example, was 67 for strawberries, 2.5 for blackberries, 12.5 for currants, and 1 for gooseberries. When the additional acreage of other farmers is considered, it becomes evident that an association in this locality might have a larger volume than either of the present co-operatives to supplement raspberry marketing. Apples probably could not be developed as a sideline in as large volume as at Excelsior, but there is some question whether an enterprise with a volume as variable as that of apples would reduce the overhead cost of a berry marketing co-operative in the long run. These facts seem to indicate that a co-operative association well supported by growers could probably operate at costs lower than those incurred in individual marketing; and even lower than the present associations, if management is equally efficient and volume larger.