Oregon Agricultural College

Extension Service

PAUL V. MARIS
Director.

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Reports of the

WASHINGTON COUNTY AGRICULTURAL ECONOMIC CONFERENCE

Hillsboro, Oregon, January 28 and 29, 1925

Suggesting an

AGRICULTURAL PROGRAM

for

WASHINGTON COUNTY

Distributed by O. T. McWhorter, County Agricultural Agent; Material arranged for publication by W. L. Kadderly of the College Extension Service

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FOREWORD

In December, 1924, a group of grange members, other representative farmers and business men of Washington County met at Hillsboro and decided to hold an agricultural economic conference for the purpose of proposing a program of agricultural development for this county. Commodity committees were appointed and organized to study the various phases of our local agriculture. These groups were instructed to deliver their reports to the general county agricultural economic conference which was held at Hillsboro, January 29th and 30th, 1925.

The reports of these commodity committees as adopted at this general conference appear in this bulletin under the following titles: Farm Crops, Dairying, Poultry, Horticulture, Livestock, Soils, Farm Management and Club Work.

Careful study of the economic principles involved in these reports and their application should assist materially in solving the county's agricultural problems.

Washington County agriculture is widely diversified and complex. The U. S. census report for the year 1919 credits the county with a total annual production as set forth in the accompanying table:

Cereals harvested for grain	$2,662,256.00
Hay and forage	2,061,330.00
Dairy products	1,902,073.00
Vegetables, including potatoes	1,302,772.00
Fruits and nuts	996,754.00
Poultry products	690,661.00
Other grains and seeds, vetches, etc.	195,607.00
All other crops	131,553.00
Wool and mohair	21,980.00
Bee products	8,830.00
Total annual production	$9,973,826.00

The income from sales of farm crops as reported by the same census is distributed according to the chart on the following page.

Statistical data indicates that the agriculture of Washington county is rapidly changing. The tendency is toward small farms. More intensive farming must of necessity follow. Careful study of the question of production and marketing and the application of the best possible methods for solving these questions will be necessary for the continued prosperous development of the county.

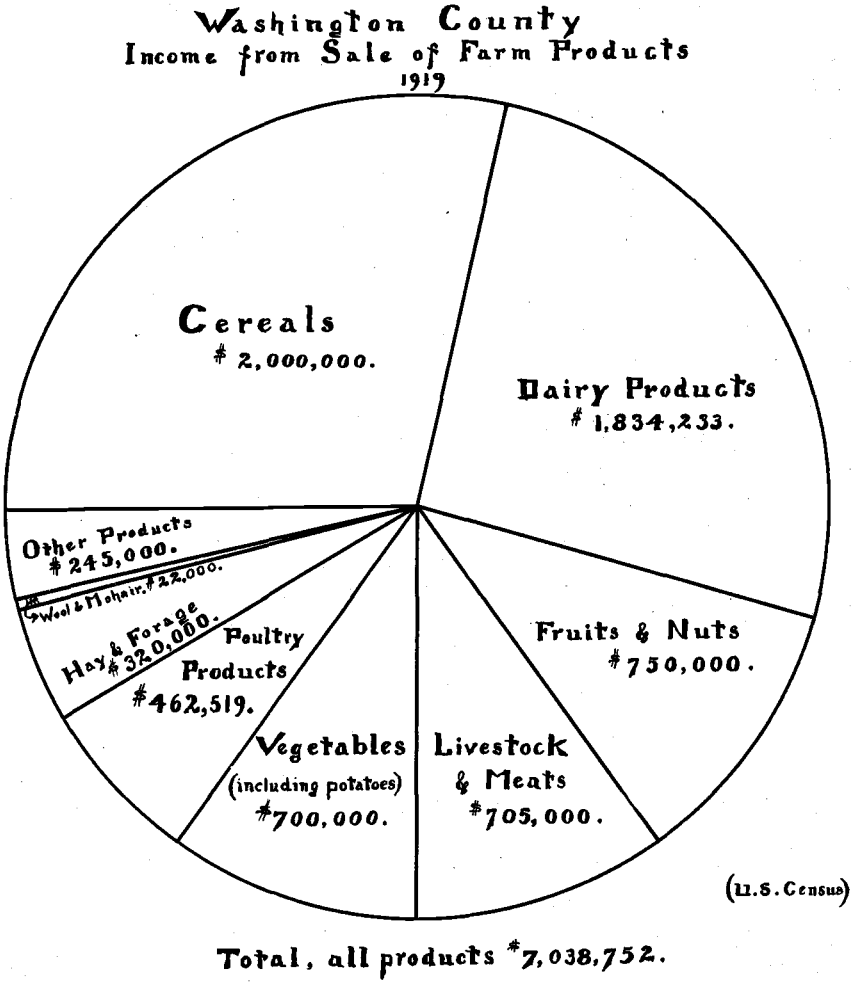

Washington County
Income from Sale of Farm Products
1919
Cereals
$ 2,000,000.
Dairy Products
$ 1,834,233.
Other Products
$ 245,000.
Wool & Mohair. $22,000.
Hay & Forage
$ 320,000.
Poultry
Products
$462,519.
Fruits & Nuts
$ 750,000.
Vegetables
(including potatoes)
$700,000.
Livestock
& Meats
$ 705,000.
(U.S. Census)
Total, all products $7,038,752.

Figure I

Report of the Poultry Group

I. INTRODUCTION

Washington County business interests and farmers not directly interested in poultry keeping overlook the present value and future possibilities of the poultry industry of the county. According to the census of 1919 the value of poultry and eggs produced in the county was $690,961. Washington County ranks third in value of poultry and eggs produced and ranks third in the value of eggs and poultry sold. The receipts from the sale of poultry and eggs in 1919 was $462,519, nearly one-half million dollars. Six per cent of the total cash farm income was derived from sale of poultry products.

Since 1919 the poultry industry has had a normal increase in size of flocks and in number of new flocks. There has been a marked increase in breeding farms, new hatcheries and in the number of day old chicks produced for sale. The above census figures are not comparable with present day values and are given only to show the magnitude and general trend of the industry.

Poultry keeping, when intelligently managed, has proved a profitable industry during each of the post-war years of deflation. It has had less fluctuation than any other farm enterprise. This fact caused many to rush into the poultry business without due knowledge of the problems involved. As might be expected of any technical business, many of this number did not prosper.

Poultry Keeping is a Technical Business.

Poultry keeping, whether a specialized business or an important farm sideline of four or five hundred hens, is a technical business. It requires more dtailed management than the average person can or will give. It is not a business for which every one is adapted. Hence there is no reason to assume that any higher percentage of persons will succeed in the poultry business than in any other line of endeavor.

More people would succeed in poultry keeping if the principles of management were investigated more thoroughly before the business is undertaken. It has been the intent of this poultry group to study the poultry industry from many angles; to incorporate in this report the possibilities of expanding the industry; and give the methods of management which will make this expansion safe and profitable over a period of years.

Market Possibilities of Washington County Poultry Products.

About 60 per cent of the eggs produced in the county must be marketed elsewhere. Oregon as a whole produces an exportable surplus of approximately 200 car loads of eggs. These overproduced conditions

have existed for several years. Each producer must realize that his flock is producing eggs for a home market already oversupplied. The quality of products and the best method of marketing them must be given careful study.

Washington County cannot be considered an independent unit in poultry production. Its poultry industry must be considered in relation to the status of the industry in the state and nation. It would make little difference in the national poultry situation if Washington County discontinued the poultry industry or doubled its present volume. It would only increase the local marketing problem.

The fact of vital interest is that a strong outside buying demand exists for the surplus eggs of high quality, which Oregon can and does produce.

The present cooperative marketing agency known as "The Pacific Cooperative Poultry Producers' Association," is a vital factor in stabilizing the market, and in marketing the surplus of eggs. It benefits both members and non members. Its expansion should be encouraged and supported by poultry producers generally.

A survey of the national poultry situation does not show any cause for alarm. No difficulty is foreseen at this time in marketing surplus eggs of quality or a reasonable increase in volume. Increasing consumption of poultry products; better quality reaching the consumer through closer grading and better care; stabilization of other farm crops; the rapid turn over of the poultry personnel and the fact that poultry keeping is a short term business are factors which prevent overproduction.

II. RECOMMENDATIONS

1. Expansion of Local Poultry Industry Justified.

Climatic conditions, availability of high producing stock and abundance of green feed are factors quite favorable for poultry production in this county. The present marketing agency is in successful operation. The county produces a surplus of some grains used in poultry feeding. Rail and highway conditions are favorable transportation agencies. Soils used for vegetables, small fruits and other crops would be enriched by the fertilizer value of poultry manure. Many of the smaller farms have some surplus labor to invest which could be profitably used in economical poultry production.

It is recommended that poultry keeping be increased in the county, provided such increase be guided by the principles of management and marketing as outlined in this report.

2. Farm Flocks of Not Less Than 500 Hens and Pullets.

Many farm flocks are too small to command respect and good care. During the flush season a great volume of inferior eggs are "dumped" on

the overproduced markets. Poor quality undermines the entire poultry industry to the extent that inferior eggs are permitted to reach the consumer.

On farms where labor is available each day of the year; where green feed can be provided at all seasons, and where capital is available for necessary outlay, it is recommended that a flock of not less than 500 hens and pullets be established as a side line issue, as soon as experience warrants.

3. Eliminate Present Flocks, or Reduce to Home Needs, If They Can't Be Cared For.

On farms that are not interested in poultry and where other farm work does not provide surplus labor it is recommended that such flocks as are now carried be eliminated entirely or else reduced to a number small enough to meet only the needs of the home table.

4. Minimum of 1000 Hens and Pullets for Commercial Unit.

As a major farm activity or specialized business, where one man expects to derive his major income from poultry, it is recommended that, as soon as experience warrants, a minimum unit of 1000 hens and pullets be established. In commercial egg farming fifty per cent of the flock each year should consist of pullets.

5. Purchase Chicks Eearly.

Producers of commercial eggs must have the benefit of fall and winter prices to get a higher average price for the year, and they must get the fall and winter production in order to get the longest period of laying before natural molting time.

It is strongly recommended that producers secure chicks early enough in the spring to be old enough to come into flock production by October. Late February, March and April is suggested as the most suitable period to secure chicks.

6. Buy All Chicks at One Time.

It is false economy to attempt to brood and range together chicks of different ages.

It is better business, for example, to secure 1000 day old chicks at one time where approximately 400 pullets are desired than to attempt to secure this number from several hatchings of small capacity incubators.

It is recommended that producers secure all chicks at one time where only one range and one brooder equipment is available.

7. At Least 10 Tillable Acres Needed for Each 1000 Hens.

Many poultry enterprises, successful for a time, have been compelled to quit business because of soil contamination aided by general mis-

management. This results when the same area is used over and over again by large numbers of fowls. Poultry keeping on a large scale on one, two and three acre tracts, is a hazardous and generally short lived enterprise. Real estate agencies should not exploit such small tracts for intensive poultry farms.

It is reecommended that commercial poultry keeping should not be attempted on less than 10 acres of tillable soil for each unit of 1000 hens, where the young stock is to be reared on the farms each year. A system of field alternations must be worked out on this area to make poultry keeping a success and the investment safe over a period of years. Lack of acreage is a great factor in poultry farm failures. A greater acreage is needed when logged off areas are used.

8. One Portable Brooder House for Each Unit of 500 Day Old Chicks.

Poultry producers will succeed according to their foresight and ability to rear pullets to maturity that are vigorous and free of intestinal parasites and inflammation. Clean soil for brooding and ranging growing stock must be provided.

The portable brooder house is recommended as the safest system of brooding chicks and providing clean soil.

It is recommended that a portable brooder house 10x12 feet be used for not to exceed 500 day old chicks. The cockerels will have to be separated at an early age to prevent crowded conditions. As soon as the pullets are old enough to roost and do without artificial heat they should be moved out on free range. (Reference: Oregon Experiment Station Circular 52.) Under ordinary conditions pullets can be transferred to the range at about 8 weeks of age.

9. Two or More Yards Where Permanent Brooder House Is Necessary.

On farms where a permanent brooder house is desired or made necessary becaus of hill land, it is recommended that it be located in the center of a given area so that two or more yards may be provided. Under this system it is understood that only one yard is to be used each year in its logical turn. Where the yard or yards are small the danger of diseased soil is lessened by covering the close-in runways with sand or gravel to a depth of about 3 inches. As soon as pullets are old enough they should be removed from the brooder house and brooder yard and put on free range.

10. Follow O. A. C. Plan in Building Range Houses.

Pullets should not be crowded nor suffer from lack of ventilation on the range. Brooder houses used for range houses soon become crowded. It is recommended that producers guide their construction of range houses as explained in Oregon Experiment Station Circular 54.

11. Follow Proven Types in Building Laying Houses.

Too many laying houses are constructed according to some untried hobby, rather than using as a pattern some type of house that has proven satisfactory under Washington County climatic conditions. Good poultry houses are necessary for the permanent home of the pullets when they are ready to move in from the range.

It is recommended that producers desiring to construct new laying houses be guided by the plans set forth in Experiment Station Circular 51. (All poultry bulletins mentioned may be secured from the office of County Agent O. T. McWhorter).

12. Green Feed is Most Important.

Green feed is one of the four major classes of poultry feeds necessary for growth and production. Green feed is the most important item in the ration of growing stock. It increases the efficiency of all other feeds fed, supplies vitamins, adds bulk to the ration and should be fed liberally. Kale does not always live through the winter, therefore root crops, alfalfa hay, cabbage, etc., should be provided each year as an emergency winter feed. Kale is the leading supply of green feed for the county but in some sections alfalfa can be grown to advantage for a dry weather supply of greens.

13. Considerable Capital Required.

Poultry propaganda is misleading and too little has been said relative to the necessary experience and capital. It has been exploited as an easy business, requiring but small capital and little experience.

The poultry group desires to present the following facts, in order to promote a common understanding:

The development of a commercial flock should be made gradually. Without previous experience, brooding 500 chicks will be found a sufficient experiment. The approximately 200 pullets secured will provide plenty of expense and experience for the beginner's first year. This infers that the man should hold his job or stay with his major crop until he is justified in devoting full time to a special poultry enterprise.

Where the farm and home are owned and a poultry unit is to be established, it will require an approximate outlay of cash of $3.00 per pullet (the first year) before she starts to produce eggs. This expenditure is pro-rated as follows (the first year expense is highest because of the cost of buildings and equipment):

Brooder house, brooder, supplies, etc.	$0.20
Feed, litter, cost of chicks, fuel, mortality losses to six months of age, etc..	1.30
Permanent laying house, material, labor, equipment, fencing, supplies, etc.	1.50

(Reference: Cost of Rearing Pullets to Six Months of Age, Extension Bulletin 379.)

The above statements show only an approximate overhead cash outlay. With this overhead investment, plus interest, labor, and depreciation costs, it is necessary to work out a definite system of management that will make the poultry enterprise on the farm profitable and safe over a period of years.

14. Support Bill to Provide Study of Diseases.

The poultry industry of Oregon was valued in excess of $10,000,000 for the year 1923. Poultry diseases and lack of knowledge on nutrition are serious and are limiting factors in profitable poultry keeping.

The rapid development of intensified farms, high production, confinement of birds in small quarters, concentrated rations and other factors are constantly resulting in heavy losses to the individual, the county and the state.

An industry of this magnitude, and one that has returned a profit during the deflation period, should at least warrant one man's study of its disease and nutrition problems.

It is recommended by the poultry group that this conference support the bill introduced in the state legislature to secure a small appropriation to carry on this needed work. This bill is sponsored by the Oregon Poultrymen's Association and the Pacific Cooperative Poultry Producers' Association.

(Signed) H. L. LAFKY, Chairman.

Report of the Dairy Group

I. THE SITUATION

1. Low Market Prevails

The dairy group of the Washington County Agricultural Economic conference in reporting on conditions in the county first calls attention to the marketing situation that exists at the present time. Most of the milk produced in this county is marketed as fluid milk. This is sold to condenseries, to Portland milk plants, to a local cottage cheese factory, to creameries and is used in the towns of the county. Less than 10 per cent is manufactured into butter.

Prices received for milk during the last year have in the main been unusually low. Portland prices are reported to be among the lowest in the country. There has been a general accumulation of storage dairy products beginning with butter and extending clear down the line. It must not be overlooked that there is a limited outlet for condensed milk in the world markets. The price of butter always has a bearing on the price of other dairy products. With almost double the usual amount of butter and cheese in storage during the last summer and fall the price has naturally been low for these products. Until recently there was an excess of canned milk on hand. In addition to all these national conditions that have a stagnating effect on the demand for fluid milk, a local condition has arisen that raises a serious problem in connection with the sale of whole milk to Portland.

2. Portland Now Gets Milk from Large Territory

The extension of the highway system has opened up a large territory from which milk can be easily and quickly transported to Portland. This is an important point when it is estimated that nearly one half the milk produced in the county goes to Portland. The so-called Portland milk zone is no longer restricted to the territory immediately tributary to Portland. That city now gets milk from Washington, Clackamas, Columbia, Yamhill and Marion counties, Oregon, and Clark county, Washington. Under present conditions and with modern transportation there is almost no limit to the distance that milk can be hauled. With the opening of this wide territory as a source of whole milk for Portland, competitive conditions are greatly altered. It appears that in the purchase of fluid milk for Portland, buyers have an almost unlimited supply at their command. Such a condition tends to lower prices. The situation is made more serious when one considers that some of this milk can be produced on cheaper lands than we have in this county. It appears that these conditions need further study to the end that future marketing possibilities can be decided upon. It is possible that the county will have to re-

sort again to the manufacture of high grade butter or to a standardized and well advertised cheese to find a satisfactory and stable outlet for much of its production.

3. Local Dairy History is Traced

Washington County has long been known as a dairy county. Before dairying came into prominence as an agricultural pursuit, it was noted for being a grain county. The wearing out of the soil was partially responsible for the turn of events. Dairy farmers in the early days organized cooperative creameries. The butter made in these creameries was sold in Portland and elsewhere. As returns justified the practice, dairying increased, soil fertility was improved, and the county developed. Eventually dairy cows became sufficiently concentrated in numbers to justify the establishment of a milk condenser at Forest Grove, followed later by one at Hillsboro. Milk routes were established which brought in milk from a wide range of territory. Development of dairying continued until in the census in 1920 Washington County was shown as having the largest number of dairy cows two years old or over of any county in the state. There is strong evidence to indicate that there has been a definite decline since 1920.

According to the census of 1920, there were 22,008 dairy animals in Washington County. This included calves, heifers, cows two years old or over, and bulls. Of this number 14,497 were listed as cows two years old or over. It appears that the average size of dairy herd in the county, including animals of all ages, is 7.5 head per herd. It is an average of less than five cows in milk on each farm.

4. Number of Dairy Cows Has Decreased in Last Four Years

Data was taken from the assessment roll in 1919 and again in 1923, showing the number of herds of dairy cattle in the county listed according to number of animals in the herd. This data shows that there has been about a 9 per cent decrease in the number of herds of dairy cattle in the last four years. In 1919 more than three-fourths of the herds of dairy cattle had less than ten cows per herd. There is no reason to believe that this percentage has increased since that time. This means that to successfully operate these herds the owners' labor and that of their families must be used at less than ordinary wages. Another disadvantage is the difficulty of organizing cow testing associations under the ordinary plan.

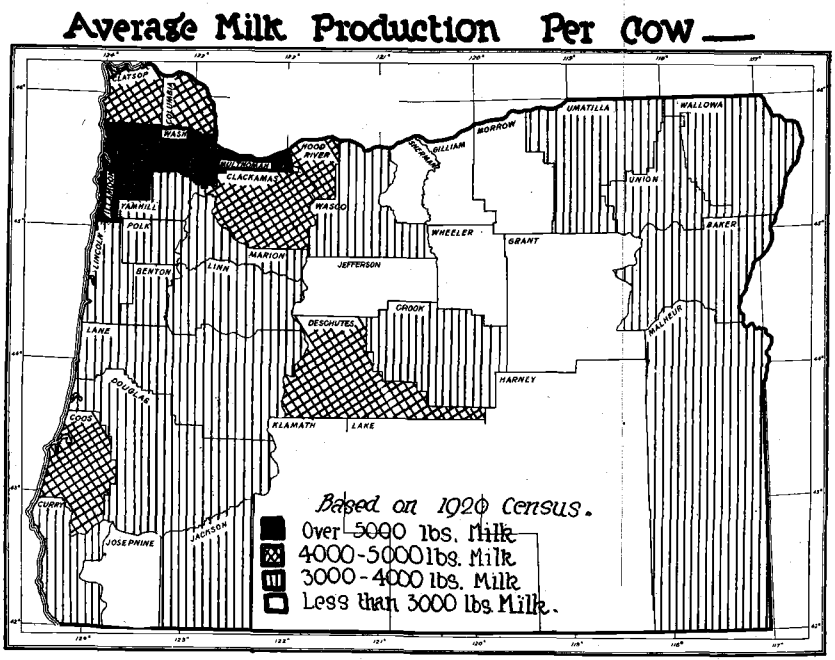
5. Not Enough Legume Hay and Succulent Crops

Crop statistics show that nearly enough leguminous hay is produced to properly feed the cows in milk but that not enough leguminous hay is produced to feed all of the dairy cattle. Washington County is well off with respect to the production of leguminous hay as compared to other

counties. Crop statistics also show that while the county is fairly well balanced with reference to the production of succulents, yet there is room for improvement; only about two-thirds as much succulent crops are produced as are needed by the dairy cows. While there are large quantities of grain produced in Washington County, the facts are that there is considerable feed purchased. On the 2,576 Washington County farms reporting on feed purchased, an average of $378 a year was spent for feed, according to the 1920 United States census. This is an average of $44.20 per head for all dairy cattle, and an average of $20 a head for all domestic animals on the farms. Information collected this year shows a decrease in the amount of purchased feed, however.

6. Production Per Cow Should be Increased

Production statistics show an average production of milk per cow of 5,168 pounds, an average annual fat production of 206 pounds. It is generally conceded to clearly place a cow in the profit producing class with all expenses paid, she should produce at least 240 pounds of fat a year.



7. High Percentage of Pure Bred Bulls

Statistics also show that there are 615 bulls in the county. From

reports made by dairymen the indications are that from 70 to 80 per cent of these are purebreds.

II. DAIRY RECOMMENDATIONS

1. Special Marketing Committees Named

Since the future of dairying in this county depends largely on developing the most desirable outlet for the raw product and a careful study of this problem cannot be undertaken in the time available in this conference, this group has appointed two committees to study the problem. These committees have been instructed to call the group together at a later date to submit their findings. The committees are: (1), F. L. Brown, Arthur Knox, Leonard Brown, E. J. Brocks and William Schulmerich, and (2), Chester Bridges, George Biersdorf, Bert Evers, Dave Story and Julius Christensen.

2. Cow Testing Association Needed

Formation of a cow testing association should be encouraged. Special attention is called to the new plan, which provides that the farmer take his own samples and have these collected in large numbers by the tester, who takes them to a central place for testing.

3. Raise More Legume Hay

More leguminous hay should be raised. Particular attention should be paid to alfalfa.

4. Grow More Succulent Crops

More succulent crops should be planted, particular attention being paid to roots and kale on the small farm where the herd is not large enough to warrant the use of a silo.

5. Eliminate the Scrub Bull

The three breed associations are urged to systematically work for the further elimination of scrub bulls and for the use of better pure bred bulls.

6. Compulsory Testing for Tuberculosis.

Compulsory testing for tuberculosis of all animals in the county should be established, either on the county unit plan, or preferably on the basis of the regional plan, as is now before the Oregon state legislature. The county delegates in the legislature should be requested to support these measures.

7. Grow More Grain Feed

More grain feeds should be grown and especial attention paid to the production of barley and oats for dairy feeds, the idea being to attempt to raise most of the grain needed for the cows on the farm.

Since the sale of vegetable fats in any form in imitation of or in competition with butterfat places the American farmer in direct competition with a product that can be produced so cheaply as to leave no hope for successfully meeting the competition, we call attention to the fact that national and state legislation is needed as a means of giving protection. The general conference is requested to pass a resolution endorsing the bills before the present session of the legislature that are designed to protect our dairy farmers from this foreign competition.

(Signed) CHAS. BAMFORD, Chairman.

Report of the Horticultural Group

I. THE SITUATION

1. This County Well Adapted to Horticultural Crops.

Washington County conditions are especially adapted to the production of a wide range of fruit, vegetables and nuts. Prunes, apples, pears, cherries and peaches are all successfully produced within its borders. Strawberries, raspberries, loganberries, blackberries, gooseberries and currants, of the small fruits, are just as satisfactory. Onions, cauliflower, asparagus, celery, horseradish and a large number of other vegetables for fresh consumption and canning are produced within the county. Walnuts and filberts occupy a large and growing acreage.

2. Fruit Production Not Well Balanced.

Our production of these horticultural crops are not in proportions which best fit existing markets. More prunes, loganberries, et cetera, are produced than can be effectively marketed. Raspberries, strawberries, pears and other fruits show a scarcity of production, on the other hand.

Lack of co-operative efforts among the growers both in production and marketing of these crops is evident. A large number of producers sell ungraded products to a small number of buyers and this practice, as usual, has proven very unsatisfactory. Both the producer and the buyer are dissatisfied. A thorough understanding and a willingness on both sides to co-operate is needed before a balanced horticultural program can be satisfactorily planned.

3. Production Must Balance Needs of Consumer.

National consumption of fruits and vegetables has about reached the saturation point. Increased consumption of these products will be at the expense of some other foodstuff. We may expect an increased demand for our fruits and vegetables in proportion to their availability to the consuming public in uniform and reliable quality and at comparatively moderate prices. Our production must be standardized and balanced to best fit the needs of the consumer. Our yields per acre must be increased, because this is our most effective way of increasing our quality and decreasing our cost of production. Our quality must be raised sufficient to successfully meet the competition of competing products. Our crop and production recommendations are as follows:

II. TREE AND SMALL FRUIT RECOMMENDATIONS

Prunes.

1. No increased acreage at the present is justified.

2. Better cultural methods for increasing the quality and size of our prunes are urged. Fifty per cent greater yields are desirable. Nothing but perfect, mature fruit should ever go into our driers. Sizes smaller than 60's should not be tolerated. Fruit carrying too high moisture content is not suitable for packing, and should be redried or kept off the market. A concerted effort on the part of all growers and driers is urged for improving the quality and size of our prunes.

3. It is the opinion of this group that the green basis is the proper basis upon which prune drying charges should be made.

Strawberries.

About 250 tons of strawberries were imported into Washington county for our processing plants last year (1924). Strawberries cannot be more cheaply or better grown than here in this county.

1. Increased acreage of Oregon, Marshall and Ettersburg number 80, varieties for barreling and the fresh fruit market, is urged. Ettersburg number 121, and Johnson should be tested out in a small way as possible canning berries for this county. The demand for good canning strawberries is much greater than the supply.

2. Nothing but weevil free plants should be planted. Rotation with crops unsuitable for weevil consumption should be practiced.

Red Raspberries.

1. Our acreage of red raspberries may be profitably increased when two tons per acre or more can be produced.

2. The Cuthbert is the only variety recommended for commercial planting.

3. Virus diseases are prevalent throughout the state. In securing plants for new plantings great care should be practiced to get plants free of these diseases.

4. Yields of large, firm, high quality berries are essential in profitable production and can be secured only by the most improved cultural practices and judicious use of manure cover crops and fertilizers.

Blackcap Raspberries.

1. Where one ton per acre or more can be consistently produced an increased acreage is recommended. Fields of this fruit are proving very profitable in this county.

2. Plum Farmer, Cumberland and Munger are the varieties grown.

3. Great care in securing disease-free plants is urged. The ravages of virus diseases in the eastern states are responsible for part of the profitableness of this berry in the Northwest at the present time. These troubles are gaining a foothold here at this time. All precautions should be taken to prevent the spread of these dreaded diseases.

Loganberries.

1. No increased plantings are recommended for the present.

2. Increased yields of higher quality fruits and large berries in the present plantings are needed to compete with districts such as the Estacada district, where a much larger and better logan is being produced. This is due entirely to the better growing methods used.

3. The same diseases affecting raspberries are prevalent in loganberries and should be guarded against.

Blackberries.

1. An increased acreage of Himalaya and Lawton varieties is recommended for the barreling and fresh fruit trade.

2. The acreage of Evergreens should be materially increased for the canning trade.

Gooseberries.

1. The present acreage of this fruit is at best sufficient to supply the present demand.

2. The Oregon Champion is the variety grown.

Pears.

1. We are of the opinion that an increased acreage of Bartlett pears made by growers who will give them the proper care will be a profitable venture. A local market for a large tonnage of Bartlett pears exists in Washington County. This demand is being met with out-of-the-county pears and should be filled with local grown fruit. Willamette Valley grown pears, if free of pests, are superior for canning purposes to the pear shipped in at the present time.

Apples.

1. No increased acreage of this fruit is recommended.

2. Our present apple orchards and trees should be sprayed and otherwise cared for or removed. Old, uncared for apple trees are a menace to the apple and pear industry of the county.

3. Yields of mature orchards should average at least 250 boxes per acre.

Cherries.

1. No further plantings of sour cherries should be made, due to heavy plantings in some eastern and middle western states.

2. An increased acreage of Royal Ann's may be safely made if accompanied with about eleven per cent proven Black Republican pollinizers or some other variety of proven worth.

3. Bings and Lamberts are suitable for local fresh fruit markets only.

General.

A motion was made and carried as follows: ,

Those contemplating putting out berries and fruits in the county are advised to consult with the officers of the Washington County Fruit and Vegetable Growers Association in regard to acreage, marketing, etc. The association will be glad to give them authentic information and co-operate with them in every way in the planting of those fruits which are in demand. The officers of the association are:

President, Geo. L. Woodworth, Hillsboro.

Secretary, Chas. La Follett, Cornelius.

NUTS

I. THE SITUATION

1. Large Acreage of Nuts in the United States.

There are now planted in the United States about 115,000 acres of walnuts, 90,000 acres of almonds, and 200,000 acres of pecans. The walnuts are producing at about 37 per cent capacity and giving 50,000,000 pounds a year. This acreage could produce 140,000,000 to 150,000,000 pounds of walnuts. The almonds and pecans are producing at somewhat less rate than the walnuts.

2. Present Acreage Will Supply Present Consumption Needs.

The United States used last year about 345,000,000 pounds of nuts, exclusive of pecans. The acreage in the United States now planted should produce at least this amount. In addition we have yearly plantings that are heavy as illustrated by 6,000 acres each of walnuts and almonds being planted each year in California.

These plantings now planted and soon to come into bearing are making money and will for some years to come. The acreage now being planted and the younger acreage will show a decided loss, according to statistics now available. In view of the probable future loss on the newer plantings in the United States and the favorable conditions in this section, a moderate planting of walnuts and filberts can be recommended. Indiscriminate planting should be avoided by the consideration of the following points:

II. RECOMMENDATIONS.

1. Proper Location and Soil Type Should be Observed.

Walnuts should be placed on elevations from 50 to 100 feet above the surrounding country, thus providing good air and water drainage. The soil

should be not less than 5 to 6 feet deep. The Olympic and Melbourne soils in general are the types best adapted to walnuts.

Filberts can be put on soils 4 feet deeper that are well drained.

2. Best Varieties Are Named.

The Franquette walnut grafted on the northern California black root stock and grown locally is undoubtedly the best variety at the present time. The Oregon grown trees have more branching root systems than the California trees and are more satisfactorily transplanted.

The Barcelona filbert, with proper pollinizers, should make up the filbert plantings.

Nursery stock should be bought only from reliable and proven sources.

3. Harvest and Dry Promptly.

In view of our climatic conditions prompt harvesting and drying are necessary to produce first class nuts.

Walnuts and filberts should be marketed according to the state grades.

4. Prospective Planters Should Seek Advice.

We urge prospective planters to seek information through the county agent and successful growers.

ONIONS

1. Formaldehyde-drip Treatment for Smut.

Concerning production problems, it was brought out that there were patches of the smut disease prevalent in different parts of the county. It was generally agreed and recommended by those present that all growers having known areas of smut use the utmost precaution to stamp out the disease. The formaldehyde-drip treatment,, in accordance with the formula recommended by the department of plant pathology of the Oregon Experiment Station, should be used at seeding time.

2. No Positive Control for Maggots.

In the control of the maggot, various devices have been used, among which are applications of materials similar to those used for controlling cutworms, viz., paris green and bran. Others have successfully used shallow pans of sweetened arsenic poison. Positive control of this insect is yet in the trial stage.

3. Fertilization is Individual Farm Problem.

It was generally agreed that eht question of fertilizers is an individual farm problem, and that no definite recommendations can be made which will take care of all farms on which onions are grown. One grower used

considerably less number of pounds per acre by drilling the fertilizer into the rows of onions. About 600 pounds of fertilizer were necessary as compared with 1400 pounds which would have been broadcasted. It was mentioned that fertilizer applied on land subject to maggots will have a tendency to attract maggots during decomposition of the fertilizer. It was agreed that application of manure every other year is a good practice, but that the land be enriched with commercial fertilizer each year. It was generally recommended that those growers of onions who use commercial fertilizers should each set aside a small patch of ground where the soil is uniform and that no fertilizer should be applied, in order that a check may be had on the value of commercial fertilizer as it effects the yields of onions.

4. Morning Glory Control Outlined.

Morning glory was stated to be one of the worst troubles experienced in growing onions. As a result of the discussion concerning the eradication of this weed it was brought out that a useful tool in cultivating the soil during the two years of summer fallowing necessary to get rid of the weeds is the Kimball weeder, otherwise known as the acme harrow. It was generally agreed that this weed could be safely handled with two years of summer fallowing. Also in some cases where there were comparatively few specimens of the weed, these could be cut out the first year with a knife, never allowing any foliage to appear above the ground.

5. United States Grades Should be Adopted.

There was considerable discussion in regard to the question of grades of onions, and it was recommended that the United States grades already drawn up be adopted for onion growing districts, having the minimum size of one and one-half inches.

6. Inspection of Shipments Advocated.

It was agreed by those present that there should be more definite and strict inspection of cars of onions. To this end it was recommended that an inspection law somewhat similar to the potato grading and inspection law be put into effect as soon as possible, in order that the quality of the Oregon onion might be maintained, and that those purchasing these onions would know that they had been officially inspected according to Federal grades and methods of inspection. One of the members of the committee was appointed to investigate the feasibility of this law and its passage as soon as possible by taking up the matter with the representative in the legislature from Washington County.

(Signed) D. G. Lilly, chairman.
R. P. Nixon, chairman of nut committee
L. W. Guild, chairman of onion committee.

Report of Farm Crops Group

HAY CROPS

I. THE SITUATION

1. Hay Acreage in County is Large.

The hay of Washington county occupies more area than any other one crop, about 33,000 acres. The acreage has remained constant for about 15 years, varying little from year to year.

2. Hay Supply Nearly Balances Demand.

Every year there are some shipments in and some out of the county. The incoming hay is nearly all alfalfa, and varies from 50 to 200 carloads. The outgoing hay is clover and vetch and oats, mostly for Tillamook county. In 1923 the hay shipped out totaled 57 cars.

3. Freight Rates.

Freight rates per ton on hay to Portland and Tillamook are as follows:

From	To Portland	To Tillamook
Hillsboro	$1.10	$2.80
Forest Grove	1.50	2.80
Sherwood	1.10	3.20

4. Varieties Grown and Yields.

The 1919 census reported the acreage and yields of the various varieties of hay as in the following table. These acreages have changed since that time, especially the vetch acreage, which has increased, and the grain hay acreage, which has decreased:

Crop	Acres	Average Yield (Tons)
Alfalfa	22	3.73
Vetch	2182	2.74
Grain Hay	9104	2.57
Clover	8607	2.32
Cheat	2825	2.14
Timothy and Clover	5358	2.1
Timothy	3290	2.07
Wild Hay	737	1.4
Total	32,127	2.32 (Average)

5. Average Hay Prices.

Hay prices over a long term of years are not available. The local five year average for 1919 to 1924 (prices paid to farmers) are as follows:

Kind of Hay	Average Price
Alfalfa	$18.50
Timothy	18.00
Oats and Vetch	16.50
Oat	16.00
Clover	14.00
Cheat	12.00

6. Income Per Acre From Hay.

Based on the census report of 1919 and the above five year average prices, the returns per acre from the various hay crops in the county would be:

Kind of Hay	Tons Yield	Value Per Acre
Alfalfa	3.73	$69.00
Vetch and Oats	2.74	45.21
Oats	2.57	41.12
Timothy	2.07	37.26
Clover	2.32	32.48
Cheat	2.14	25.68

7. Cost of Production.

Based on figures from a large number of Washington county farms the average cost of production per acre of hay here is as follows:

Item	Vetch and Oats	Clover	Alfalfa
Interest on land at 5 per cent	$7.00	$7.00	$7.00
Interest and depreciation on equipment	2.00	2.00	2.00
Taxes	2.50	2.50	2.50
Seed	3.00	2.00	.50
Land preparation—			
Plowing	3.00	1.50*	.30
Cultivating	1.20	.60*	.12
Seeding	.60	.40	.06
Haying—			
Cutting	.75	.75	.75
Raking	.30	.30	.30
Shocking	.75	.75	1.25
Hauling to barn	1.50	1.50	2.25

Item	Vetch and Oats	Clover	Alfalfa
Land plaster	1.00	1.00	1.00
General farm overhead	1.00	1.00	1.00
	$24.60	$21.30	$19.03

(*half of cost because clover is a two years crop).

Life of alfalfa estimated at 10 years.

Man labor figured at $0.30 per hour, horse labor at $0.15 per hour.

Based on average yields, the cost per ton of these hays is:

Kind of Hay	Cost per Acre	Cost per Ton
Vetch and Oats	$24.60	$8.95
Clover	21.30	9.19
Alfalfa	19.03	5.10

It must be remembered that these figures are averages and will not apply to every particular farm. For example, the readers may have taxes twice as high as the average, or the item of depreciation on equipment may be only half as great. These figures are given for the purpose of comparing the crops and to provide a basis for figuring for those interested in the subject.

II. HAY RECOMMENDATIONS

1. Increase the Alfalfa Acreage.

A large increase is recommended in the alfalfa acreage, based upon the facts shown in the preceding part of this report. Alfalfa as compared with other hays, has:

(a) A lower cost of production per ton and per acre.
(b) A higher feeding value.
(c) Longer life.
(d) Less labor.
(e) Less danger of damage of entire crop by rain.
(f) Greater yields.
(g) Greater benefit to following crops.

2. Observe Causes for Failure in Growing Alfalfa.

Many failures with alfalfa in the past have been due to one of the following reasons or a combination of several of them:

(a) The use of common instead of Grimm seed.
(b) Seeding on land needing lime.
(c) Seeding at the wrong time.
(d) A loose seed bed.
(e) Failure to get rid of grass and weeds before seeding.
(f) Lack of inoculation.

(g) Poorly drained land.
(h) Poorly prepared land.

All of these reasons for failure must be avoided to succeed in growing alfalfa.

3. Use Alfalfa as Soiling Crop on Small Farms.

Small farms with a few dairy cows can profitably grow alfalfa as a soiling crop. It will make plenty of green feed throughout the summer. The same applies to poultry farms.

4. Alfalfa Supplies Cheap Protein.

Dairymen will find that by feeding aflalfa they can supply protein to their cows at a lower price than in any other way.

5. Alfalfa Furnishes Abundant Pasture.

Alfalfa furnishes abundant pasture during the dry summer months, but it is not recommended for anything except hog pasture due to the danger of bloat. It must be pastured carefully for that reason.

POTATOES

I. THE SITUATION

1. Acreage in the County.

The potato acreage of the county has remained nearly constant for about 15 years. For the past five years the acreage and yields have been:

Year	Acres	Yield per Acre (bushels)	Total Production (bushels)
1919	4536	92.9	420,034
1920	5520	140	772,800
1921	4500	80	360,000
1922	4500	110	495,000
1923	4000	75	300,000
Average	4611	99.6	469,567

2. Average Yields.

The yields here average about the same as the United States average, and slightly below the Oregon average.

	Average Yields per Acre (bushels)
Washington county	99.6
Oregon	105.0
United States	97.0

3. Potatoes Are Sold Out of the County.

Of the average production of about 470,000 bushels, it is estimated that in an average year, about 300,000 bushels are exported. This represents an average income of roughly $300,000 which fluctuates greatly with yields and prices.

In 1923, the railroad shipments were 306 cars, 85 per cent of which went to California. In addition, some potatoes are trucked into Portland.

4. Average Prices.

The prices paid to farmers of the county are not available, but the following are the average prices by months for number one Burbanks in Portland for the past nine years. These are jobbers prices to retailers. Farmers prices will average about 80 cents lower:

Month	Price per 100 Lbs.
July	$3.38
August	2.46
September	2.02
October	1.95
November	1.95
December	1.93
January	2.06
February	2.24
March	2.18
April	2.61
May	2.71
June	2.90

This shows an average price to farmers of about $1.15 per bushel during October, November and December; an average of $1.36 from January to April; and an average of $1.86 during April and May.

The average price is only of importance in figuring the possible returns over a long period of years. Average of spring over fall months are misleading because of the wide fluctuation from year to year. In general, in years of large crops, the spring price is lower than the fall price, and in years of small crops the prices rise steadily after digging season until the new crop comes on.

5. Many Varieties Grown.

The county grows many varieties. The leading ones are:

Burbank, American Wonder, Netted Gem, Pride of Multnomah, Earliest of All, and British Queen.

6. Freight Rates.

The freight rates per hundred from various points in the county are:

From	To Portland	To Los Angeles	To San Francisco and Stockton
Hillsboro	$0.08	$0.56½	$0.35½
Forest Grove	.09	.56½	.35½
Beaverton	.06	.56½	.35½
Sherwood	.08½	.56½	.35½

7. Cost of Production.

Cost of production varies widely on different farms. The following costs are averages of the figures on seven farms in different parts of the county. These figures are intended only as a guide to others in figuring their own cost of production and do not apply to any one farm.

Item	Cost per Acre	
Investment charges—		
Interest on land	$7.50	
Interest and depreciation on equipment	3.50	
General farm overhead	1.00	
Taxes	2.50	
Total investment charges		$13.50
Labor—		
Plowing	3.50	
Discing	3.00	
Harrowing	1.50	
Planting	4.00	
Treating seed	1.00	
Cutting seed	2.00	
Cultivating	2.50	
Digging	9.00	
Picking up	5.00	
Hauling in	2.50	
Sacking and grading	7.50	
Hauling to market	10.00	
Total labor		51.50
Material—		
Corrosive sublimate	.50	
Seed	7.50	
Sacks	7.00	
Land plaster	.40	
Total material		15.40
Total expense—per acre		$81.40

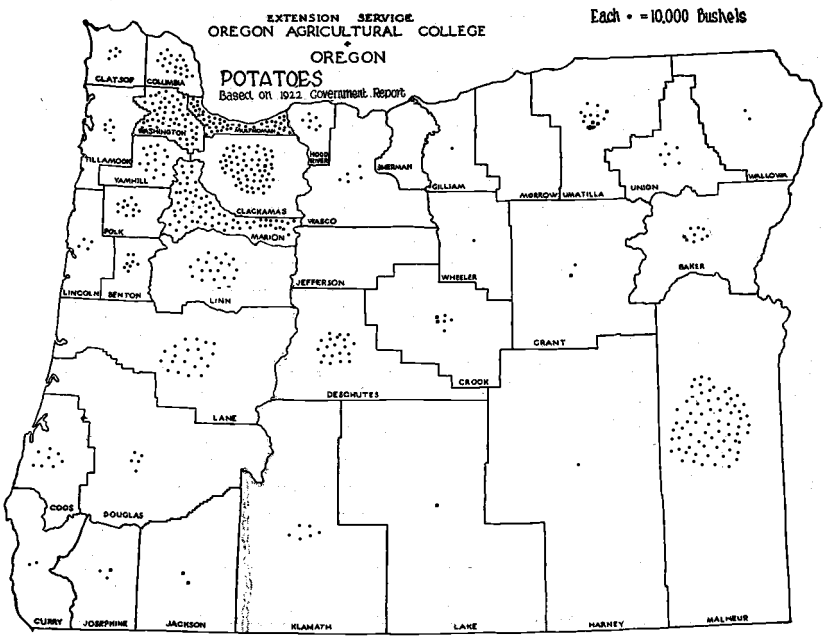
8. Yields Necessary to Pay Cost of Production.

With the average yearly price for the preceding nine years and the average cost of production in paragraph six, it would be necessary to get 94 bushels per acre to pay cost of production. This is slightly below the county's average yield. Potatoes are compared with some other common farm crops in this regard, in the following table:

Crop	Cost of Production (per acre)	Yield Necessary to Pay Cost	Average Yield of County
Potatoes	$81.40	94 bushels	99.6 bushels
Clover Hay	25.60	2.08 tons	2.32 tons
Vetch and Oat Hay	28.70	2.09 tons	2.73 tons
Wheat (Winter)	23.48	21 bushels	25.8 bushels
Oats	23.43	48 bushels	42 bushels
Barley	24.18	33 bushels	33.6 bushels

9. Potato Markets.

The only large market in Oregon is Portland. In recent years the Yakima Gems have been invading this market in increasing numbers. In 1924, the State of Washington sent to Portland 669 carloads of potatoes and the entire State of Oregon 105 carloads, exclusive of the quan-



tity hauled by trucks. The same situation holds in most other Oregon markets, such as Astoria, Tillamook, Marshfield, etc.

Freight rates limit out-of-the-state markets for Oregon potatoes to California except in years of abnormal shortage elsewhere. California is a large importer of both table stock and seed. Because of the heavy shipments of Idaho and Yakima potatoes to California in the fall, that market is usually best for Oregon potatoes in the late winter or early spring. This does not apply to years when there is an extremely heavy surplus of potatoes all over the country.

The seed market is largely limited to the territory around Stockton. This district uses every year about 900 carloads of seed. They previously used Oregon and Washington Burbanks, but the market was abused by supplying as seed, large quantities of potatoes which were very unreliable. Often, Pride of Multnomah and American Wonder were shipped and sold as Burbanks and sometimes several varieties were mixed. Very often badly diseased, low yielding seed was sent. Neither Oregon or California had any way of checking upon the reliability of seed lots, so the situation was due to lack of any organized effort to deal with it, rather than the fault of either dealers or growers.

As a result, last year 20,000 of the 27,000 acres around Stockton were planted to seed brought from the Middlle West. This was of a variety called Pride of Wisconsin which is an inferior potato. The freight from the Middle West is $22.00 per ton as compared with $7.00 per ton from this county.

II. POTATO RECOMMENDATIONS

1. Provide Penalties for Violation of Potato Grading Law.

Because of the large imports of No. 2 potatoes from Yakima and the resulting lower prices of all potatoes in the Oregon markets, and because of the fact that dealers generally do not know the difference between U. S. No. 1's and this second grade stock, we believe the present grading law should be strengthened so as to provide penalties for its violation. We therefore authorize our chairman to ask our representatives and senators from this county to vote for such needed changes in the potato grading law.

2. No Large Increase in Acreage.

No large increase of potato acreage in the county is justified because we already have enough of the average stock. A market exists for any reasonable amount of really good seed, at a premium over table stock large enough to justify trying for it. California could easily take all of the good seed potatoes this county could produce.

3. Efforts to Build Up Good Seed Supply Are Commended.

We commend the efforts of a small group of growers in the county to build up Burbank seed which will be suitable for supplying this California demand, and urge other growers to join them in the potato growers association which they are now organizing.

4. Use Only Burbanks for Late Crop.

For a late crop potato, Burbanks only should be used, because the market is best for that variety.

5. Good Storage Facilities Are Needed.

Good storage is of equal or greater importance than good seed. The average annual loss from poor storage on some farms is enough to more than pay for a good cellar or warehouse. All growers intending to stay in the business should have good storage.

6. Stay With the Business.

The practice of jumping in and out of the potato business is almost sure to result in losses. The only way to make money from potatoes is to stay in year after year and grow potatoes in a rotation.

7. Long Rotations Advocated.

On potato farms a four-year rotation is advised for growers of table stock and a six-year rotation or longer for seed stock. For certified seed new ground should be used if available.

8. Use Good Seed.

Good seed is the cheapest seed, no matter what the price. There are many potato diseases, all of which either reduce the yield or make a large number of culls. The only possible way to avoid these diseases is to get seed as free from them as possible, grow it away from other potatoes, and treat it before planting. Treating will not control the most serious of the diseases. They can only be controlled by getting rid of diseased plants in the field, starting with good seed in the first place.

The cost of the seed is only a small per cent of the total cost of growing potatoes. Quality of the seed often makes differences of from 20 to 50 sacks per acre, at digging time. Certified or standard seed is recommended.

GRAINS

I. THE SITUATION

1. Grain Is Important Part of County's Income.

Considering only the things sold from the farms, the 1919 census showed that grain crops made up the largest single source of farm in-

come in this county. The cash returns for grain were $2,000,000 or 28.4 per cent of the total farm income. Dairy products come second in importance with sales totaling $1,834,000.

2. Oats Lead In Acreage.

Of the grains, oats occupy the most acres. Following are the acres of the grains in 1923:

Kind of Grain	No. of Acres	No. of Bushels
Oats	22,500	1,125,000
Winter wheat	19,000	475,000
Corn	4,200	138,600
Spring wheat	2,000	40,000
Barley	800	32,000
Rye	145	2,900

3. Wheat and Oats Exported, Barley and Corn Imported.

The market for grain is naturally Portland. Something over half of the wheat grown is sold in Portland, but the big majority of the oats are used within the county, many of them on the farms where they are produced. The county imports from 50 to 100 carloads of corn and barley annually, the larger part of which is barley. During 1923, the railroad shipments into the county were as follows:

Barley	7 cars
Corn	57 cars
Feed	381 cars*

*Includes some cars of barley and corn; mostly mill run.

This does not include the truck shipments which are very large in parts of the county.

4. Feed Bill for County Is Large.

The total value of all grain and hay imported is about $500,000 in an average year. A large part of this is in the form of prepared dairy and poultry feeds and mill run. All grain and hay exported from the county will just about come to this same figure. So the county's feed will about balance with the amount of feed and grain sold.

5. Many Varieties of Wheat Grown.

Unlike most sections of Eastern Oregon, where most of the farmers in any one section all grow the same variety of wheat, many varieties are grown here. It is estimated that the average in the various varieties is about as follows:

Rink	70 per cent
White Winter	10 per cent
Kinney	5 per cent
Marquis	5 per cent
Foise	2 per cent
Others	8 per cent
Total	100 per cent

In the 8 per cent are included Jenkins Club, Fortyfold, Federation, Little Club, Defiance, Huston, Red Russian, Hybrid 128 and many others.

6. Many Varieties Lead to Mixtures.

Where many varieties are grown, mixtures are bound to occur. This leads to losses in yields and market value. This loss in the county averages about $10,000 on each year's wheat crop.

7. Which is Most Profitable, Oats, Wheat or Barley?

Taking average yields for the past five years and average prices, the county's grain crops compare as follows:

Crop	Bushels per Acre	Pounds per Acre	Value per Acre
Winter wheat	25.8	1,548	$28.72
Spring wheat	19.4	1,164	21.62
Oats	42.8	1,369	21.00
Barley	33.6	1,613	24.44

These figures are county wide average and will apply to no one farm.

8. Cost of Production Over $20.00 Per Acre for Grain.

A large number of farmers from all parts of the county submitted costs of production. These varied according to many factors, but for an average crop of 25 bushels of wheat and 42 bushels of oats the costs run about $23.50 per acre. The basis of this figure is given below more as a guide for comparison with one's own costs than as a statement of fact. There is no one cost of production as costs differ on every farm. The following are only average figures:

Overhead costs—		
Interest on land	$7.50	
Interest on machinery	.50	
Depreciation on machinery	.60	
Repairs on machinery	.40	
Taxes on land and equipment	2.50	
Total overhead		$11.50

Labor costs—man and horse—		
Plowing	3.00	
Harrowing	.60	
Discing	.40	
Drilling	.50	
Binding	.90	
Shocking	.40	
Threshing	1.50	
Hauling	1.20	
Total labor		8.50
Materials:		
Twine	.35	
Seed	2.00	
Sacks	1.10	
Total material		3.45
Total cost per acre		$23.45

By separating the non cash costs of the above from such cash costs as taxes, repairs, seed, threshing bill, etc., it is seen that about 50 per cent of the costs are cash and the others are items which the farmer pays to himself for his time and the use of his money.

9. Yield Necessary to Pay Cost of Production.

Applying the above average costs of production to the average prices of grains given in paragraph 10, the yields necessary to pay costs of production are as follows:

Wheat	21 bushels
Oats	48 bushels
Barley	33 bushels

Again it must be remembered that these are given for comparison only and that they cannot be applied to any individual farm. Prices fluctuate widely and these only show a comparison of average prices over several years. In a year of low wheat prices, it will take more bushels to pay cost of production that in a year of high prices.

10. Average Prices Paid for Grain.

From 1921 to 1924, the average prices paid for the various grains per bushel during September, October, November and December were:

	Price per Bushel	Price per Ton
Wheat	$1.16	$38.66
Oats	.51½	32.19
Barley	.77	32.08
Corn	.97	34.64

The yields necessary to pay cost of production will vary as these prices change in relation to each other.

11. Special Market for Oats Exists.

Portland is quite a milling center for oats and Gray Winter oats of good quality bring a premium of about $3.00 a ton as a rule over the price of the ordinary stock. Milling oats from this district would be in demand if we had a large enough supply for shipment east.

In order to be fit for milling purposes they must be free from buck cheat and other serious mixtures and weigh well per bushel. Because of mixtures, practically all of the oats grown here grade No. 3 or 4. The millers want No. 1 or 2 and will usually pay a premium for them.

II. GRAIN RECOMMENDATIONS

A. Wheat.

1. Too many varieties of wheat are grown. Until it is certain that better varieties are known, we recommend the dropping of all varieties for fall planting except White Winter and Rink. There are other varieties which yield nearly as well as these, but they have no advantage over these and growing many varieties leads to mixtures.

2. Copper carbonate should be used for treating wheat. By so doing better stands can be insured and 25 per cent of the seed saved. Granges or other farm organizations are urged to consider buying community mixing machines for treating with copper carbonate.

3. Spring wheat should be grown only as a substitute crop where fall grain winter kills or when it is impossible to seed fall grain for any reason.

4. Winter wheat on the larger farms is the best paying grain crop, but it should be grown in a rotation with clover. A cultivated crop and a legume crop are necessary in the best rotation.

5. Because of world wide conditions, wheat may be expected to be rather low in price for a long time except in occasional years of crop shortage like this one.

B. Oats.

1. A decrease in the oat acreage is justified, but there is always a place for good, plump Gray Winter oats, free from buck cheat and mixtures. These always sell at a premium.

C. Barley.

1. The barley acreage should be increased on farms now growing spring planted oats. Barley will yield more pounds per acre and it is a better home feed for stock fed on clover, vetch or alfalfa hay.

2. Hannchen barley is recommended. In parts of the county where winter barley will live through, O. A. C. No. 7 is recommended. Beardless barley is nicer to handle but it almost always falls far below Hannchen in yield.

D. General Grain Recommendations.

1. As land rises in price and farms decrease in size, a point is reached where grain is an almost impossible venture. Farms of less than 40 acres with high priced land are advised not to grow grain of any kind unless for a special market (such as certified seed) or unless exceptionally large yields are possible.

2. Grain should be grown only in a rotation with a legume or else fertilized with barnyard manure.

3. Corn is the best paying spring planted grain crop if the proper seed is used.

4. With any kind of grain, it pays to get good seed and keep it pure.

5. Certified seed is endorsed.

RECOMMENDATIONS FOR FARMS WITH GRAIN FROZEN OUT

1. White Winter, Rink or Jenkins Club wheat can be seeded during February.

2. White Winter should not be seeded after February, as it is a true winter wheat and will not head out if spring seeded. Varieties of true spring wheat such as Rink, Foisy, Jenkins Club, Huston, etc., can be seeded at any time in the spring, but early seeding is nearly always better.

3. Wheat seeded in the winter should be treated with copper carbonate. Otherwise poor stands are almost sure to result.

4. Farms with no clover and with vetch frozen will do well, if the weather permits, to seed some vetch and oats in February. A legume hay crop is necessary to produce milk economically.

5. It will cost less to seed corn than any other crop. Corn is suggested for re-planting on many hundreds of the frozen out acres. In a normal year corn will yield more pounds of grain per acre than any other spring planted crop.

6. If half a crop remains, it will be better to leave it than to re-plant, as fall planted grain usually yields about double that of spring planted. In this case it may pay to make an application of about 50 pounds per acre of sulphate of ammonia and nitrate of soda. These fertilizers will help to make the grain stool out.

7. Spring planted Hannchen barley will yield more pounds of grain per acre than either spring wheat or spring oats. Hannchen barley is

suggested as a good crop for replacing several thousand acres of the frozen grain.

8. Those desiring to seed alfalfa, can do so on the frozen out fields without re-plowing.

CORN

I. THE SITUATION

1. Acreage Increasing.

During the past five years the corn acreage has greatly expanded, both for grain and silage. It is now more than 4,000 acres.

2. Cash Costs of Production Lower Than Grain.

Due to the lower cost of the seed and to the eliminations of the threshing and sack bills, the cash cost of growing an acre of corn is lower than for wheat, oats, or barley. The labor cost is greater, however, so that the total cost is slightly higher.

3. Corn Needed in County.

About 2,000 carloads of corn are imported every year into the Pacific Northwest. This county is one of the heavy importers. A good market for corn thus exists right at home. Corn is greatly needed as the only cultivated crop the acreage of which could be greatly extended so as to provide a better rotation on grain farms.

4. Drying the Corn Difficult.

Many people believe corn to be a surer crop than any other grain crop, but hesitate to grow it because of the difficulty of drying. If fed on the farm, this is not so much of a drawback, as the corn may be left on the stalk in the field. Hop or prune dryers give good results with corn. Narrow cribs with good roofs are used by a few farmers with success.

5. Corn Yields More Pounds per Acre Than Other Grains.

The man who feeds most of his own grain is more interested in getting a large yield per acre than he is in the price of the grain. Here are the average county yields in pounds per acre of the grains grown here:

Kind of Grain	Pounds per Acre
Corn	1848
Barley	1613
Winter wheat	1548
Oats	1369
Spring wheat	1164

6. A Cultivated Crop Badly Needed.

Yields of all other crops are kept down and prices of the grains reduced because of weeds and volunteer grain of other kinds. A cultivated crop is very badly needed on many farms to clear the land of weeds and volunteer crops. No other cultivated crop could be grown on thousands of acres, so if a cultivated crop is ever included in the rotation on most grain farms, it must be corn.

II. CORN RECOMMENDATIONS

1. A large increase in the corn acreage is justified at the expense of spring wheat and oats. A cultivated crop is badly needed to clear the land of weeds. Corn is the only crop which could be grown at present on large acreages to fill this need.

2. Local acclimated seed should be used.

3. Succulent feed is needed for the most economical production of milk. The records submitted by the dairy group show that many dairy herds in the county are so small that a silo is not justified. For those farms root crops should be provided for winter feed and as a reserve crop if kale freezes out.

4. In raising corn for grain, either a hop or prune dryer should be available, or else a crib should be built with a stove underneath.

5. Part of the profit of a corn crop comes from the higher yields of grain following the corn.

CLOVER SEED

I. THE SITUATION

1. Clover Seed Usually A By-Product.

Although this county often produces considerable clover seed for export, on most farms the crop is not grown primarily for seed. A hay crop is taken off and then if another crop comes on it is saved for seed. Exports of seed amount sometimes to as mush as 10 cars and in other years it is necessary to import seed.

2. Cost of Production of Clover Seed Less Than for Grain.

With conditions the same as those given for hay and grains, the cost of production of clover seed is about $5.00 per acre less than for grain.

3. Average Prices.

Omitting the high prices of the war years, clover seed has averaged 17½ cents per pound during the past 10 years. This is $10.50 per bushel. It is thus only necessary to get 1.7 bushels per acre of seed to pay the cost of production. If the crop is grown for seed, and handled right, this amount of seed can usually be obtained. The average yield of the county amounts to a little more than two bushels per acre. Much higher yields are rather common.

4. Much Poor Clover Seed Planted.

The practice of buying any kind of clover seed without having it tested for purity often results in crops so weedy that the seed crop has little value. This applies to home grown as well as imported seed.

II. CLOVER SEED RECOMMENDATIONS

1. We believe that many grain farms can make more net profit from a clover seed crop than from a grain crop. The expense of growing is about $6.00 or $7.00 less per acre than a grain crop and the returns as good or better.

2. Clover seed growing works in particularly well on farms with sheep because the clover can be pastured until late spring and the straw used for winter feed.

3. Care is urged in buying clover seed to avoid introducing noxious weeds into the neighborhood.

FLAX

I. THE SITUATION

1. Imports of Both Fiber and Seed Flax Large.

The United States imports both fiber and seed flax and products made from them. The tariff on flax fiber is $20 per ton, on dressed flax $40 per ton, on flax seed 40 cents a bushel, and on linseed oil 3 3-10 cents a pound. Imports of these products have been as follows:

	1920-21	1921-22	1922-23
Fiber flax	$ 3,406,000	$ 2,906,000	$ 4,300,000
Flax seed and linseed oil	41,238,000	37,997,000	55,409,000

It is probable that imports of seed flax were smaller in 1924 due to the much larger United States crop.

2. Different Varieties Used for Fiber and Seed.

Different varieties of flax are used for fiber and seed. They are planted at different rates of seeding per acre and harvested differently.

3. A Market In Portland for Seed Flax.

A mill in Portland uses annually from 350,000 to 500,000 bushels of seed flax in the manufacture of oil. It would require from 20,000 to 30,000 acres in the Willamette Valley to grow this amount. At present it is all imported from the Middle West and foreign countries.

4. Fiber Flax Growing Dependent Upon Linen Mills.

The growth of a fiber flax industry depends entirely upon the coming of linen mills. Fiber flax offers some promise if mills are built. It is usually impractical to ship fiber flax very far, as it is a bulky product. The linen mills must therefore be fairly close to the grower.

A linen milling industry would be worth while in Oregon because the finished product can be shipped long distances at a comparatively low freight rate and because it is an industry which employs a large number of people. At present the state penitentiary is successfully operating a plant and another plant is in process of construction at Salem.

II. FLAX RECOMMENDATIONS

1. We recommend small trial plantings of flax for fiber in order to obtain knowledge of the crop under local conditions. In this way mistakes on larger acreages can be avoided.

2. Flax for seed requires different varieties than flax for fiber. Seed flax is a demonstrated success in western Oregon. A market in Portland exists for seed flax and trials are recommended on grain farms. No new machinery is needed for growing seed flax.

GRASS PASTURES RECOMMENDATIONS

1. Often a grass pasture is the best investment on a dairy farm. There is very little work and money tied up in a pasture so it does not carry the risk of loss that other crops do.

2. When grass pastures are seeded, it will pay better to buy the kinds of grasses desired and mix them on the farm, rather than to buy the commercial pasture grass mixtures. These often contain a high percentage of trash and weed seeds.

3. Small trial plots of Reed Canary grass are urged on wet land or on land needing drainage.

Report of the Farm Management Committee

The various commodity groups of this conference have considered the problems affecting a particular commodity or a single farm enterprise. This committee, representing each commodity group, considers the whole farm as a business unit. This committee defines a successful farm business to be one which pays the operator good interest on his investment and pay for his labor and management. The farmer is, therefore, concerned with all profitable enterprises or combinations of enterprises which adapt themselves to his individual farm. He is concerned in the development of a farm plan which will create a well balanced business and utilize to the best advantage his available land, labor and capital.

I. ENTERPRISE COMBINATIONS OR PROFITABLE SIDE LINES

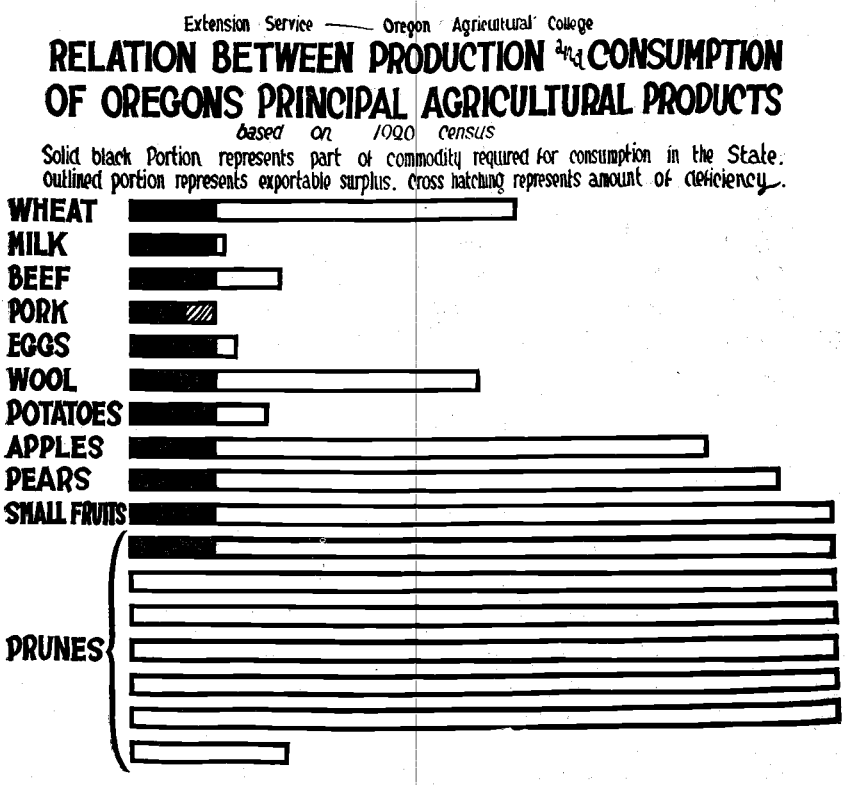
This committee believes there is an opportunity for the adoption or reorganization on farms of profitable side lines or combination of profitable enterprises,and recommends the following:

1. On farms where dairying is the major source of income the farm plan might include the following enterprise combinations—
   - (a) Dairying, tree fruits where soil conditions are suitable and a cash crop such as potatoes or clover seed.
   - (b) Dairying, hogs to consume wastes, farm sheep, and grain.
   - (c) Dairying and poultry (400 hens or more).
   - (d) Dairying and small fruits.
   - (e) Dairying and onions where suitable land is available.
2. On farms where grains contribute a major income, the following combinations are suggested—
   - (a) Grains, clover hay and seed, dairying.
   - (b) Grains, clover hay and seed, farm sheep.
3. On farms where fruits contribute the major income—
   - (a) Prunes, walnuts, dairying and potatoes.
   - (b) Prunes, walnuts, poultry.
   - (c) Prunes and hops.
   - (d) Small fruits and poultry.
4. On farms where poultry contributes the major income—
   - (a) Poultry and small fruits.
   - (b) Poultry and vegetables.

This committee further recommends that the following definite steps be taken to increase interest and secure the practical application and adoption of these enterprise combinations on farms of the county:

1. That organized tours of farmers be conducted for the purpose of studying side lines and combination where they are now successfully practiced.

2. That the county agent present the subject at farmers meetings in the county.



II. SIZE OF FARMS.

This committee believes many farms are too small or the income enterprises too limited to make them a paying business, and it recommends that every farm business should be large enough to produce a gross annual income of at least $3000 and employ to capacity available labor, equipment and capital.

III. GOOD STANDARDS FOR WASHINGTON COUNTY

After analyzing the major factors which influence profits in farming in Washington county, this committee has set up a series of "standards"

which it believes will be helpful in enabling farmers to measure and compare the efficiency of their farm business. These "standards" have already been reached and passed by some of our best farmers and are within the reach of all farmers.

1. Receipts from Livestock.

(a) Milk receipts per cow—$125.00. (County average now approximately $100.)

(b) Pounds milk per cow per year—6000 pounds. (County average now approximately 5100 pounds.)

(c) Pounds butter fat per cow—300 pounds. (County average now 215 pounds.)

(d) Live pigs per sow—6.

(e) Pounds wool per sheep—8.

(f) Percent lambs per ewe—125 per cent.

(g) Number eggs per hen per year—160 to 180. (County average now about 110.)

2. Yield of Crops.

At least 30 per cent above the average acre yield for the county.

3. Use of Labor.

Sufficient acreage of crops, sufficient livestock and diversity to keep all man and horse labor productively employed the year around.

IV. THE KEEPING OF FARM ACCOUNTS

This committee believes the first step in the successful management of a farm is the keeping of simple farm accounts and strongly recommends that every farmer secure a suitable farm account book and keep a financial record of the farm business. Account books may be obtained from local bankers, from the county agent or from the Oregon Agricultural college.

In order to increase interest and secure a better understanding in simple farm accounting the committee further recommends:

1. The conducting of farm accounts meetings in the county.

2. The teaching of simple farm accounts in the eighth grade or rural schools, as a small part of the arithmetic course.

V. PURCHASE OF FEED

Washington county farmers spend approximately one million dollars per year for purchased feed. This committee recommends that with the

exception of specialized poultry, fruit and vegetable farms, all feeds should be home grown where possible.

(Signed) R. G. SCOTT,
F. ELSNER,
F. L. BEACH,
ALEX EISCHEN,
EDWARD FREUDENTHAL.

Report of the Soils Committee

The soils committee has considered those factors which are fundamental in the maintenance of fertility on the now productive soils and the building up of the old cropped soils as related to all lines of farming. There are undoubtedly soil problems confronting specialized lines of production which have not been taken up in this report, but we believe that the first step in the solution of any such problem will be accomplished to a large degree by following these fundamental recommendations.

Commercial Fertilizers.

Use of commercial fertilizers in Washington county is apparently not a general practice. At the same time there are many farmers who are very profitably using fertilizers. We believe some farmers are unfamiliar with fertilizers and what fertilizers can be profitably used. These farmers should profit by the experiences of other growers and save their experimenting. The following recommendations are made:

1. Superphosphate is giving increased yields of 20 to 40 per cent when applied to corn at the rate of 200 to 300 pounds per acre. This may be applied by a fertilizer attachment for the corn planter or broadcasted as the seed bed is being worked down. This will hasten maturity 10 days to 2 weeks and increase the following wheat or clover seed yields.

2. J. J. Van Kleek has secured very profitable increased yields for several years by using 100 pounds of potash with superphosphate on corn and root crops. More trials should be made in other parts of the county before being certain of this as a general recommendation.

3. Potash has been used on potatoes with good results but more trials are needed. We recommend that potato fertilizer trials be carried on under the direction of the county agent during the coming season and continued until sufficient data is secured.

Lime.

Failures were general on clover seeding last year due to the dry season, which cannot be helped. A large percentage of Washington county farmers are having serious difficulty in getting a stand of clover in years of average moisture.

We believe that lime is a controlling factor in most of these cases. Many farmers believe they cannot afford to buy lime at the present price of $7.40 per ton, f. o. b. Hillsboro, in sacks. However, it is generally agreed that it will cost $3.00 to $4.00 per acre more to raise a crop of vetch or oats hay than clover hay. At this rate a ton of lime per acre will soon be paid for. Results from lime should show over a period of five to seven years and often longer.

Apply lime in the fall after plowing if results are to be expected on the next crop. Don't apply lime in the spring and expect good results the following summer as it will probably not show until the following year. Even spreading is an important factor.

If manure is spread before plowing, the lime and manure should get a clover stand on any field that has fair drainage.

The use of lime on land to be seeded to alfalfa is recommended.

Adolph Rutschmann applied lime on five acres on his farm four miles northeast of Hillsboro at one ton per acre in 1916 and secured an increase on wheat the first year. The second year he got four tons of clover per acre where it was limed and two tons per acre where it was not limed. The third year a bumper corn crop was taken from the field, far better than any former yield. In plowing, the soil was noticeably looser and more mellow where it was limed.

Such results indicate that lime has an important place in Washington county.

Land Plaster.

Although the committee recognizes that land plaster is not a fertilizer in that it does not carry nitrogen, phosphorus or potash the beneficial effect noted on clover and vetch justifies recommending its use on legumes at the rate of 40 to 75 pounds per acre.

Crop Rotation.

We believe that crop rotation is absolutely necessary for the maintenance of soil fertility and profitable crop yields. The necessity of good yields per acre are often pointed out as necessary to meet high land values. Better seed and standard varieties will aid in this direction but crop rotation including legume crops of vetch and clover is fundamental in keeping up soil fertility.

The average yield of winter wheat in this county is 25 bushels per acre. The cost of producing wheat as shown by estimates of the farm crops group is $25.00 per acre covering interest, depreciation, etc. If wheat prices to the farmer would be $1.00 per bushel this would just cover his expenses. Many farms are producing 40 to 50 bushels of wheat per acre, hence show a margin of profit. Many other farms are producing less than 20 bushels per acre. The farms using legumes and crop rotation are consistently with the higher producers per acre.

A substantial increase in the corn acreage is recommended by the farm crop group.

This coincides with our recommendation for more crop rotation, because a cultivated crop is needed to clean the land of weeds.

A good rotation for Washington county will be corn and potatoes followed by fall grain with clover seeded on the grain in February for the

third year. This rotation will not fit all farms but can easily be varied to meet conditions.

Cover Crops.

Cover crops are absolutely necessary for the maintenance of soil fertility in orchards unless organic matter is supplied in some other way, such as manure, or straw.

Common vetch at 30 to 40 pounds per acre with 40 to 50 pounds of winter grain is the mixture recommended.

Straw.

Washington county has a $2,000,000 annual cereal crop. This shows that there is a large tonnage of straw to be disposed of each year. We recognize that although many farmers use this straw there are great quantities burned. The following recommendations are made:

1. No straw should be burned.

2. Straw is a valuable soil builder in supplying organic matter and plant food and can be spread on the land profitably.

3. Many farmers who have large quantities of straw will never be able to spread it until they get a straw spreader. A good straw spreader that can be attached to any straw rack can be bought for $75 to $100. This spreader covers a strip 16 feet wide. In one day two men can spread the straw from 15 acres.

4. More straw can be used with manure.

5. Lounging sheds for stock where the manure and straw is hauled out in spring is highly recommended.

6. The plant food in a ton of straw is figured at current prices for nitrogen phosphorus, and potash fertilizers would cost $3.80 and should not be wasted.

Manure Storage.

The usual methods of manure storage on the farm allows a great loss in the plant food value. The loss of liquid manure alone means a loss of 50 per cent of the total nitrogen and 85 per cent of the total potash in the manure. This loss usually occurs in a period of six to seven months when the cows are kept in most of the time. The loss in liquid manure from one cow over this period would average $8.00 for nitrogen and $3.25 for potash if this should be replaced by commercial fertilizers at present prices. This would amount to $111.25 where the liquid manure from 10 cows is lost for 7 months.

Therefore we recommend that this valuable manure produced by over 20,000 dairy cattle be saved by the use of manure pits, storage sheds or lounging sheds.

Drainage.

It is the unanimous opinion of the committee that the importance of drainage in the improvement of wet lands of Washington county cannot be over emphasized. Tile drainage is more of a permanent investment than a good barn because the barn decreases in value with age while the tile drainage gets better.

Many farms of Washington County have wet areas and draws that reflect seriously on the productivity and value of the entire farm and make farming more expensive.

Tile drainage of wet areas is considered an absolutely sound investment. It will pay by bringing new land into production and by making possible the growing of more fall crops and legumes which will make better yields. Spring operations will be earlier and the cost of plowing, etc., will be reduced because these wet spots can be handled right along with the rest of the farm. The cost of drainage is often paid for by increased yields in two or three years and this increase continues without further expense.

Tile drainage is more economical and profitable than open ditches. Where needed tile drainage cannot be financed at one time the use of open ditches is recommended with tiling to progress as fast as finances permit.

There are many thousand feet of tile that are a waste of money because when installed they were improperly and poorly laid. In view of this it is recommended that great care be taken in properly installing the tile system.

When a small unit is to be installed each year it is very necessary to have the entire system carefully planned first so that proper size of tile and outlets are provided.

Attention of those needing help in planning tile systems is directed to the fact that assistance can be secured from the O. A. C. extension service through the county agent.

Irrigation.

Irrigation has been practiced by several Washington county farmers at a decided profit. This is especially true during the past few years. Last summer some farmers installed pumping units and the increased yields of that year more than paid the installation cost. We do not believe that irrigation in Washington county will become extensive but there are many farms favorably located along streams where water can be pumped at low lifts to small fruits, vegetables, corn, clover, alfalfa and pasture. The long dry summers can thereby be made to produce bumper crops.

Practically every farmer has his individual problem and must figure his cost of equipment, power, and method of handling very carefully to see if the proposition is feasible.

If water is to be taken from any stream the water right should be filed with the state engineer at Salem without delay.

Irrigation information can be secured by consulting the county agent.

(Signed) ROBERT WARRENS,
Chairman.

Report of Livestock Group

I THE SITUATION

Livestock production in Washington county is a side line on most farms. The principal activities, such as grain farming and dairying, offer some opportunity for the production of sheep and hogs and a few goats to utilize brushy areas.

In 1923 Washington county carried, according to the census, 1100 beef cattle, 5500 sheep, 1700 goats and 8900 swine, according to estimates by F. L. Kent of the U. S. Department of Agriculture. This number were carried on farms as a side line.

A problem in production of hogs is the high cost of grain, making it necessary to limit production to proper utilization of waste on the farm.

There is a considerable area of land in the county which is suitable to the production of sheep. Owing to the menace to the industry from dogs and coyotes, the expansion in sheep raising in the county is not alluring until measures are taken to control this problem.

There are areas suitable for production of goats. This land is brushy and usually good farm land when cleared. It is at least suitable for pasture land for sheep.

Returns from sheep at present are satisfactory as shown by the experience of the local sheep owners. The world supply of sheep indicates that the future market will be satisfactory to the man who remains in the business permanently and who follows good, sound management practices.

The present status of the draft horse in Washington county is that there are few if any draft stallions in service. There is a shortage of good young horses at the present moment. This is due to the fact that horses are not bringing as much as the cost of production. This is true over the entire country. It is difficult to say how far the tractor will go in taking the place of the horse. However, it is a certainty that some horses will always be needed on the farms.

II. LIVESTOCK RECOMMENDATIONS

Beef Cattle.

The livestock group feels that the present conditions in the county surrounding grazing do not justify any expansion in beef cattle production except where there is sufficient outside range to insure cheap gains.

Sheep.

The committee on livestock feels that there should be many times the present number of sheep on the farms of the county. However, owing to

the heavy losses incurred from dogs, the business suffers a heavy handicap. It is recommended that this conference go on record urging a strict enforcement of the dog law in all counties of Western Oregon, as a means of securing better protection to sheep. It is further recommended that farmers familarize themselves with the provisions of the law so as to better understand their rights in this matter. Publicity should be given losses incurred by sheep owners from dogs, so as to create a public sentiment in favor of strict enforcement of this law.

We recognize the wisdom of keeping the number of sheep on the farm entirely within the feed supply and caution against overstocking.

Goats.

We recommend goats on the farm as a means of clearing up brush lands.

Hogs.

We recommend that production of hogs be based entirely on farm wastes in form of skim milk, cull fruits or vegetables and stubble fields. Raising hogs on grain alone without waste products is not encouraged. This is based on experience of local producers.

Horses.

With reference to horses, we call attention to the fact that from present indications there is likely to be a shortage of good draft horses in the county and state to do farm work. It is suggested that each farmer should therefore insure himself against such shortage by breeding such mares as necessary to keep up the supply of good draft horses for his own needs.

General.

In connection with livestock production on the farm we recommend the use of carefully selected sires.

(Signed) W. N. HATHORN,
Chairman.

Report of the Club Work Committee

We, the boys and girls club committee, respectfully submit the following report to the Washington County Agricultural conference:

I. THE SITUATION

Boys and girls club work in Oregon is under the direct supervision of the extension service of the Oregon Agricultural college, the U. S. Department of Agriculture, and the State Department of Education, co-operating.

The purpose of club work is to develop our boys and girls along vocational lines and at the same time develop their characters. Instruction in the latest approved methods is given in the livestock, homemaking and agricultural projects.

The number of boys and girls enrolled in club work in this county compares favorably with other counties working under the same conditions. Last year there were 342 members enrolled. Of this number, 211 completed their work and filed their reports with the state club leader. Thirteen clubs finished their work as 100 per cent clubs (that is every member in these clubs finished his or her work and filed all reports).

The reports of the 211 members who finished their projects show a value of all work of $5,277.95 at a cost of $4,102.59; thus leaving a profit of $1,175.36. In addition to this, about $750.00 was earned in premiums by these boys and girls at the county and state fairs and the Pacific International Livestock Exposition.

II CLUB RECOMMENDATIONS

1. As enrollment in club work has steadily increased in this county, we recommend that we set as our goal for this year a membership of 400 children and that we strive to have every club member complete his or her project.

2. Since every club must have a local leader and as the demand for local leaders is greater than the supply, we recommend that men and women should consider it a privilege and duty to be leaders of boys' and girls' clubs. We further recommend that members of this conference volunteer to be leaders in clubs in their home communities.

We also recommend that the livestock associations of the county provide local leaders for the livestock clubs.

3. Since livestock clubs in this county have been very successful in the past, we recommend that more livestock clubs be organized.

4. As this county has been successful in the raising of corn, we recommend that more corn clubs be organized and that persons who

are interested in the raising of corn volunteer to be leaders of corn clubs.

5. Since potatoes raised in this county find a ready sale and since this project has been one of the best in club work, we recommend that potato clubs be organized and that leaders interested in this work be selected.

6. Since 90 per cent of the girls who grow to womanhood become homemakers we recommend that more clubs be formed in canning, cookery, sewing and the homemaking projects.

7. Because a child's success in club work is largely due to the cooperation of the parents, we recommend that parents of boys' and girls' club members of the county encourage their children in every possible way to carry their work to a successful finish.

8. In our zeal for better livestock, more and better fruit, better potatoes, etc., do not let us lose sight of the fact that the greatest asset of this county is our boys and girls. Let us do all we can to encourage them in right thinking and in right acting. Club work we believe is a great agency in safeguarding our boys and girls and in making them useful men and women. We therefore recommend that every effort be put forth to promote the work.

(Signed)

MRS. F. W. WELDON,
CLYDE ROBERTSON,
MRS. OLIVE SCHULTZ,
MISS JENNIE MacKEY,
MRS. EMMA BRYANT.

Description of Washington County

(From Soil Survey Bulletin by U. S. Bureau of Soils and Oregon Experiment Station)

Washington county is located in the northwestern part of Oregon. It includes the valley of the Tualatin river, a part of the large basin known as the Willamette valley, lying between the Coast Range and the Cascade Mountains.

The business center of Portland is 3 miles east of the extreme eastern boundary line of the county, and the Pacific ocean is 23 miles west of its most western part. The county is irregular in outline. It covers an area of 731 square miles, or 467,840 acres.

The county occupies a large central lowland area or valley almost completely surrounded by rolling hills or low mountains. This valley, known as the Tualatin valley, lies in the central and southeastern part of the county and covers about one-fourth of its area. It is about 10 miles wide and 15 miles long with its longer axis extending in a northwest-southeast direction. The elevation of the valley is from 140 to about 275 feet above sea level. It is a broad plain sloping gently from the surrounding hills to the Tualatin river, which drains it and passes out of the county near the southeastern corner. The flood plains of this stream and its main tributaries lie from 5 to 20 feet below the general level of the main valley.

Development of Washington County Agriculture

This has been primarily an agricultural county since its earliest settlement. The first permanent settler came to what is now Washington county in 1834. During the next seven years 12 to 15 families came into the county. In 1842 to 1844, there was a large influx of settlers, who came from all parts of the United States, but mainly from the Mississippi valley. Later there were other immigrants from the same source.

Washington county was organized in 1849. In 1850 it had a population of 2,652. The census of 1920 gives it a population of 26,376. Table No. 1 shows the growth in population by census periods.

Table No. 1

POPULATION OF WASHINGTON COUNTY
(U. S. Census)

Census Year	Total		
	Per Sq. Mile	Number	Percent Increase
1850		2,652	
1860		2,801	5.6
1870		4,261	52.2
1880		7,082	66.2
1890		11,972	69.1
1900	22.3	14,467	20.8
1910	29.4	21,522	48.8
1920	36.1	26,376	22.6

In 1920 none of the cities of the county had a population of more than 2500, and therefore the population was all classed as rural.

Beginning of Agriculture

Histories of the early Oregon territory tell us that actual development of agriculture in the Willamette valley dates from about 1837, in which year a drove of cattle was brought into the valley from California. Raising of livestock predominated in the early stages of development. Production of grains, vegetables and fruits and was limited to home demands and the requirements of home markets.

Since 1850 agricultural development in this county has been very rapid. The growth in number of farms and trend in acres in farms is shown in Table No. 2 for the several census periods. Analysis of that table shows these things:

1. A steady increase in number of farms.

TABLE NO. 2

NUMBER OF FARMS, LAND AREA, ETC.
(U. S. Census)

Census Year	Number Farms	ACRES IN FARMS			% Farm Area Improved	Average Acreage per Farm	Average Improved Ac'e per Farm	Total Land Area in County (Ac)	% Total Area Improved
		Improved	Unimproved	Total					
1850	116	13,498					116.4		
1860	565	38,133	105,294	143,427	26.4	253.9	67.5		
1870	400	24,714	86,665	111,379	22.2	278.5	61.8		
1880	785	61,627	110,213	171,840	36.0	218.9	78.5		
1890	1,588	86,045	125,875	211,920	40.3	133.5	54.2		
1900	2,302	92,512	159,056	251,568	36.8	109.3	40.2	457,600	22.4
1910	2,871	107,919	132,409	240,328	44.9	83.7	37.6	467,840	23.0
1920	3,090	121,325	102,081	223,406	54.3	72.3	39,3	467,840	26.5

TABLE NO. 3

FARM PROPERTY VALUES IN WASHINGTON COUNTY
(U. S. Census)

Census Year	TOTAL FARM VALUES				AVERAGE VALUES		
	All Farm Property	Per Cent Increase	Land	Buildings	All Property	Land and Buildings	Land Alone Per Acre
1850	$ 176,780				$ 1,524		
1860	1,172,493	563.5	$1,062,910		2,075	$ 1,881	
1870	1,219,650	4.3	908,590		3,049	2,272	
1880	3,866,189	121.8	3,323,735		4,925	4,234	
1890	8,603,890	122.4	7,605,110		5,418	4,790	
1900	7,112,422	--17.3	4,993,320	989,010	3,090	2,599	$ 19.85
1910	28,816,033	305.1	23,349,581	3,060,643	10,037	9,199	97.16
1920	39,371,724	36.7	28,425,947	5,799,920	12,742	11,076	127.24

*Livestock values not included.

2. A corresponding increase in number of improved acres in farms.
3. A steady decline in the average acreage per farm.
4. A marked increase in the percent of improved acres per farm.

Farm Property Values Increase

With the exception of the period between 1890 and 1900 there has been a marked increase in the value of farm property. The census of 1920 shows that all farm property in the county was valued at $39,371,-724—an average of $12,742 for each farm. The greatest increase in farm values has come since the year 1900. Farm values by census periods are shown in Table No. 3.

It is noted that between 1900 and 1920 the average value of an acre of farm land increased almost seven times.

Analysis of U. S. census compilations reveals the story of agricultural development in this county. As has already been indicated, livestock production predominated in the early periods. As the county settled up and new markets became available the livestock was pushed back into the hills and production of cereals, vegetables, fruits and dairy products came to the front. Wheat and oats production early assumed an importance that they have held down to the present time.

Legumes Are Introduced

Clover and vetch were introduced during the late eighties and early nineties and have gradually increased in acreage. They served an evident need for putting the agriculture of the county on a sound basis. They aided in the development of the livestock industry, played an important role in keeping up the fertility of the soil, and have made the practice of summer fallow obsolete. (From Soil Survey Bulletin of Washington county.)

Vetch now occupies a prominent place among the forage crops.

Between 1880 and 1890 the production of potatoes, onions and other truck crops adapted to the muck and peat and sandy soils became of importance, the produce finding a ready market in Portland.

Potatoes are now grown on almost every farm. In some sections this is the leading cash crop.

Hops have been an important crop. The first hops were grown about 1880. Production on a large scale was undertaken between 1890 and 1900. The 1909 census shows 1675 acres in this crop, but by 1919 the acreage dwindled away to 392.

Fruit Production Develops

Commercial fruit production dates from the period of 1879 to 1889. In the latter year apples were of first importance, with 90,058 bushels;

prunes followed with 14,218 bushels. Production of peaches, pears and cherries was limited. In 1923 commercial production of fruits was given by the U. S. Department of Agriculture as follows: Prunes, 2,500,000 pounds (dried basis); apples, 17,500 bushels; pears, 4,000 bushels; cherries, 600,000 pounds.

Production of small fruits has developed slowly since 1899, when the census showed a total acreage of 62. This increased to 445 in 1919. In that year there were reported 122 acres of strawberries, 70 acres of raspberries, 207 acres of loganberries and 38 acres of blackberries.

Total value of orchard crops was given as follows by the U. S. census:

1879	$ 23,009
1899	119,926
1909	190,688
1919	996,754

Fruit now occupies a prominent place among the commercial crops of the county. Prunes are the leading fruit crop.

Dairying Comes to the Front

Active dairy development dates from about 1890. In that year the U. S. census credits the county with 6,012 dairy animals. The number increased steadily after that time, as shown by the census:

Census Year	No. Head
1890	6,012
1900	6,585
1910	12,678
1919	22,008

Creameries were gradually established until there were more than a dozen in the county. In 1902 the Carnation Milk Products company was built at Forest Grove. In 1907 the Carnation people took over the Hillsboro plant of the Oregon Condensed Milk company. Because the condenseries could pay more for butterfat the creameries were gradually forced out. The condenseries have played an important part in making dairying a permanent and leading industry. This county in 1919 had more dairy cows than any other in Oregon.

Directly and indirectly dairying has contributed much to local agricultural development. Increased soil fertility and better crop rotations that are the direct result of dairying have combined with better varieties and improved methods of farming to materially increase the average yield of crops. This is shown as follows (U. S. census figures):

Table No. 4

DAIRY DEVELOPMENT AND CROP YIELDS

(U. S. Census)

Census Year	Number Dairy Cows	Yield per Acre of Bus. Wheat	Bus. Oats	Bus. Barley	Tons Hay
1890	6,012	22.2	33.3	33.9	1.9
1900	6,585	20.5	31.0	29.3	2.1
1910	12,678	25.2	39.4	36.8	2.2
1920	22,008	28.2	43.0	33.4	3.1

Present Main Sources of Agricultural Income

The census of 1920 credits Washington county with an agricultural income of $7,038,752 for the year 1919. Of that total, 28.4 per cent was derived from cereals and 26 per cent from dairying. Table No. 5 gives the principal sources of income and per cent of the total contributed by each.

Table No. 5

INCOME FROM SALES OF FARM PRODUCTS, WASHINGTON COUNTY, FOR THE YEAR 1919

(U. S. Census)

Product	Income	Percent of Total Income
Cereals	$2,000,000	28.4
Dairy products	1,834,233	26.0
Fruits and nuts	750,000	10.7
Livestock and meats	705,000	10.0
Vegetables (incl. potatoes)	700,000	9.9
Poultry products	462,519	6.6
Hay and forage	320,000	4.6
Wool and mohair	22,000	.3
Other crops	245,000	3.5
Totals	$7,038,752	100.0

Since 1919 the total income and the distribution of that total have undoubtedly changed to a considerable degree. Income from poultry products, for instance, has materially increased. In the main, however, table four gives a perspective of agricultural income.

Total value of crops produced in 1919 and of livestock on farms in 1920 is given by the census as $10,392,932. Washington county ranked fourth in the state in this respect.

The Climate of Washington County

Mild, moist winters and dry, comparatively cool summers characterize the climate of this county. The wet season extends from the middle of October to the early part of May. During this period 95 per cent of the annual precipitation is received. July and August are very dry months.

Table No. 6 shows the average rainfall at Forest Grove for the 31 year period 1890-1922.

Table No. 6

PRECIPITATION AT FOREST GROVE

Monthly and Annual Averages—1890-1922

(U. S. D. A. Weather Bureau)

Months	Inches
January	7.53
February	6.35
March	4.88
April	2.95
May	2.03
June	1.28
July	.47
August	.53
September	1.93
October	3.34
November	8.38
December	8.35
Annual	48.02

RANGE IN PRECIPITATION

Highest—	
Inches	65.88
Date	1904
Lowest—	
Inches	35.22
Date	1892

* Records for 1914-1915 not available.

The amount of snowfall is variable. Generally it does not exceed a few inches. Snow never stays on the ground more than a few days at a time. Due to lack of snow covering fall sown grains and clover are sometimes damaged by freezing weather.

Temperature records at Forest Grove for the period 1890-1922 show a yearly mean temperature of 51.2 dergees Fahrenheit. The highest temperature on record is 103 degrees. The lowest is —15 degrees (December 12, 1919). Extremely high or very low temperatures are of rare occurence.

Following are pertinent temperature observations at the Forest Grove station during the period 1890-1922 (records for 1912 to 1915 not available):

Average length of growing season—164 days.
Shortest growing season (1919)—121 days.
Longest growing season (1900)—207 days.
Average date of last killing frosts in the spring—May 5.
Average date of first killing frost in the fall—October 16.
Latest killing frost on record—May 25.
Earliest killing frost on record—September. 1.