UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE
AGRICULTURAL EXTENSION SERVICE
COLUMBIA, MISSOURI

A Program for Missouri Agriculture

PROJECT ANNOUNCEMENT 28
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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

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FOREWORD

In connection with the January, 1928, Farmers Week held at the College of Agriculture, two general assemblies were devoted to consideration of the agricultural situation in Missouri. The first assembly disclosed a long list of ailments. The second assembly considered, with little success, possible remedies and adjourned after passing the following motion:

> "That the Dean of the College of Agriculture be requested to appoint a representative committee which, through proper sub-committees, shall formulate a tentative program for Missouri agriculture and farm life based on the deliberations of the past two days (January 18 and 19) and that the tentative report, or reports, of said committee shall be submitted for consideration and approval at the next Missouri Farmers' Week."

In accordance with the foregoing motion, Dean F. B. Mumford appointed the general committee with sub-committees listed at the close of this booklet. The reports of the committee appear in the following pages with some slight abridgement of introductory statements in order to conserve space.

The sub-committee reports were considered and revised by sectional groups of farmers during the October, 1928, Farmers Week, and finally the report as a whole was considered and adopted by a mass meeting of all Farmers Week visitors October 26, 1928.

Many agencies including the Extension Service of the College of Agriculture are vitally concerned with the development of Missouri's farm and home interests. The program outlined in the following pages, prepared by men and women who live on, or operate, Missouri farms, may properly serve as a guide to all such agencies.

It is with this thought and purpose that the "Program for Agriculture" is published as a Project Announcement of the Agricultural Extension Service

A. J. MEYER, *Director*

A Program for Missouri Agriculture

In the appended program for Missouri agriculture, the term "agriculture" is used in its broad sense to include the farm home as well as the farm itself.

Your committee recognizes that there are two groups of factors which must enter into a comprehensive program for agriculture. In the one group are those factors which are mainly under the control of the individual farm family on their own farm. The second group includes those factors which demand widespread coordination of effort involving the cooperation of individuals and groups.

An agricultural program for Missouri must include the following items which require mass action:

1. Taxation.—The present system of raising revenues chiefly by a tax on capital property places an undue hardship upon agriculture. Our system of taxation should provide for the raising of a larger proportion of our revenues by a tax on incomes thereby placing the responsibility of government financing upon those best able to pay taxes.
2. Marketing.—Marketing is of equal importance with production. Cooperative marketing, including the standardization of farm products to meet consumer demands, should be encouraged where it can be developed along sound, economic lines.
3. Transportation.—Adequate, economical and efficient transportation facilities from the producer all the way to the ultimate consumer are vital to a successful agriculture. Every encouragement should be given, therefore, to the proper development of our railway systems, our waterways and our highways.
4. Credit and Finance.—As a group, farmers pay the highest rate of interest of any class of borrowers. Without encouraging the over extension of credit, ways and means should be devised to enable farmers to borrow at as favorable a rate as other groups.
5. Education.—A program for agriculture requires an equal educational opportunity for all girls and boys regardless of whether they live in the country or in the city. The cost of this equal educational opportunity should be distributed over the entire state and not be borne by local school districts.
6. Legislation.—Agriculture may be profoundly affected by legislation. An agricultural program must give constant attention to legislative matters.

Beyond submitting the foregoing items and suggesting certain fundamental principles in relation thereto, your committee offers no specific plan of action, believing that these are all factors which demand and should have, the united attention of all farmers' organizations in the state, and all agencies interested in the general development of agricultural interests.

The remainder of this report is concerned with items which are largely under the control of the individual farm family or the community.

I. The Live Stock Program

Live stock production was the means of marketing most of the products of the land, not needed for home consumption, by those who first settled Missouri's agricultural lands. This method of farming has been continued to the present date.

Of the leading crops grass, corn, hay, wheat and oats, all except wheat find their best market through the production of live stock and live stock products. Low grade wheat, low grade flour, bran and shorts are used for live stock feeding.

In 1910 there were 298 head of live stock per 1000 acres of Missouri farm land. In 1920 this number had dropped to 264 and in 1925 to 249. The net decrease during the fifteen-year period had been 17 per cent. While systems of farming and crop acreage have undergone some variation and change, it is probably not as great as the live stock changes.

BEEF CATTLE

The number of beef cattle in the state has declined from a maximum of 2,397,000 in 1907 to 1,347,000 in 1928. The average on Missouri farms from 1910-1914 was 1,711,000 and from 1923-1928, 1,712,000. In the United States the maximum number of beef cattle, 50,584,000, was reached in 1900, as compared with 33,748,000 in 1928, and an average of 37,642,000 for the past five years as compared with a 1909-1914 average of 42,631,000.

Breeding beef cattle may safely be maintained in such numbers as to utilize the rough feed produced. This will involve a slight increase in present numbers in Missouri. Where corn is not available for finishing, the calves may be marketed for stock purposes. The growing and fattening of steers is indicated where corn is grown in abundance and pasture is available.

Essentials to be observed in producing beef cattle are:

1. Maintain good cows and cull irregular and poor breeders.
2. Use only good purebred bulls.
3. Use maximum of roughage and grass in maintaining cows.
4. Use precautionary measures to prevent disease, such as abortion, blackleg and tuberculosis.
5. In the production of calves: (A) In the sections where little corn is produced calves may be marketed as stockers or feeders at weaning time. (B) In sections of medium corn production calves may be fed grain while nursing and fattened and marketed at 9 to 12 months of age. (C) In heavy corn producing sections calves may be fattened and marketed as fat calves or yearlings.

In the fattening of beef cattle consideration should be given to:

1. Relative economy of gain made by young and more mature cattle.
2. Methods of minimizing speculation.
3. The time of buying and marketing and the finish required for different grades of fat cattle.
4. Proper use of protein supplements.
5. The use of legume hays.
6. Use of silage.
7. Conservation of manure.

HOGS

The hog production has been more nearly constant in the state than that of any other class of meat animals, reaching a maximum of 4,698,000 in 1923 with a five-year average from 1909-1914 of 4,153,000; from 1923-1928 of 4,339,000 with 4,270,000 in 1928. Federal swine statistics are similar to those of the state, reaching a maximum in 1923.

The present rate of pork production for the state of Missouri should be maintained but it should be confined largely to farms which grow corn and good pasture advantageously.

Essentials to be observed in producing hogs are as follows:

1. The use of breeding stock which will produce desirable and efficient market types.
2. The use of proper sanitation for the prevention of worms and filth bacteria diseases, and additional precautions necessary to prevent cholera, swine plague and abortion.
3. Maximum use of good pasture (especially legume).
4. Proper use of protein supplements (such as skim milk and tankage).
5. Push pigs rapidly to marketable weight and market before seasonal declines.
6. A system of management, making possible the production of two litters per sow per year and furnishing pigs enough to consume the part of the corn crop that can profitably be marketed through hogs.

SHEEP

Sheep on Missouri farms January 1, 1928, were 986,000 as compared with 1,847,000 in 1911. The average from 1909 to 1914 was 1,614,000; from 1923 to 1928, 931,000. In the United States the sheep reached their maximum in 1884, when there were more than 50 million head, as compared with 44,545,000 on January 1, 1928. The average number from 1909-1914 was 46,253,000, and from 1923-1928 was 40,222,000.

The production of sheep as a major enterprise is indicated in those areas of Missouri where the corn crop is limited and grazing land must be utilized. Sheep may be profitably maintained on farms in practically every section of the state.

Essentials to be observed in producing sheep are as follows:

1. Use of a purebred ram.
2. Control of stomach worms.
3. Flushing of ewes before breeding.
4. Proper winter feed and care of the bred ewes (especially use of legume hay in ration).
5. Early lambs, marketed early (May 15th to June 15th).
6. Docking and castrating of lambs.
7. Creep feeding grain to the lambs.
8. Marketing lambs on graded basis.

HORSES AND MULES

There has been a constant annual decline in the number of horses since 1918. The horse population of the country remained approximately stationary from 1910 to 1920. Mules have shown a slight increase in numbers. The number of colts (both horse and mule) has declined from an average of 91 per 1,000 total in 1919 to 42.2 in 1927, or more than 50 per cent. This indicates that the average age of all horses is gradually increasing. There are only 73 per cent of the number on Missouri farms that there were in 1910.

Horses and mules are the chief source of Missouri farm power. The production of horses and mules may safely be increased to a point where in total the required replacement of horses and mules is produced within the state. This production should occur on the farms where it can most conveniently be handled. There is also an opening for specialists to produce pleasure horses successfully.

Essentials in the production of horses and mules are as follows:

1. Use of purebred sires of correct breed and type.
2. Use of good mares for breeding purposes.
3. Feed growing colts enough to produce rapid growth.
4. Let young horses earn keep after 2½ to 3 years of age.
5. Adjust production so that mares which produce foals may also perform their share of labor.

CREDIT FACILITIES

Better provision for the financing of the purchase of breeding stock should be devised.

MARKET CYCLES

The general tendency of live stock prices to move in definite cycles is recognized and should be studied by live stock producers.

II. The Poultry Program

Poultry is fourth as a livestock industry in Missouri. In 1927 the income from poultry was $25,046,560.00 and from eggs $33,101,640.00, making a total income of $58,148,200.00. It is surpassed in gross income by hogs, dairy and beef cattle. None of these industries are double that derived from poultry. Of the field crops, corn is the only one that produces an income greater than does poultry.

Missouri is favorably suited for the economical production of poultry and eggs. Most of the grain needed is usually produced on or in close proximity to the farm. Markets are not far distant. Climatic conditions are good. Missouri can therefore produce eggs as economically as any state in the union.

The poultry business today is in good condition economically. The supply is equal to the demand at figures making the industry profitable to farms well managed. *A great deal of expansion is not warranted, as is shown by results in* 1927 *when poultry profits because of over expansion became losses.*

The poultry program for Missouri should not have as its objective either the expansion or the limitation of production, but it should offer suggestions that will make the industry more efficient and will increase the quality of poultry and eggs to such an extent that Missouri poultry and Missouri eggs will demand a place on the markets of our country second to none.

The following points carefully followed will greatly benefit the poultry industry in Missouri:

1. The average Missouri flock can be greatly improved by the use of purebred strains selected from high laying strains that are true to breed type and possess great constitutional vigor. This improvement should be made.

2. Instead of spending thousands of dollars each year for poultry medicines farmers should follow best known methods of housing, feeding and sanitation, thereby accomplishing the results that the so-called remedies fail to accomplish. More research and investigational work in poultry husbandry should be made. It encourages the keeping of records in order that the producer may know whether he is operating at a profit or loss.

3. Commercial hatcheries should be supervised in some way so that the loss of baby chicks from bacillary white diarrhea may be reduced.

4. Missouri, through its proper agencies, should establish grades of eggs, and the buying of eggs on a graded basis should be encouraged

reflecting the difference in price to the producer. Statistics show that each individual on a Missouri farm consumes 357 eggs annually, while the average per capita consumption is only 220 eggs. The farmer eats only first quality eggs. If we place such eggs on the consumer's table he will increase his consumption.

5. The sale of inedible poultry is an infringement on the pure food and drug act. Producers therefore should offer for sale nothing but good healthy poultry. Your committee condemns the practice of dealers buying and paying for sick poultry.

6. Every encouragement should be given to the forming and the maintaining of organizations to keep performance records of flocks, to certify flocks and to establish a uniform standard for the accrediting of hatcheries.

7. Some agency should be authorized or formed for the purpose of protecting the poultry industry against fraud in the sale of many so-called poultry remedies and medicines.

8. The movement looking toward the federation of existing poultry associations in Missouri for the promotion of the industry as a whole, should be encouraged.

III. The Dairy Program

It is well-known that milk and its products constitute one of the most important of all sources of food, and that the history of agriculture shows dairying to be among the most efficient and permanent types of farming. The dairy industry of the United States has long been and continues to be a favorable industry for expansion because we are on an import basis and both our population and per capita consumption of all dairy products are steadily increasing. A substantially greater, but withal a sound, well-balanced, development of the dairy industry in Missouri should be for the best interest of Missouri Agriculture. Such a program as is here presented should assure the development of the industry on a sound basis and in such a manner that it will take its proper place in a well-balanced general agricultural program for the state as a whole.

1. The further development and increase of dairy farming in Missouri should result through first improving our dairy cattle and dairy methods to the end that the most efficient production may result.

2. Increase in the number of dairy cattle should come as a result of the natural and normal development of the industry, and not as a result of widespread propaganda for the introduction of large numbers of cattle from the outside, or for the purpose of inducing great numbers of farmers now engaged in other types of farming to make an immediate change to dairy farming.

3. Improvement in the feeding, care, housing and management of dairy herds is of primary importance. Every dairy farmer should grow and feed approximately one and one-half tons (about one acre on the average) of legumes for each cow on the farm. Corn or other suitable crops should be grown and used for silage where the herd numbers 12 to 15 cows or more, and increased attention should be given to the care and maintenance of permanent pastures. Approximately two-thirds of the cows in farm herds should be bred to freshen during the fall months.

4. Complete production and breeding records should be kept on each and every cow on the farm. There should be a more general use of the Cow Testing Association for all herds and for highly developed pure bred herds, the special breed Herd Improvement and Official Tests.

Dairy judging contests for both adults and juniors should be encouraged.

5. Better purebred herd sires are of fundamental importance. Every encouragement should be given to the cooperative purchase of herd sires, and the use of purebred bull associations as an aid in making

it possible for the individual farmer to have the use of a better class of bulls than might otherwise be possible, were he to depend on his own financial ability to purchase sires for use in his individual herd. No grade or inferior pure bredbull should be raised or sold for breeding purposes:

6. Under present conditions, the most economical unit for the family farm herd, is 12 to 15 cows except where milking machines are used when the size of the herd may be 20 to 25 cows.

7. All dairy cows should be regularly tested for tuberculosis. The county or district tuberculosis free accredited area plan should be generally adopted.

8. All dairy herds shall be regularly tested for the infectious disease known as Bang abortion disease, and proper sanitary measures used as an aid in the control of this disease. Proper regulations should be formulated and officially promulgated to prevent the shipment into the State of breeding and dairy cattle that have not been shown to be free from this disease, by means of the well recognized serological test for the Bang abortion disease (agglutination or complement fixation tests).

9. A complete simple record system covering all operations on the dairy farm would add materially to the prosperity of the dairy farmer and efforts to bring this about should be pushed vigorously. Increased attention should also be given to the neatness, sanitation and attractiveness of the farm home, buildings, equipment and grounds.

10. Boys and girls calf clubs, where properly supervised and so organized as to offer regular instruction in the care, feeding, management and breeding of dairy cattle over a period of several years, are one of the soundest and most effective ways of interesting young people in a proper understanding of dairy farming. Every proper encouragement should, therefore, be offered for an increase in this work.

11. Closer cooperation between the various state institutions and greater permanence in the conduct of the breeding operations in their dairy herds should be encouraged.

12. Because of the great importance of suitable markets and marketing methods in the dairy industry all dairy interests should cooperate for the purpose of improving the present situation. Any material increase in the total number of dairy manufacturing plants is not at present justified and additional plants should be built only when justified by the volume of product available in a given community. Some readjustment in the types of existing plants is desirable. The present trend toward marketing on a quality basis and toward a more complete and efficient utilization of all dairy by-products should be encouraged by our dairy products plants. Closer cooperation between

producers and the plants to which they market their products will result in improved market conditions and the natural development of the dairy industry will result in such adjustments in dairy plants and markets generally as are economically sound, without any widespread general attempt in this direction. Educational campaigns directing the attention of the consuming public to the great food value of milk and its products should aid the general situation.

IV. The Horticultural Program

The problem of horticulture or of fruits and vegetables presents almost as many phases as there are such products grown. Horticulture has shared with other agricultural enterprises in an enormous development within the past fifty years. Not only has the total consumption of all such products increased but the per capita consumption has also increased. As has been the case with almost every other farming enterprise, the horticultural field has been over-expanded. Expansion in production has taken place at a more rapid rate than has the expansion of market outlets.

From a long-time standpoint the outlook for practically all horticultural products is favorable. With an increasing population and an increasing per capita consumption, it would seen that the demand for products would keep the price at a profitable figure. However, an unusual year of high prices very frequently unduly stimulates producers and expansion of acreage of the crop takes place. With some horticultural products this situation is not so serious because the crop production is a year to year proposition. With others, as tree fruits, an over-expansion of acreage depresses the price of the product, frequently, over a period of several years.

Climate and soil conditions in Missouri make practical the growth of a great variety of fruits and vegetables. The chief horticultural products are apples, tomatoes, strawberries, potatoes, grapes, and watermelons. With the exception of apples, the commercial production of each of these crops is limited to certain sections of the state.

APPLES

The "productive possibility" of the state is rather stable at its present level. The loss of trees in bearing orchards is being equalized by an increased production of the remainder through better management. There are also some new plantings in the favored districts.

The "farm production", however, is rapidly disappearing and is hardly an important factor. Uncared for trees fail to mature their crops and most farmers have found it cheaper to buy their home supply than to care for the small "home orchard".

While the conditions within our state are more or less stable, we are confronted with an increasing production in the northwestern states. The "acre yield" in this territory is much larger than our own. We are able to compete with them largely because of their expense in production. However, if the existing freight rates are lowered to the levels demanded by the northwestern growers, many of our orchards, that are now showing only a marginal profit, will be eliminated. This territory has wisely

accepted the necessity of discarding varieties that are either unproductive, unfitted to their localities or unpopular in consuming-centers. For this reason, our commercial crop comes in direct competition with the cream of the crop and the best varieties.

In the neighboring states in the Central West, much the same set of conditions exists as within our own state and there is no available evidence to indicate that there will be any radical change within them during the next few years.

The state of Missouri does not now produce enough apples to supply the needs of the state. However, its three largest cities, St. Louis, Kansas City and St. Joseph are important "storage in transit" points and their average holdings would more than meet the needs of these points. On the basis of state population, less these three cities, the state production is probably more than adequate for the balance of the state. This is indicated during the years of heavy production in the country as a whole. The demand is much lessened when the commercial crop for the country passes the 30,000,000 barrel mark and in such years the margin of profit is so slight, that they do not warrant any market increase in plantings.

The conclusions drawn from the survey of this committee are as follows:

1. That a production basis not to exceed that of the past five years be accepted as the maximum state margin.
2. That new plantings be limited to such a basis as will be necessary to maintain this basis.
3. That new plantings shall be limited to standardized varieties and to those best adapted to the locality in which the planting is to be done.
4. That new plantings shall be confined to the districts within which it has been profitably followed over a period of years.
5. That new plantings be discouraged except where one or more of the parties has knowledge of, or experience with, apple production.
6. That the grades and standards for grading and packing apples shall be improved and that all packages shall be honestly branded.

STRAWBERRIES

For more than 30 years strawberries have been grown profitably in Southern Missouri. They have brought millions of dollars into that territory. They have, probably more than any other crop, advanced the family standard of living in that section.

Following a falling off of production immediately after the war production increased until 1925 practically 1500 cars were marketed at a

price which, because other sections were short, averaged around $4.75 per crate. Many growers made as high as $1000 per acre. As a result of this stimulation a tremendous increase of acreage was planted in 1926. The yield from this increased acreage was cut by a freeze in the spring of 1927. But in 1928 a full crop was produced, not only in Missouri but in competing states where acreage had also increased, with the result that prices were low and unsatisfactory.

For the benefit of this industry during the next ten years, the following recommendations are made:

1. That the practical doubling of the acreage in 1927 and 1928 be acknowledged unwise and unprofitable to the grower, that the state acreage be readjusted to the acreage in effect before those years, and that increases above these figures be recommended only to keep pace with increases in population and demand.
2. That Missouri agencies seek to secure the cooperation of competing states in a similar readjustment.

Among the sections in Missouri where strawberries have been grown for many years the production per acre has been decreasing. Territory which, when the soil was first used for strawberries, may have produced 100 crates per acre, now produces only slightly more than half that yield. Steps are necessary to bring back the production to its former level. It is, therefore, recommended

1. That steps be taken to increase the yield per acre by following the best recognized cultural practices.
   a. Aroma is the standard variety for Missouri.
   b. New beds should be planted early in the spring, on land of good fertility properly prepared during the preceding fall and winter, using vigorous one year old plants free from disease and insects. Inspection of plants should be more vigorously enforced.
   c. New and old beds should be cultivated throughout the growing season.
   d. Mulching is beneficial to strawberry beds.
   e. Renewal of beds should be a regular practice applied immediately after the completion of picking and accompanied by the use of fertilizer.
   f. Economical production and liability of infestation limit the life of a bed to three years.
2. That harvesting and marketing be improved as follows:
   a. That the grades and standards for grading and picking strawberries be improved and that all packages be honestly branded.

b. That, as rapidly as a majority of Missouri growers can be educated to the benefits of Federal and State inspection, all strawberries shipped from Missouri shall be so inspected.
c. That in order to increase the popularity of Missouri strawberries and to enlarge their markets, the growers assess an advertising fee on the crate basis to create a fund to be expended for consumer advertising and dealer helps.

POTATOES

Missouri's commercial potato crop is grown chiefly in the western part of the state, the so-called Orrick section. There are other sections, however, which, considered only from the standpoint of production, are adapted to potato production. The crop is harvested usually in July and August. Practically all of these potatoes are used for immediate consumption. This is the intermediate potato crop movement. Kansas and the Eastern shore section of Virginia participate in this movement as well as Missouri. The Virginia crop is one of the largest of all the second early states, and the Kansas crop is larger than that of Missouri. Forty-five per cent of the Kansas and Missouri crop is marketed in Illinois, and forty-eight per cent is marketed in states west of the Mississippi. Much of the Missouri crop is shipped to Chicago in direct competition with the Virginia crop.

The per capita consumption of potatoes has not varied a great deal in the last fifty years. Potato production has increased unevenly with population. In general, it would seem that increases of production will have to be taken care of by increases in population. At present, production is greater than consumption. Potato prices over a long period of years vary directly with acreage. That is, as acreages increase prices decrease and vice versa.

Conditions which exist in the state potato industry of the country and of Missouri indicate the following recommendations.

1. That there is at present no need for an increased acreage of potatoes in Missouri.
2. That acreage be increased only as population demands and the broadening of market outlets indicate that an increase may be profitably utilized.
3. That the markets for Missouri potatoes be stimulated by the adoption of better methods of grading, the utilization of shipping point inspection and by developing closer marketing rotations with the competing sections, particularly Kansas.
4. That production per acre be increased and cost of production per bushel decreased by use of the cultural practices which are recognized as profitable, recognizing the importance of the

following factors: (a) Certified seed, (b) Seed treatment, (c) Green manures, and (d) Commercial fertilizer.

5. That an experimental field in the commercial potato district is needed, where tests would be made dealing with: (a) Sources of seed, (b) Fertilizers, (c) Green manures, (d) Dates of planting, and (e) Other questions.

GRAPES

Missouri has never been an important grape producing state. In 1926 some 13,000 tons were produced in the state. However, when we consider the fact that the United States production is usually around 2,000,000 tons and that California produces 90 per cent of this amount, the Missouri production seems small and insignificant.

It is probable that the Missouri crop can supply the demand of nearby markets for the type of grapes produced. The present outlook for grapes is not very favorable. In 1927 some six per cent of the entire crop remained in the vineyards unharvested. It is very likely that the acreage of bearing vineyards will be the same in 1928 as in 1927. It is possible with favorable weather conditions to have a five per cent increase in production.

Some increase in consumption of grapes may also be expected. Recommendations:

1. A sufficient acreage of Concord grapes is now available to supply the markets reached by Missouri grapes.
2. A moderate increase of Moore Early may advantageously be planted in the extreme Southern part of the state where the variety is adapted to that locality.
3. That the grades and standards for grading and packing grapes be improved and that all packages be honestly branded.
4. That the cultural practices which are recognized as profitable be more closely followed.
5. That the practice of early picking of grapes before a sufficient sugar content has developed be discouraged and that neighboring states be urged to cooperate in this effort.

WATERMELONS

Missouri ranks first among the late producing states in watermelon production. The acreage in Missouri is variable. In 1926 there were 17,500 acres. The decrease of the 1927 crop to 8000 acres was chiefly due to flood conditions.

Production of watermelons and the acreage devoted to them will largely be controlled by the prevalence of wilt which lives over in the soil for ten years or longer and to which no commercially desirable resistant varieties have been developed. Recommendations as to acreage are therefore considered unnecessary. It is recognized, however, that an

outlying experimental field is needed in Southeast Missouri for investigating varieties and methods of insect and disease control.

The marketing of Missouri watermelons is in a more or less chaotic state. Cash buyers are preferred, but some cars are generally consigned and a few are peddled. The situation could be improved if growers would cooperate to:

1. Develop a reputation for melons from the district by
   a. Grading melons more closely and establishing standards of quality.
   b. Thinning the vines to one per hill.
   c. Pruning melons, leaving two to four per vine.

TOMATOES FOR CANNING

A canning industry of real importance has developed in Southwestern Missouri. This territory in conjunction with Northwest Arkansas serves a field which it adequately fills as a result of several advantages it possesses. Among these are,

1. Cheap and suitable land
2. Good flavor of the fruit
3. Favorable freight rates to the southwestern territory.

The prosperity of the tomato industry in Missouri is dependent both upon the prosperity of the grower and of the canner. One cannot be successful unless the other is. For several years the industry has been in an unsatisfactory situation. Not only in Missouri but in the whole Unites States the industry has been over-developed. In many communities factories have been established by booster methods where a previous determination of all the factors would have indicated the probable folly of such a venture. Financial failure of the canner has left in its trail growers unpaid for the tomatoes they had delivered, can and shook manufacturers for the materials they had supplied. In the light of the present information on this industry, the following recommendations in regard to the establishment and operation of canneries are made.

1. That no more canneries be established except where properly financed and managed by men thoroughly trained in the business.
2. That a system of state licensing of canneries be established.
3. That sanitary conditions of construction and operation be improved.
4. That the industry be put on a more efficient basis and the quality of the product improved by the centralization of canneries and the elimination of the small and inefficient plants.

In regard to the production of tomatoes the following recommendations are made:

1. That an outlying field is necessary in the Ozarks where experimental work shall be carried on of all methods which will increase quality and yield per acre and decrease the cost of production per bushel.
2. That the information thus obtained as well as that already available be more widely disseminated to the tomato growers of the Ozarks, as well as to the vegetable growers of the entire State.
3. That an increase of acreage is not needed, but that use be made of those practices, such as proper selection of soil, seed selection, fertilization and cultivation, which have been demonstrated as valuable for increasing quality and production per acre.

TRUCK AND OTHER HORTICULTURAL CROPS

In the vicinity of the large cities, principally St. Louis and Kansas City, considerable acreage has been devoted to truck crops. The recent development, due to good roads, of swift automobile transportation as well as the wider utilization of rail transportation for long distances has made unnecessary the closeness of truck patches to the local consuming markets. In addition, the increasing value of land adjacent to large centers of population has made more difficult the financial success of such truck gardeners. It is evident, therefore, that the acreage devoted to general truck cropping may be expected to show a decrease near large cities. Some increases may be looked for in sections, such as parts of Southeast Missouri, where conditions are particularly favorable for large yields, early maturity and accessibility to good markets.

It is recommended, however,

1. That the acreage devoted to truck crops be adjusted to fit into the general farm scheme.
2. That no considerable acreage be devoted to these products except as profitable marketing outlets are assured.

Many other horticultural crops are produced in Missouri. Most of these, such as blackberries, raspberries, cherries, plums, pears and peaches may be considered as truck crops since they are largely marketed locally. Only one other needs special mention, sweet potatoes, which are produced in considerable quantities in Southeast Missouri. The profitable development of this industry is linked with adequate storage and marketing facilities. It is recommended, therefore,

1. That the sweet potato acreage be developed only so fast as storage and marketing outlets are available.

V. The Soils and Crops Program

CONSERVATION AND IMPROVEMENT OF MISSOURI SOILS

The conservation and improvement of the soils of Missouri is of very great and fundamental importance. The five most important things to be done in this connection are: (1) the rotation of crops to include a legume at least every fourth year; (2) the liming of sour land; (3) the control of erosion; (4) the conservation and use of barnyard manure and farm refuse and (5) the proper and intelligent use of commercial fertilizer.

1. **Rotation.**—The kind of rotation followed should depend, among other things, on the type of farming being followered on the particular farm where used and the kind of soil. The essential and most important crop to be included in any rotation from the standpoint of soil fertility is some kind of legume at least one year in four. Whether such legumes should be sod forming or non-sod forming legumes will depend not only somewhat upon the same factors that determine the kind of rotation to be followed, but, in some cases, the fact that sod forming legumes help prevent erosion will make their selection advisable. Alfalfa is a legume that should be more generally grown in Missouri, although it is usually more difficult to fit into ordinary rotations.

2. **Use of Lime.**—It is generally observed by farmers of the state that the application of agricultural limestone aids in the growing of many legume crops on a large percentage of Missouri soils. The growing of many legumes on much of Missouri soil is practical only after the application of the proper amount of lime.

Since the growing of legumes is important from the standpoint of soil maintenance, this consideration alone justifies great effort in encouraging more general application of limestone to Missouri soils.

3. **Control of Erosion.**—Some of the most serious losses in the fertility of Missouri soils is brought about by erosion and we recommend that this subject receive due consideration by all concerned.

4. **Conservation of Barnyard Manure and Farm Refuse.**—The failure to conserve and apply barnyard manure constitutes a very serious annual loss to the fertility of Missouri soils. The practice of burning corn stalks, wheat straw and other crop refuse should be discouraged. The agencies taking the leadership in the work of improving Missouri agriculture should make an effort to better inform farmers as to the value of barnyard manure and crop refuse and in methods of conserving this important by-product of the farm.

5. **The Use of Fertilizers.**—The general adoption of the practice of obtaining the major part of our soil nitrogen from the air by means of growing legume crops should be encouraged, but the intelligent use of

commercial fertilizers, especially those containing phosphorus, is of much importance. Economic production can be greatly furthered by the use of such fertilizing materials.

The practice should be encouraged of adding enough plant food to farm land in a given period to equal the approximate amount removed by crops during the same period with the possible exception of where a large excess of the element potash already exists. Such plant food may be applied in the form of barnyard manure, green manure, crop refuse or commercial fertilizer.

CROPS

It is believed that in making the production of Missouri crops more profitable, the following are the things that should receive most consideration: (1) the use of varieties of proven value; (2) better seeds; (3) standardization of varieties in given communities; and (4) pasture management.

1. **The Use of Varieties of Proven Value.**—Every encouragement should be given to research leading to the discovery of new varieties and strains of the various field crops, and to the disseminating of information in regard to such research.

2. **Better Seeds.**—There is great need for improvement in the quality of seed grown and used in the state. Laws defining the meaning of such terms as "certified" and "registered" as applied to seeds, and providing penalties for the improper use of such terms by those offering seed for sale.

3. **Standardization of Varieties.**—With few exceptions the growing of a small number or even a single variety of a given crop in a community is to be desired and such practice should be encouraged. The difference in adaptation of different varieties of crops for certain purposes may make the growing of different varieties advisable in some cases. For example, it might be an advantage for farmers of the community growing soybeans for hay to use different varieties than those growing them strictly for seed. Yet the community might well adopt one variety for seed and one variety for hay.

4. **Pasture Management.**—According to the report of the County Assessors there were in Missouri in 1922 about 35,000,000 acres of farm land. Of this acreage 19,500,000 acres in round numbers was classed as uncultivated land. Since a large part of this uncultivated land is in pasture, it is evident that pastures are of great importance in this state. Great benefit can come to Missouri agriculture, therefore, through pasture improvement. The use of proper varieties of pasture grasses or

mixtures of grasses and the judicious use of manure and fertilizer are among the things to be considered in such improvement.

FORESTRY

The deforestation of poor land having doubtful agricultural value should be discouraged. Encouragement should be given to the reforestation of land unprofitable for agricultural production. This subject deserves special study by persons, groups of persons, or institutions well informed on this subject, and that, as a result, suggestions for special forestry legislation might be made to aid in the development of Missouri's future timber supply.

FARM LEASES

The short time farm lease as ordinarily written is a common cause of the failure of tenant farmers to adopt soil conservation practices. Long time leases should be encouraged as an aid to soil improvement, including provisions for compensating tenants for such improvement practices.

VI. Program for the Missouri Farm Home

Appreciating the fact that children are the greatest asset of the farm, and realizing the responsibility of the home, your committee suggests that the first item on a program for the Missouri home should be:

1. *To strive to have each Missouri farm child reach his best physical, mental and spiritual development.* In order to achieve this it is recommended that:

   a. Parents secure all training possible for this most important task by means of study groups, speakers on special phases of child rearing, and through a wider use of agencies disseminating information and help on child care and training.
   b. Communities work to secure educational opportunities for the farm child equal to those enjoyed by town children.
   c. Homes and communities provide facilities for recreation, music, reading, nature study, participation in 4-H club work and other social and educational opportunities that will contribute to the all-round development of the boy or girl.
   d. Communities maintain conveniently located churches and Sunday schools.

Because, in times of agricultural depression, the morale of farm homemakers is apt to be low, so that many leave their farm homes or encourage their children to do so, and, because the nation will profit most by keeping on the farm, families of intelligence and high standard, your committee believes that the second item in the program for the farm home should be:

2. *To help farm families get the most happiness and satisfaction possible from life in the open country by:*

   a. Educating farm families in the dignity and value to the nation of agriculture and farm homemaking.
   b. Stimulating desire and ambition, and giving training and information that will help farm families secure many of the satisfactions of life, such as becoming clothes, attractive homes and good food, even when little money is available.
   c. Educating farm men and women in the importance of saving woman power, by making the farm home at least as mechanically convenient as the farm that supports it, and by using time and fatigue saving methods of housekeeping.
   d. Providing through organizations, opportunities for more social contacts, good times, community service, music, lectures and reading facilities that will enable farm families to lead richer, fuller lives and recreate their spirits.

Since vigorous personal health and a well family are such an important factor in a farmer's success, your committee suggests that the third item in a program for the farm home should be:

3. *To secure a high health standard for every farm family.* To secure a high health standard, more information and wider use of the following are needed:

a. Food values and balanced meals.
b. Sanitation of the home and schools, with emphasis upon safe water and disposal of waste.
c. Approved health habits.
d. Necessity of physical examination particularly for children and expectant mothers.
e. How to prevent the spread of disease and care for the sick.

The foregoing report was submitted October 26, 1928, by the General Committee composed as follows:

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