KENTUCKY

AGRICULTURAL EXPERIMENT STATION

OF THE

STATE COLLEGE OF KENTUCKY.

BULLETIN NO. 73.

STRAWBERRIES.

LEXINGTON, KENTUCKY.

FEBRUARY, 1898.

KENTUCKY

Agricultural Experiment Station.

Address of the Station—LEXINGTON, KY.

NOTICE.

The Bulletins of the Station will be mailed free to any citizen of Kentucky who sends his name and address to the Station for that purpose.

Correspondents will please notify the Director of changes in their post-office address, or of any failure to receive the Bulletins.

ADDRESS:

KENTUCKY AGRICULTURAL EXPERIMENT STATION,

LEXINGTON, KY.

BULLETIN NO. 73.

STRAWBERRY RESULTS IN 1897.

BY C. W. MATHEWS, HORTICULTURIST.

A report upon the varieties of strawberries grown upon the Experiment Station farm in 1895 was issued two years ago as Bulletin No. 62 of this station. The following year (1896) was a very unfavorable season for the strawberry in this locality, so that no reliable estimate could be made of the relative value of the varieties under cultivation during that year.

The past season, however, was quite favorable to the crop, both in this vicinity, and as our reports show, in most parts of the state.

As in our previous strawberry report, we have again called upon the growers throughout the state to give us their experience with methods of cultivation and varieties. In response to our inquiries we have been fortunate in securing valuable data from one hundred and thirty of the largest and most progressive strawberry growers in the state, and the writer takes this opportunity of expressing his appreciation of the valued assistance they have rendered.

It is believed that a report of this kind will have a far greater value to the farmers of Kentucky when obtained from the records of growers all over the state than it could possibly have if it included only the results of our own observations upon our limited plots, representing but a single combination of soil, climate, and other conditions.

That the reports from our correspondents are fairly representative of the conditions existing in Kentucky may be seen

from the fact that they include all parts of the state, thirty-two counties being represented, from Fulton to Lawrence and from Boone to Bell. Among the seventy-five growers who have stated the area devoted to this crop, there are three hundred and twenty-five acres in strawberries, an average of four and one-third acres each.

While this represents of course but a fraction of the acreage in the state, it is nevertheless ample to show the prevailing methods of culture and the average opinion concerning varieties.

Interest in the strawberry, both as an adjunct to the farmer's garden and as a market crop, is undoubtedly on the increase. The large and growing cities upon our northern border afford a good market for early berries, which the fruit growers of Kentucky are in just the position to profit by. Nor should the smaller towns be overlooked when the strawberry grower is seeking a market. Experience has shown over and over again that in shipping to large cities the farmer and gardener often neglect a near but smaller market, which, with some attention could be made to return much larger profits, at least for limited quantities, than do the large city markets, which receive such enormous quantities of perishable products that they must sometimes be sold at a loss.

The importance of cultivating the smaller cities and towns as fruit markets is further very emphatically shown by the replies of our correspondents. Those who have sold their crops in smaller markets have as a rule received two or three cents per quart more than those who have shipped to the large markets of Cincinnati, Louisville and Chicago.

Growers who have many acres in this crop cannot, it is true, hope to dispose of their entire crop in small towns, although many of this class do sell a considerable amount of fruit in the smaller markets, only shipping to the large cities when the home market has been completely supplied, but the difference in price enforces the importance of studying the demand in the home market; a demand that can often be greatly increased by properly supplying it.

CULTURAL METHODS.

THE SOIL AND ITS PREPARATION.

The strawberry will thrive upon nearly all kinds of soils, as the great variety of soils mentioned by our correspondents would indicate. But the soil should be good and well drained. The majority prefer a "clay loam" or "sandy loam" on somewhat elevated land to escape late frosts, with a gentle slope to the southeast or north, according as the grower desires to reach an early or late market.

Whenever the "cutworm" is prevalent, growers find it safer to use land that has been in some cultivated crop for a year or two rather than sod ground. Many growers, in parts of the state where it is practicable, find that they secure their best results with "new" or "virgin" land, but recently cleared of its timber. Such land, if suitable in quality, generally contains an abundance of all the needed elements of plant fertility from the decaying organic matter and ashes usually left in large quantities upon such land.

Some of the most thorough cultivators plow the ground deeply in the fall, leaving it rough through the winter, plow again as early in the spring as possible, and work it very thoroughly with harrows and other implements, according to the character of the soil, until it is in the most perfect tilth possible, before setting the plants.

MANURES AND FERTILIZERS.

The manures and fertilizers used vary greatly, as would be expected upon widely different kinds of soil. No rule of general application can be given as to whether manures or commercial fertilizers are needed upon a soil for the strawberry crop, and the individual must use his judgment, based upon experiment and observation upon his own or nearby lands to determine whether the use of any manure will yield a profit.

Of one fact, however, there can be no question ; the soil must be either naturally fertile or made so artificially. The

strawberry, of all crops, will nowhere yield satisfactory returns upon a poor and unfertilized soil.

Upon some virgin lands, our correspondents find that they can secure abundant crops without manures of any kind, and in our "Blue Grass" soils others find that the application of commercial fertilizers will not produce any paying results for the strawberry.

The most generally used source of plant food in the state is barnyard or stable manure. When commercial fertilizers are applied at all, as they are by perhaps one-fourth or one-fifth of our correspondents, wood ashes and ground bone seem to be used more than all other kinds put together.

Stable manure should be well rotted or applied the year previous to setting the plants. Many find it profitable, particularly on the lighter soils, to turn under a green crop such as clover or cow peas the previous year, thus furnishing an abundant supply of decaying vegetable matter or humus to the soil, as well as supplying the nitrogenous element of plant food.

Bone dust and wood ashes are best applied in the spring just before setting the plants, in most cases broadcasting giving best results, and they should be thoroughly worked into the surface layers of the soil.

Too much attention cannot be given to thoroughly pulverizing the soil before setting the plants; as one grower expresses it, he "continues working it until no clod larger than a hen's egg can be found either under or on top of the ground." With lighter soil than this man possesses, it would be a good rule to allow no clod even of this size.

SETTING THE PLANTS.

Among Kentucky strawberry growers, as in most parts of the country, the "matted row" system of growing the crop has been very generally adopted, as giving the largest and most profitable yield of fruit for the average grower. The large growers set the plants in rows from three and one-half to four feet apart, the plants in the rows being set from one to three feet apart, according to the ability of the variety

to produce runners and plants. We believe the latter distance (3 feet) to be by far too great under most circumstances, as it is difficult to avoid a poor "stand" of plants, if, on account of cutworms or other causes, a portion of the first setting of plants is lost. Distances of fourteen to twenty inches apart, according to soil and variety, appear to be safer limits, except for the strongest growing varieties. The greater of these distances is sometimes adopted to enable the grower to cultivate both ways until the plants begin to run considerably.

Each grower has his favorite plan of setting the plants. One very careful and apparently successful cultivator in central western Kentucky gives the following as his method of procedure: "A boy has the plants in a pail about one-third full of water, and the plants are dropped just as needed by the planter. The planter uses a concave trowel, the plant roots are spread fan-shaped in the hole, and the soil is pressed firmly all around except just at the crown." Many growers prefer instead of the concave trowel, a flat dibber, such as is used by nurserymen, and others a common sharp spade for making a narrow, wedge-shaped opening in which the roots can be spread out fan-shaped in the direction of the row.

AFTER-CULTURE.

As soon as the plants are set, cultivation should begin and should be continued unceasingly until late in the fall. Some of the most careful growers in our state cultivate their strawberry fields regularly once a week except when interfered with by storms. It should be remembered that the best cultivation, as now understood, does not mean simply the destruction of weeds and keeping the land clean. Careful experiment and observation have shown beyond question, that in most cases, an object of nearly or quite equal importance is the saving of soil moisture, that is effected by a constant stirring of the surface soil, which acts like a blanket to prevent the rapid evaporation of the water beneath the surface. The importance of moisture to the strawberry crop, and the losses occasioned by drouth, are too well known to every grower of experience. No other crop grown is more exacting in its demands

for a sufficient supply of soil moisture, and no effort should be spared to jealously guard every avenue by which the moisture can be lost.

In regard to the practice of cutting the runners from newly set plants, opinions differ, as was expected. A large majority do not favor cutting them at all, believing that the first formed plants are the most fruitful ones of the succeeding season. Those who practice cutting the runners usually do so until the middle of June or the first of July, after which time the stored up energies of the parent are able to produce a large number of young plants if the weather is favorable. If, on the other hand, one of our frequent summer drouths begins about this time the chances for a good "stand" of plants are greatly diminished.

A number of careful growers follow an alternative plan which has much to commend it. They allow the runners to grow, but late in the season carefully thin out the plants in the matted rows, removing all the smaller ones and leaving an even stand of plants not nearer than six or eight inches apart. Every plant is thus relieved from crowding, the winter mulch will settle about it to keep the future berries clean, and each is thus in the best condition for an abundant fruitage.

On account of its ready availability the most commonly used mulch is wheat straw, which is generally applied lightly in December, or after the first freeze, and remains in place until after the crop is marketed in order to keep the berries clean. If the mulch is heavy enough over the plants to prevent them from coming through freely when growth starts in the spring, it should be partly raked off into the alleys between the rows. Here, like the soil mulch of the preceding years, it serves to check the escape of moisture from the soil by evaporation.

It is the usual practice among Kentucky growers to take two or three crops, often more, of berries from a bed before turning it under. Like most other practices its advisability depends upon the conditions surrounding the individual grower. In many parts of the country the practice of turning under the plants as soon as the first crop is secured, meets with

much favor. It is argued by those who follow this practice that it is less expensive to set a new bed each year than to clean and keep clean the old one; that some quick growing crop can be matured before winter upon the same land that produced a crop of berries, and finally that the first crop of fruit meets with a readier sale on account of the larger size and greater attractiveness of the berries.

PICKING, MARKETING, YIELD AND PRICES.

In this state the pickers who are employed to gather the berries are of all kinds, men, women and children, both white and colored. They are for the most part paid by the quart, although a few growers prefer to pay by the day. The price ranges in general from 1 cent to 2 cents per quart, although in a few cases the prices run above or below this rate, the average being 1½ cents per quart. In counties adjacent to the Cincinnati market, the price paid is usually 1 cent or 1¼ cents per quart; around Louisville the price appears to range slightly higher, while in the extreme western part of the state the usual price paid by those reporting is 2 cents per quart. This variation in price is due in part to the different class of berries produced in different sections. In the extreme west the Crescent type is the favorite, being shipped to distant northern markets like Chicago, while in the vicinity of Louisville and Cincinnati the shorter transportation permits a greater proportion of the larger varieties like the Bubach to be grown, with a consequent saving in the cost of picking.

In keeping tally with the pickers the common plan is still the use of checks of different denominations, which are handed to the pickers as fast as a picking stand of four to six quarts is passed in to the superintendent, these checks being redeemable in cash at the end of the week or picking season.

As these checks are frequently lost, and found by others than the owners, giving rise to more or less dispute and dissatisfaction, many growers have adopted the plan of using tickets to be punched, on which are printed different denominations of money or numbers of baskets. These tickets are

not transferable, and as fast as berries are gathered the amount due the picker is punched from the numbers on this card, the punch used for this purpose being carefully kept of course in the owner's possession, the settlements being made just as in the check system.

The practice of branding each crate of fruit with the grower's name and the variety of fruit in some neat design, is an excellent idea that has been adopted by a few growers. This is an inexpensive form of advertising that helps to create a demand for a grower's product if his fruit is uniformly good and carefully picked, and has a reactionary effect upon the grower himself, stimulating him to greater efforts in the growing of choice fruit and putting that fruit upon the market in the most attractive shape.

From general reports, the past season seems to have been one of the most favorable for the strawberry crop for several years. An attempt was made to secure data as to the yield of fruit, and the average prices received. As the figures given were not all estimated upon the same basis, it is not possible to give results with exactness. The average yield for 1897, of all the growers who gave definite figures, appears to be about 3400 quarts or a little over 100 bushels per acre, the average gross price, 6¼ cents per quart, and the average net price, after deducting cost of picking, shipping and commissions, to be 4½ cents per quart, or in round numbers, $150 per acre.

Many growers have, of course, exceeded these figures, but the estimate made above, including only one or two growers who are cultivating less than one acre, and including sales in smaller markets as well as the large cities, is believed to be a close approximation to the truth.

Several growers, whom we have every reason to believe to be thoroughly reliable, have reported crops nearly or quite twice as large as the yield mentioned above. A significant fact noticed in several instances is, that those growers who have produced the large yields per acre have also frequently secured prices considerably higher than the average. While, of course, much depends upon a man's conditions and markets,

these facts possibly suggest that the same energy and painstaking care that enables one to produce a large crop, will also lead him to give such attention to its condition and attractiveness in the market that its ready sale at a good price is assured.

MOST POPULAR VARIETIES.

The varieties first in popular favor remain about the same as they were two years ago, Bubach still easily holding first place among growers for market, followed by Haverland, Gandy, Crescent, Michel and Warfield.

It is interesting to note that in an inquiry regarding best market varieties, that was sent out four years ago, the returns gave Creseent first place as the favorite. This seems to indicate,—what we should expect,—that consumers are becoming better educated and more critical in their purchases of strawberries, so that where a berry of the Crescent class would once sell freely, the buyers now demand the larger and better berries represented by the Bubach.

The Michel, while not very much esteemed in the eastern part of the State, is generally of considerable value in western Kentucky for shipment, because the entire crop can be ripened and gotten to market before the glut of later berries arrives, so that, although not a very productive variety, it fills a very important place in their crop.

Of the varieties recommended as pollinators of such standard varieties as Bubach and Haverland, the varieties most frequently mentioned and in their order are: Gandy, Michel, Lovett, Enhance and Woolverton.

One grower suggests removing the mulch from Bubach and Haverland at a later period than from the Gandy, thus bringing their blooming period into closer conformity.

NOTES ON VARIETIES.

(The varieties marked P. are pistillate or imperfect flowered kinds.)

It should be remembered that these notes are made chiefly under such conditions as surround the average grower for market. The culture given is such as prevails upon farms where several acres of strawberries are grown. It is doubtless true that some of the varieties which are unpopular under such field culture, would, in small gardens under high culture, yield good crops and give complete satisfaction.

Upon our own grounds, while the conditions are perhaps somewhat more favorable than in the fields of the average market grower, they are no better than are provided by a number of our correspondents who grow several acres of berries each, and no excessive "coddling" is given to either old or new varieties.

ANNIE LAURIE. Eight out of nine who mention it describe it as worthless and unproductive, which accords with our experience.

AROMA. Upon our grounds we had but a very few plants of this. It seemed fairly productive, of fair size and will be tried again. Two growers in Warren county speak in very high terms of this as a late variety.

AUBURN. P. A medium sized berry of good quality and handsome appearance, but only moderately productive here and elsewhere so far as heard from.

BANQUET. P. Showed no indications of special value upon our grounds.

BARTON. P. While still cultivated as a market variety in some localities on account of its productiveness, it is no longer a popular variety owing in part to its susceptibility to rust.

BEDER WOOD. Generally discarded throughout the state, although still grown for market in northern Kentucky near Cincinnati.

BEECHER. Has been generally discarded on account of unproductiveness.

BEVERLY. Does not seem to grow in popularity; of good quality, but not productive enough.

BISEL. P. Gave a good yield of medium sized berries on our land, but generally reported as valueless.

BOYNTON. P. Not generally liked as well as Crescent, which it closely resembles.

BRANDYWINE. Receives about an equal number of favorable and unfavorable comments; its praises are moderate in tone and it does not seem likely to become very popular; not very productive.

BRUNETTE. Of medium size, quite productive, and of superior quality on our grounds, but the majority of reports are unfavorable.

BUBACH. P. Still by far the most popular variety in Kentucky either for market or home use.

CHAIRS. Discarded as valueless by all who have reported upon it.

CHILDS. Favorably commented upon by a few growers and discarded by others. A pale berry, of medium size and rather attractive in appearance, but not productive on our grounds.

CRESCENT. P. Continues to be one of the favorites for market in Kentucky, particularly with those who ship long distances. Some of the latter still find it their best paying variety.

CYCLONE. A rather small berry, bright in color and of good flavor, but not productive enough; not generally valuable.

DOWNING. Not very generally grown for market now; not productive and suffers much from rust. Still a favorite with some for home use.

EDGAR QUEEN. P. Generally discarded, although favorably spoken of in Jefferson county; moderately productive here, but rather irregular in shape; others are more valuable.

ELEANOR. One of the recent varieties, which meets but little favor in Kentucky; on our grounds it was small and not productive.

ENHANCE. Not very generally esteemed, although several in Kenton county give a favorable opinion of it; as grown here not very productive and is unattractive in appearance.

ENORMOUS. P. Of large size and attractive in appearance; quality good and productive upon our grounds; will be tried further.

EPPING. P. Has not proved of value on our grounds; will not be grown further.

EQUINOX. Does not appear valuable on our grounds: rather small and unproductive. The majority of those reporting pronounce unfavorably upon it; one however finds it worthy of further trial.

FAR WEST. A recently introduced variety of the Crescent type that exhibits no valuable qualities here.

FOUNTAIN. Small and unproductive; discarded.

GANDY. One of the trio of Kentucky's favorite varieties; best late market berry almost everywhere in the state; equally good for the home garden; somewhat lacking in productiveness, but on most ground has nearly every other good quality.

GARDNER. A strong vigorous grower and quite productive on our ground; berry of good size and appearance. The only comment upon it from our correspondents is favorable.

GREENVILLE. P. Reports upon this variety are in most cases favorable; handsome in appearance and productive here as in most places in the state.

HAVERLAND. P. Too well known to need any description; a favorite all over the state as a market variety and for home use, although only fair in quality.

IOWA BEAUTY. A fairly productive variety, of good quality and medium size. Growers elsewhere do not praise it; badly rusted here.

IVANHOE. Medium to large in size, of excellent quality and fairly productive. Comments from other parts of the state, though few, are favorable to it.

JAY GOULD. P. Generally discarded.

LEADER. Not very generally grown in Kentucky. One grower speaks in high terms of it. Upon our ground it was large bnt irregular in shape and not productive enough.

LOVETT. One of our most productive varieties and largely used for pollinating imperfect varieties. Of medium size and fair quality. Quite largely grown for market, especially in Northern Kentucky.

MARSHALL. A large and handsome fruit but not productive, and although a considerable number of growers have tested it, scarcely a single favorable report has been received concerning it.

MAY KING. Reports are not favorable. Much complaint of rust.

MARGARET. A new variety that has been quite extensively advertised. Upon the few plants on our grounds it was quite productive of large and attractive berries. We shall try it further.

MEEK'S EARLY. P. Upon our grounds a small dark colored berry. Discarded by other growers who have tested it.

MEXICAN. Unproductive and rusted badly. Discarded.

MICHEL. Not productive but ripens its entire crop early so that when the chief object is to reach the market early, this variety sometimes proves quite desirable. Not generally esteemed in this part of the State, but growers in southern and western Kentucky speak in high terms of it and find it their best paying berry, because they can get it into market before the glut of later berries arrives.

MIDDLEFIELD. P. Large and handsome berries, but unproductive and generally discarded.

MINER. All reports are unfavorable. Generally discarded.

MRS. CLEVELAND. Of several reports received all are unfavorable, and it is generally discarded.

MOUNT VERNON. While favorably commented upon by some for a home berry, this variety has been generally discarded as a market variety, on account of its softness and because badly affected by rust.

MUSKINGUM. Of the few reports made in regard to this berry, most are unfavorable except from this part of the state. Upon our grounds this variety is large, smooth and handsome, and of superior quality. Plants very free from rust.

NOBLE. Of the few reports received all are unfavorable.

NO NAME. Fairly productive and of pleasing appearance on our grounds, but reports from other parts of the State are uniformly unfavorable.

PARKER EARLE. Generally discarded. Only does well on rich soil with an abundant supply of moisture.

PREMIUM. P. Berries few and of poor quality on the few plants that we grew in our plot.

PRINCESS. P. Of the seven correspondents who refer to this variety only one calls it good; the remaining reports are unfavorable. Upon our ground it yielded a fair crop of berries of good appearance and flavor.

PRINCETON CHIEF. P. General reports unfavorable. Yielded here a generous crop of small to medium berries which were rather sour.

REIHL'S NO. 5. A productive variety of medium size and good quality. Quite free from rust. We shall try it further.

RIO. A variety that, like Michel, ripens the bulk of its crop early, and is reported upon quite favorably from the counties along the Ohio River and in the extreme western part of Kentucky as an early market variety. In this part of the State it is not commended. Upon our grounds this variety has produced a moderate yield of handsome berries of good size, and very early. Plants healthy.

SHARPLESS. This old variety, though cultivated to some extent, has been generally discarded throughout the state. As several growers suggest, it "has seen its day."

SNOWBALL. Of no pronounced value here. Rusts badly.

SPARTA. Small to medium in size. Not productive and rusts badly here.

SPLENDID. Reports from nearly all points in the State are unfavorable. Rusts badly here.

STAPLES. Reports are unfavorable. Of no decided merit here.

SWINDLE. P. One of the most productive varieties upon our grounds during the past two seasons. Of good size, but dull in color and rather unattractive in appearance.

TENNESSEE PROLIFIC. Reports divided in opinion as to its value. Majority favorable. Moderately productive here, but not attractive in appearance.

TIMBRELL. P. Of good quality, but so unsightly in appearance that it has been generally discarded.

TUBBS. Not very productive here and rusts badly, but one prominent grower finds it worthy of further trial.

WARFIELD. P. Not generally found valuable except in the northern counties along the Ohio River, where it is still considered by most of the growers a standard market variety.

WILLIAM BELT. Moderately productive of large and attractive berries. Reports are divided as to its merits, the majority being unfavorable on account of its lack of productiveness and its susceptibility to rust.

SUMMARY.

THE SOIL FOR STRAWBERRIES SHOULD BE RICH AND MOIST, BUT WELL DRAINED.

SOMEWHAT ELEVATED LANDS PREFERABLE TO AVOID LATE FROSTS.

THE SOIL SHOULD BE THOROUGHLY AND DEEPLY PULVERIZED BEFORE SETTING PLANTS.

BARNYARD MANURE THE MOST GENERALLY USED SOURCE OF PLANT FOOD. BONE DUST AND WOOD ASHES FOUND PARTICULARLY VALUABLE BY MANY GROWERS.

THE MATTED ROW SYSTEM OF GROWING THE CROP ALMOST UNIVERSALLY USED IN KENTUCKY.

CONTINUOUS AND FREQUENT CULTIVATION SHOULD BE GIVEN THE CROP, WHETHER WEEDY OR NOT, FROM THE TIME OF SETTING UNTIL LATE FALL.

MOST KENTUCKY GROWERS FIND IT PROFITABLE TO FRUIT THEIR BEDS FOR TWO OR THREE YEARS.

THE USE OF TICKETS SUITABLE FOR PUNCHING IS THE MOST GENERALLY SATISFACTORY METHOD OF KEEPING TALLY WITH THE PICKERS.

THE AVERAGE YIELD IN KENTUCKY IS 3400 QUARTS PER ACRE. ARE YOU HELPING TO RAISE OR LOWER THAT AVERAGE?

THE AVERAGE GROSS PRICE IS 6 1-4 CENTS PER QUART.

THE FAVORITE MARKET VARIETIES IN KENTUCKY IN THEIR ORDER ARE: BUBACH, HAVERLAND, GANDY, CRESCENT, MICHEL AND WARFIELD.

THE FAVORITE VARIETIES FOR HOME USE NOW VARY BUT SLIGHTLY FROM THE MARKET LIST.