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Grape Production and Distribution in Western Iowa



A typical hillside vineyard in western Iowa.

AGRICULTURAL EXPERIMENT STATION
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AMES, IOWA

Grape Production and Distribution in Western Iowa

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Commercial grape growing is unusually successful in the vicinity of Council Bluffs, not merely because this district is naturally adapted to this industry, but also largely because of the influence of the excellent cooperative marketing organization known as the Council Bluffs Grape Growers' Association. This organization has for many years provided satisfactory markets for grapes at the best possible prices to growers and at a low cost of marketing, besides handling other fruits and buying supplies for its members. Due to its influence, grape growing near Council Bluffs is generally better organized and managed than elsewhere in Iowa.

The practices of the grape growers in the Council Bluffs district and their marketing methods have been carefully studied by the Pomology Section of the Iowa Agricultural Experiment Station and the facts secured are presented in this bulletin for the information of growers in other districts in Iowa where similar success might be secured.

In so far as possible, the material was secured from the "pool books," ledgers, etc., of the sales agencies. In some instances this was not possible and then the information secured is a careful estimate made by the managers and later checked by estimates from other sources.

No attempt is made to compare the prices or profits in the different steps of distribution or to note their prevailing trend in any but a general way. It would be very difficult to secure accurate information in regard to the wholesale and retail prices thruout the season. At its best such information would vary from season to season. No attempt was made to learn the relative amounts distributed in the channels of trade beyond the carlot wholesaler.

BEGINNINGS OF THE INDUSTRY

Grape growing began in the Council Bluffs district as early as 1857, when A. S. Bonham¹ settled near Council Bluffs and set out a vineyard on the hills about one and one-half miles from the present court house. The older settlers state that returning sol-

*Acknowledgement is given to F. E. Parsons, now connected with the U. S. Bureau of Markets, who, in 1917, assisted in collecting and tabulating the data considered; to S. A. Beach, for suggestions in preparing the manuscript; to members and officers of the Council Bluffs Grape Growers' Association, who furnished data and otherwise gave valuable assistance.

¹Transactions of the Iowa Horticultural Society, 33(1898):492.



Fig. 1. First vineyard set in the Council Bluffs section. Planted in 1857; still vigorous and productive.

diers of the Civil War paid as high as one dollar for a ten-pound basket of grapes from this vineyard.

The industry seems to have developed but slowly, and generally as a home vineyard proposition. As late as 1893, when the Council Bluffs Grape Growers' Association was organized, the vineyard area of this district was estimated to be only 100 acres. However, the stabilizing effect which this association had upon the marketing of the fruit soon led to an expansion of the vineyard area. At the present time there are approximately 500 acres of bearing vineyard and 200 acres of younger vines.

NATURAL ADVANTAGES

The Council Bluffs grape district is rather favorably located in regard to climate and is also situated on a fertile soil which is well adapted to the production of fruit.

CLIMATE

Iowa is noted for the rigor of its winters, yet in only a few seasons has there been any serious damage to the vineyards of this district because of the extreme cold. Located as the district is, in the southwestern part of the state, along the Missouri river, the temperatures are favorable enough so that it is not a general practice for the growers even to remove the vines from the trellis

and lay them down and cover them for winter protection. It is a common practice to offer a partial protection to the root system by plowing furrows toward the vines late in the fall.

A large part of the annual rainfall comes during the growing season, but the soil is of such a nature that the excess rainfall is readily absorbed and little damage results either from erosion or from conditions of moisture favorable to the development of fungous diseases.

SOIL

According to Stevenson², the very deep soil known as the Missouri loess, which occurs along the Missouri river from Sioux City to the Missouri boundary, in a belt from five to ten miles in width, is a deposit which in nature and origin is similar to the loess of the valleys of the Rhine and Moselle in Germany, which are world-famous for their vineyards.

This soil is a very fine-grained, wind-formed type. Near the Missouri river it is perhaps 100 feet in depth. It extends eastward into the state at a gradually lessening depth for a distance of 50 to 80 miles. Analysis by Brown³ show a relatively high percentage of plant food and lime content. Experiments demonstrate its excellent water-holding capacity. The high absorptive and retentive characters of this soil tend to keep the surface earth relatively dry in the vineyards, even after a season of abundant rainfall, yet the vines are supplied with sufficient moisture during the entire growing season.

FREEDOM FROM INSECTS AND DISEASES

The topography of this region is very rough and is characterized by many sharply contoured, bluff-like hills and relatively narrow valleys. For the most part, the vineyards are situated along the sides or on the crowns of these bluffs on the southerly and easterly exposures. Such locations provide good soil drainage and maximum exposure to sunlight, and the narrow, open valleys aid in supplying the desired air drainage.

These factors, combined with the above mentioned soil properties, produce conditions which in a large measure are unfavorable to the development of fungous diseases. In fact, outbreaks of black rot (*Guignardia bidwellii*) or downy mildew (*Plasmopara viticola*) are almost unknown. The growers commonly do not practice spraying the grapes in any manner.

In a few of the vineyards there are indications of the grape root worm (*Fidia viticida*), but as yet no serious damage has resulted. The practice of the growers in plowing up to the grapes in the fall and throwing away the furrows in the spring tends to

²Stevenson, W. H. The Principal Soil Areas of Iowa. Bull. Ia. Agr. Expt. Sta. 82; Soil Survey of Pottawattamie County, Ia. Agr. Expt. Sta. Soil Survey Rep. 2.

³Brown, Percy Edgar. The Fertility of Iowa Soil. Bull. Ia. Agr. Expt. Sta. 150. Soil Acidity and the Liming of Iowa Soils. Bull. Ia. Agr. Expt. Sta. 151.



Fig. 2. Vineyard topography, giving maximum sunlight and good air and drainage.

control this insect. The grape cane borer (*Schistocerus hematus*, Fabr.) is noted by Maney⁴ in some vineyards, especially where the spur and high renewal system of pruning is practiced. The general adoption of a comparatively low renewal, long-cane system of pruning, and the burning of the prunings, have overcome in a large measure the depredations of this insect. A few other insects are found, but none others as yet are considered troublesome. Probably no other grape-growing region in the United States enjoys such complete freedom from the attacks of insects and diseases.

VINEYARD PRACTICES

VARIETIES

The Concord grape is the main variety grown in this district and growers estimate that it comprises over 90 percent of the acreage. Other well-known varieties used are Worden, Moore Early, and Niagara.

The Moore Early comprises only a small percent of the total acreage. It is largely marketed in four-pound baskets and in less than carload quantities. In average years about 4,000 of the four-pound baskets are sold. In addition to these, a few carloads of this variety, the first loaded each season, are put up in six-pound baskets.

But relatively few Niagara grapes are grown, as the demand for white grapes is very limited. They do not sell well on the local market and it is not desirable to include them in shipments

⁴Maney, T. J. Grape Pruning—The Spur and Long Cane Systems Compared. Bull. Ia. Agr. Expt. Sta. 160.

of the black varieties, as such shipments may at times be rejected or the price of the black grapes reduced by as much as one-half cent a basket thru such a practice.

The Worden is little grown. In some instances it is intermixed with the Concord vineyards, but only a few growers make any distinction between these two varieties at harvest time. The selling agencies consider them all as Concord. The Worden ripens a few days ahead of the Concord. It is not popular, due to the fact that it has a tendency to crack and consequently is not as good a shipper as the Concord.

MANAGEMENT METHODS

In the early period of grape growing in this district the vines were pruned according to the low-headed fan system⁴. This enabled the growers to "lay down the vines" over the winter. As experience later showed such a practice to be unnecessary for the main varieties, it was discontinued and more and more old wood was left on the vines. In time, a high renewal, spur system of pruning was evolved and became the prevailing type of training. As a result of experiments conducted by the Pomology Section of the Iowa Agricultural Experiment Station in recent years the low-headed system has been largely discontinued.

In 1914 the writer started some cooperative pruning experiments in this locality⁴ in which a comparison was made of this high renewal spur system with a long-cane system. The results were so overwhelmingly in favor of the latter system that many

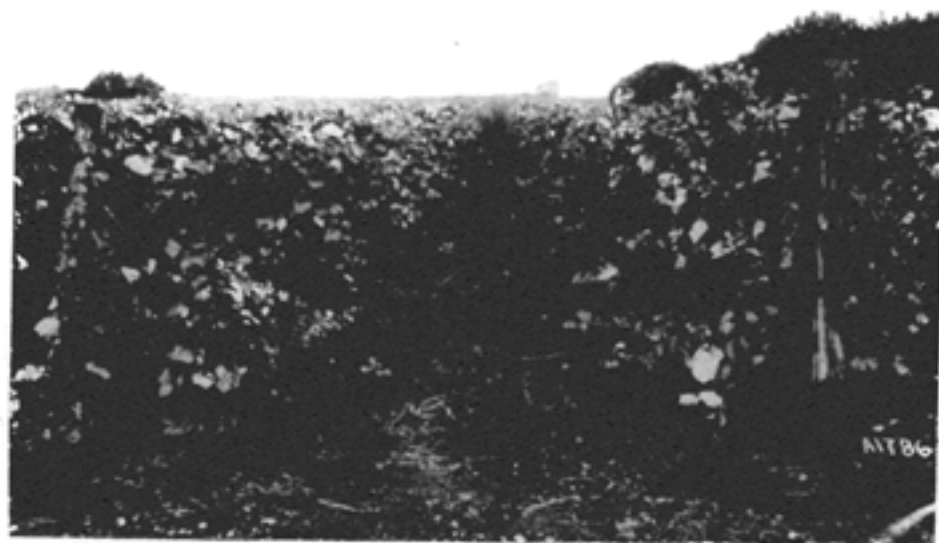


Fig. 3. Good culture⁵ pays.

of the more progressive growers adopted it the following season, and practically all of the vineyards of over three acres in size are now being pruned according to this system.

Pruning is done principally during February and March, tho a few growers begin in the fall immediately after the leaves have dropped. Five to six canes of eight to ten buds each are left to a vine. These are arranged on the trellis in the shape of a fan and are tied to the wires with a soft jute twine.

Usually, a two-wire trellis is used, with supporting posts between every third vine. The lower wire is 24 to 30 inches from the ground and the top wire approximately 20 inches higher. The posts used are of various kinds. Some of those noted in use are oak, osage orange, locust, iron pipe, angle irons and galvanized pipe. In a portion of two vineyards, cement posts have been used entirely, while in several others the end posts are of cement.

Planting distances are usually 8 feet in the row and rows 8 feet apart, with a 10-foot width between every four rows for a driveway. In some vineyards, however, the vines are only 6 feet apart in the row, and, on very steep hillsides, the rows are often only 7 feet apart.

The more progressive growers practice a system of clean cultivation where the topography of the land will permit them to do so. The vineyard is plowed early in June and disced or harrowed during the summer to maintain a dust mulch. The vines are also hoed at least once and often twice during the season and are kept free from all large weeds.

The average grower, more especially the small vineyardist, does not follow such good practices. Far too commonly, he limits cultivation to one plowing, half-done, together with one hoeing and the mowing of the weeds in August. In a later discussion it will be noted that the differences in yields are directly comparable to the variation in area of vineyards and the methods of cultivation.

Under the present practices vineyards laid out on the steepest hillsides are subject to erosion. There is need for careful study of this problem. Much of the washing may be stopped by the use of cover crops and heavy applications of coarse manure. Some vineyardists have partially solved this problem by keeping rows at intervals in permanent sod.

HARVESTING

The grape bunches are clipped and packed directly into the selling basket by the picker. These baskets are then set along the rows nearest the driveways and are gathered frequently and hauled in a light spring wagon to a packing shed. Here the top is properly faced, the lid added and stamped with the grower's name and the association brand, and the baskets are ready for delivery to the sales agencies.



Fig. 5. This type of soil erosion on steep hillsides can be prevented by proper cultural practices.

The pickers are largely neighbors, or women and children from the city. They receive about $1\frac{1}{2}$ to 2 cents a six-pound basket for their work. The packages used are the four-pound basket for the very earliest grapes and the six-pound climax basket for the bulk of the shipments.

VINEYARD STATISTICS

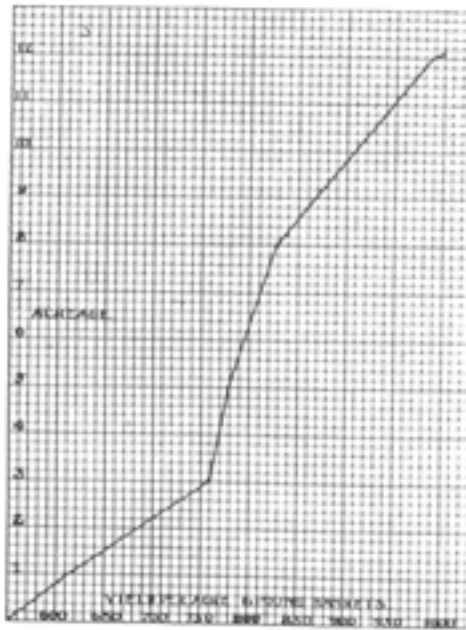


Fig. 4. Graph showing relative increase in yield with increase in size of vineyard.

The vineyards of this district are located largely within three miles and almost entirely within five miles of the city. Only a small proportion of the suitable land is planted to vines. The district is really just beginning to develop its grape industry.

There are approximately 500 acres of bearing vineyard distributed among over 200 growers, so the average size of the vineyards is less than two and one-half acres. In fact, as is shown in table I, a very large number of growers have vineyard yields of less than 2,000 baskets. With good growers, the yield may run from 1,000 to 1,200 baskets per acre.

YIELDS

The average acre yield of grapes in this district varies largely with the extent of vineyard area under each individual management. The column in table I, giving the assumed area of the vineyards, was calculated as follows: The acreage of a few growers in each class was determined from a survey report and their total

TABLE I. RELATION BETWEEN NUMBER OF GROWERS, AVERAGE VINEYARD PRODUCTION AND TOTAL DISTRICT PRODUCTION.

No. of growers*	Percentage of total production	Limit of production per vineyard (6-pound baskets)	Average production per vineyard (6-pound baskets)	Assumed area of vineyard (acres)
88	6.7	23-659	269	-.1
68	22.9	700-2220	1324	1 to 3
22	17.4	2374-4073	3103	3 to 5
21	28.5	4146-7008	5328	5 to 8
6	15.0	8155-11593	9852	8 to 12
2**	9.5	14847-22217	15 to 26

*This table does not include the few growers who sell direct to the local consumer or upon the Omaha public market.

**In 1921 these two vineyards will have 40 and 50 acres, respectively, in bearing.