

Report of the

YAMHILL COUNTY AGRICULTURAL OUTLOOK CONFERENCE

Conducted In
McMINNVILLE, OREGON
JANUARY 24 AND 25
1936

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REX WARREN—General Secretary

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Alex Cruickshank	E. E. Jackson	Clyde W. Smith

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F. C. Gunther	George Fuller	E. F. Jernstedt

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Oliver H. Schrepel	George W. Sharp	

SMALL FRUITS AND VEGETABLES

Rush A. Miller	Dale L. Fowler	William F. Schaad
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NUTS

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R. A. Merchant	A. E. Wright	

SOILS AND IRRIGATION

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John H. Bernards	Guy H. Fendall	Fred W. Schreiber
F. C. Jernstedt		

DAIRYING

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C. E. Terry	Vernal E. Forrest	

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H. T. Jernstedt	J. A. McFarlane	

POULTRY

Mrs. John Eborall	H. S. McIntyre	
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TURKEYS

Harry F. Williams	T. Derr	Stephen Adelman
V. C. DeLashmutt	C. B. Wilson	Roy Marshall
Clair J. Reid		

PUBLICITY

J. M. Davenport	Ernest Moe	Gordon Sitton
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DINNER COMMITTEE

Mrs. Herman Bernard	Mrs. E. Von Forrell	Mrs. Tom Grenfell
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FOREWORD

The publication of these recommendations of the committees at the Agricultural Outlook Conference for Yamhill County is made possible by the splendid cooperation of the Yamhill County Court, and the Yamhill County Bankers' Association. These groups sensed the importance of agriculture and the value such a report will have to farmers in this community. It is their desire that every farmer in this county receive a copy of this bulletin and that this be filed as a future reference concerning agricultural conditions and recommendations for this section.

This report is compiled by committee meetings of leading farmers in different agricultural lines in this county. All groups met twice prior to the general meetings at which times subcommittees were appointed to gather data in order that this report would be of utmost value.

REX WARREN, County Agent.

REPORT OF THE COMMITTEE ON AGRICULTURAL ECONOMICS

The economical outlook of Yamhill county agriculture has been considered through four important approaches having a vital bearing upon the county's program. These are: 1. Land Utilization. 2. Farm credit. 3. Farm accounts. 4. Marketing and demand.

Proper Utilization of Land Important.

Yamhill county has some farms that are believed to be sub-marginal and not capable of returning a living to the average operator. Some of these sub-marginal farms are located in isolated areas where school and road costs must be subsidized by the other taxpayers of the county. It is believed that a desirable land program for Yamhill county involves a classification of the land area to determine which lands are suitable for agricultural development. Following such a classification it is believed that counties should be given authority to zone their lands and thereby prevent further agricultural settlement in sub-marginal agricultural areas.

Land now in public ownership, including county owned, state and federal lands, should not be sold or homesteaded for farm purposes until it has been classified by competent agricultural authorities and certified as suitable for development into economic farm units.

About half the present farms in Yamhill county are so small that their operators must work off the farm part of the year in order to obtain a living income. Many of the farms were secured by workers employed in towns and cities for the purpose of supplementing their earnings from labor. It is believed that part-time farming tends to lower wage rates and injure farm markets. Workers who wish to live in the country should confine their land holdings to the rural residence or subsistence type of farm and not attempt to produce for sale. Moreover until industrial employment increases materially in Yamhill county it is believed that additional subsistence farm homes should not be developed.

Yamhill county has witnessed the inauguration and passing of many orchard subdivision schemes. Practically all such programs, even though conceived with good intentions, have caused investors the loss of large sums, and have done much damage. Development of small orchard subdivisions is deplored and all responsible individuals and agencies in the county such as the chambers of commerce, the county court, cooperative associations, farmers and other business men are urged to warn purchasers of the danger from investing in these proposals.

There appears to be an opportunity for a moderate amount of further settlement in Yamhill county by:

Clearing up the better valley floorlands now in timber or stumps.

Acquiring good valley floor farms that the present owners cannot operate and therefore desire to sell.

The use of supplemental irrigation in some areas.

It is believed that new settlers should be encouraged to select such locations if they desire to settle in Yamhill county. Shallow hill soils and poor quality valley soils such as Whiteland are suitable chiefly for pasture and as a rule are good for farm units only when acquired in large tracts and used for livestock production.

There are 18 distinct series of soils in Yamhill county and many

of these series contain several types or textures. Often several kinds of soil will be found on the same farm, and are so different in character that different methods may be required in cropping these soils if the best production is to be obtained. Because of these variable soil conditions newcomers in Yamhill county who desire to buy a farm either should rent or work in the county for at least one year before investing their money.

It is believed that a full time farm in Yamhill county should, with moderate prices, produce a minimum of \$1500 gross income per year. Newcomers purchasing a farm should consult with the county agricultural agent, cooperative associations, and leading farmers about the productive capacity of any farm they intend to purchase.

It is detrimental to Yamhill county agriculture for purchasers to buy farms which they cannot pay for and subsequently lose by foreclosure. It is the opinion of farmers that in most instances a farmer should have stock, equipment, cash for one year's operating expense and 50 per cent of the purchase price before attempting to become a farm owner.

Fertile soil is basic to a prosperous agriculture. The committee believes that many farmers of Yamhill county are not at present maintaining the fertility of their lands. To improve this condition Yamhill county farmers are urged to consider carefully the possibilities of: (1) Increasing the number of livestock on grain farms so that most of the crop can be fed on the farm. (2) Plowing under all crop residues instead of burning the stubble and straw as is now practiced on many farms. (3) Wherever possible using a cover crop on all lands that are used for spring crops.

It is recognized that in some instances heavy interest and principal payments on the farm mortgage virtually require the production of crops for sale and are a hindrance to a fertility conservation program. Lending agencies are urged to recognize the need for such programs and to cooperate with the farmer by deferring or adjusting payments so that desirable changes in farming practice can be effected.

Farmers Urged to Liquidate

The best information available indicates that farm prices in general are likely to increase somewhat during 1936. It is recommended that farmers who are in debt take advantage of this situation and use their profits toward reducing their debt obligations. It is recognized that in some instances farmers may find it to their advantage to buy new machinery or other equipment in order to continue to operate efficiently, but it is believed that such purchases should as a rule be held to the minimum.

Many of the present farm mortgages are now written for terms of five years or less, thereby, in most instances, forcing periodic renewals. These renewals are often a source of expense, and are potentially dangerous because the lender may, if he chooses, foreclose instead of renewing.

It is believed to be to the advantage of the farmer to place all mortgage indebtedness on an amortizing basis, based on the average annual productive capacity of the farm to pay.

Farmers should be encouraged to get out of debt as rapidly as possible. It is believed that a new method of mortgage repayment based on a set percentage of the annual income of the farm would encourage farmers to get out of debt during prosperous times and is therefore worthy of the most serious attention from mortgage lending agencies. It is also believed that such a method of payment would

encourage better farm accounts.

Installment buying by farmers is a practice that leads to excessive debt at high interest charges, and it is suggested that farmers consider carefully the need for, and ability to pay for goods that can be acquired in this manner.

The present farm mortgage debt load and interest rates generally are beyond the ability of farmers to pay and the federal government is urged to offer mortgage financing to farmers at an interest rate of $1\frac{1}{2}$ per cent.

Farm Accounts Barometer of Business.

A well kept set of farm records is conducive to better and more prosperous farming in Yamhill county and it is recommended that the farmers of the county cooperate with the Oregon Agricultural Extension Service to provide adding machines and consultant service so that farm accounting will be encouraged and expanded.

Poorly kept or incomplete accounts are of little value, daily entries in the account book being essential, and it is suggested that the account keeping be adopted as a daily chore.

Production Control Advantageous.

It is believed that the results obtained from production control through the former AAA programs indicate that this is an effective way of securing better agricultural prices. It is recommended, therefore, that production control be reestablished and expanded to include most of the major agricultural commodities produced.

There is considerable confusion in agricultural markets due to the use of conflicting grades by different sections of the country. It is believed that farm products will be in better demand if a more definite delineation and uniform usage of produce grades can be developed.

Many specialized agricultural products produced in Yamhill county are produced under contract with dealers and processors. In the past many of these contracts have been loosely drawn and violated by both parties. It is believed that more stable prices will result if contracts are made definitely binding.

FARM CROPS

Before the World war and up until 1930 importing countries, mostly in Europe, imported from 600,000,000 to 900,000,000 bushels of wheat per year. These countries have hedged themselves with high tariffs on wheat, import restrictions, milling regulations, until now they will buy only about 500,000,000 bushels.

For some years before the war Oregon farmers received on an average of 80 cents per bushel for wheat, 1920 to 1930 \$1.10 per bushel, and 1930 to 1935 the average 58 cents per bushel. It is likely that the price paid Yamhill farmers has been about 10 cents higher than these figures.

The census shows that the wheat acreage in Yamhill county increased from 14,000 in 1909 to 32,000 in 1919 and was reduced to 14,700 acres in 1934.

About 100,000 bushels of the 360,000 bushels now produced are shipped from the county and the balance is used for local feed and seed.

It is estimated that the varieties are distributed in the county as follows: White Holland, 65 per cent; Rink, 20 per cent; White Winter, 5 per cent; and miscellaneous varieties, 10 per cent. The miscellaneous includes Federation, Defiance, Zimmerman, Jenkins, Hood, various club wheats, Marquis, and Kinney.

It is estimated that the cost of production is about \$15 per acre divided as follows:

	Cost per acre
Interest on land at 4 per cent -----	\$ 3.20
(Valuation \$80.00)	
Taxes -----	1.50
General farm overhead -----	2.00
Plowing -----	2.00
Harrowing twice -----	.50
Drilling -----	.50
Combining -----	2.50
Seed -----	1.35
Sacks -----	.90
Trucking -----	.55
Total -----	\$15.00

(It is realized that there is no absolute and actual cost of production, since this cost differs on every farm. The cost is mentioned only so farmers may compare these costs with their own and also so comparison may be made with costs of producing other crops).

Average Yields per Acre of Wheat, Barley, Oats and Corn

Grain	Bushels per acre	Pounds per acre
Wheat	23.9	1434
Barley	24.2	1151
Oats	29.4	940
Corn	29	1624

About one-third of the wheat is shipped from the county, and these

shipments determine the price for nearly all the wheat. In certain seasons there is a premium for good, pure, soft white wheats that are preferred for pastry flour. White Holland, Rink, Zimmerman, and White Winter are suitable for this trade.

Four or five growers in the county could become interested in seed production, roguing their fields, and establish a business of producing certified seed wheat for sale to other farmers.

With winter wheat the highest yielding grain except corn, the majority of the grain produced in the county being used for feed, no further reduction in the winter wheat acreage is recommended.

Wheat that may go into milling channels should not be grown on land that may have volunteer hairy vetch growing on it.

Average yields and average prices indicate that wheat yielding less than 30 bushels per acre will not return sufficient profit. Wheat is best grown in rotation with legumes, especially alfalfa or clover.

The Ceresan method is the best and cheapest seed treatment for smut.

OATS AND BARLEY

The 1934 census showed 24,318 acres of oats and 3,410 acres of barley. Since the census the oat acreage has declined and the barley acreage increased slightly.

About half of the oat crop is shipped out of the county, but most of the barley is fed locally. About 400 tons of oats go east for use on the Atlantic seaboard for seed and formerly Portland bought oats for milling.

The advantages of barley are:

It out-yields oats in pounds per acre on good land.

It can be seeded later in the spring.

It is a better grain for use with oat hay or vetch and oat hay.

It can be substituted for corn which is higher priced.

It is a better crop as a spring seeded nurse crop for clover.

The disadvantages of barley are:

It does not do well on wet land.

It is not suitable for winter seeding or very early spring seeding.

It is difficult to harvest without shattering.

It volunteers badly in the succeeding fall sown wheat crop.

For the past five years the average price of oats and barley has been almost identical, each about \$20 per ton.

Approximately 40 per cent of the oat acreage is gray winter oats and 60 per cent spring oats. The spring oats are divided between Victory, Kanota, Shadeland Climax, and others.

The barley acreage is almost entirely Hannchen.

Barley Could Replace Oats.

In sections of the county where all of the crop is used for feed, some of the oat acreage could profitably give way to barley.

The greatest obstacle in shipping oats out of the county is mixture of varieties. An attempt should be made to secure four or five growers in the county who will specialize on the production of pure seed of Gray Winter, Victory, and Kanota oats and Hannchen and Winter barley.

Growers intending to sell barley for malting purposes should thresh barley in a special manner, the following steps being necessary:

Harvest when all parts of the field are fully mature.

Slow down cylinder speed.

Feed grain regularly.

Take end play out of cylinder.

Have the grain augur adjusted so that barley will not be crushed by the augur and housing.

Leave small amounts of beards on kernels.

Ceresan is superior to any of the old treatments for the control of both oats and barley smut.

Seed Flax Acreage Expands Slowly.

Portland prices are always on an import basis with seed flax due to its importation from Argentina and from the Midwest areas, whereas grain prices usually are on an export basis. Flax grinding firms in Portland import half a million pounds of flax per year. Flax yields fairly well on the better soils where it can be planted early.

A flax seed crop has never been popular in Yamhill county, due mostly to late planting, seeding on weedy or unadapted soils, and due to unfamiliarity with the crop. Some increase in the seed flax acreage is believed advisable.

Oregon Corn Imports Heavy.

Approximately 2,000,000 bushels of corn are shipped into Oregon and Washington yearly, half from Argentina and half from the Midwest. The corn coming from Argentina pays a tariff of 25 cents a bushel and that from the Midwest pays a freight rate much higher.

The average yield in Yamhill county is about 29 bushels per acre, exceeding in pounds per acre the average of any other grain. It is probable that it is grown on better land than the average of other grains, however. The price for corn in the fall months usually is from \$5 to \$8 per ton higher than the price of either oats or barley.

Corn has been dried in Yamhill county in large quantities for \$3 to \$4 per ton. Farmers who do not have driers handle corn in one of the following ways:

They pick it and store it in narrow cribs with slatted sides.

They leave it standing in fields and haul it in a little at a time as it is required for feed.

They hog or sheep it off during the late fall.

They pile it on barn or shed floors and turn it by shoveling frequently. This method is extremely unsatisfactory.

Corn frequently is a more profitable crop than oats or barley, but there is no use to recommend an increase in acreage unless drying facilities are provided. It is probable that either small home driers or larger commercial driers would prove more profitable.

On small farms where all of the grain is raised for feed, growers can avoid the following cash expenses by growing corn: Ownership or hiring of a grain drill, ownership or hiring of a binder, the cash expense of threshing or combining.

It is recommended that only home grown seed be used, recommended varieties being Minnesota 13, Putnam's Yellow Dent, Golden Glow, and McKay. The latter two varieties are recommended for silage, the former for grain.

Vetch and Oat Hay Leads in Yamhill County.

According to the 1934 census the county produced in that year hay as shown in the following table:

Yamhill County Hay Acreage for 1934

Kind of Hay	Acres	Yield per acre, tons
Alfalfa	3,505	2.78
Red clover	9,068	1.96
Oat hay	6,725	1.3
Wild hay, rye grass, etc.	2,376	1.26
Vetch and oats	13,590	1.95

In 1934 hay was shipped from this county to the Midwest because of the drouth, but normally most of the hay is used at home. It is likely that less than 10 percent of the total production leaves the county, that ordinarily going to Tillamook.

Using the same land valuations and taxes as in figuring the cost of grain production, vetch and oat hay averaged a cost of \$13.85 per acre compared with \$15 per acre for grain. Clover and alfalfa have higher costs per acre, but in the case of clover either pasture or seed usually is secured in addition to the hay crop and in the case of alfalfa either pasture is secured or the yield per acre is higher. The cost of alfalfa per ton averages about \$1.00 less than the cost of vetch and oats per ton due to higher yields. The figures above do not include the cost of baling.

Alfalfa should supplant additional amounts of vetch hay and oat hay because considerably more than 10 per cent of the entire hay acreage should be in alfalfa, due to the following advantages over other hay:

It yields more.

The cost per ton is less.

It furnishes pasture in the late summer when it is most needed.

The feeding value per ton is higher.

It is somewhat permanent and releases the owner from annual land preparation so that he can get to his other farming operations in better season.

The yield per acre of succeeding crops usually is at least doubled.

Pasture Lands Are Important.

In 1934 one fourth of the farms reported plowable pasture with a total of 10,500 acres. Additional areas of woodland and unplowable hill land were of course used for pasture. One of the greatest needs on dairy farms is for green pasture during July, August and September, irrigation being the only secure method for creating a permanent and profitable pasture schedule.

The Willamette valley strain of sweet clover in its second year will yield nearly as much pasture during the dry months as an irrigated pasture.

Alfalfa is one of the best of the pasture crops as far as yield per acre is concerned. But unless handled correctly it dies out under heavy pasturing. If used throughout the season for a pasture the field should be divided and each part allowed to come into full bloom once during the season and a hay crop taken from it. In this way alfalfa pasture may be kept growing several years.

Not all land in the county will grow sweet clover or alfalfa unless limed very heavily, drained, or both. On these farms Sudan grass

will give the most green feed in July, August and September.

Permanent pastures for lowlands are best if seeded to Bent grass, Reed Canary, Alsike clover, or Meadow Foxtail. For upland pastures, orchard grass, tall oat, chewing fescue, English rye grass, Highland bent, and white clover are recommended.

Winter grains—either rye or wheat—seeded in the spring make good late pasture. For early spring pasture, fall seeded winter barley or fall seeded crimson clover are best. For very acid or thin hill lands hairy vetch is good. Rape is inexpensive to seed and makes much late summer pasture, particularly for sheep.

Seed Crops Important Industry.

During the past five years average seed imports by the United States have been as follows:

Crimson clover -----	1,600,000 pounds
Winter rape -----	5,400,000 pounds
English rye grass -----	580,000 pounds
Hairy vetch -----	200,000 pounds
White clover -----	1,100,000 pounds
Chewing fescue -----	960,000 pounds
Rough stalked meadow grass -----	400,000 pounds

Most grasses and clovers have a per acre production cost less than that of grain or hay. This is true of all ordinary perennial seed crops such as: English rye grass, orchard grass, tall oat, chewing fescue, and white clover. The cost of hairy vetch and Austrian winter peas is higher per acre than the grain crops due to harvesting and cleaning costs.

Seed crops from Oregon are of higher quality and appearance and in most cases the yield is greater here, due to the cooler summers. Eastern and Midwestern grown seed is likely to be shriveled due to hot weather at filling time. Usually it is discolored due to rains preceding or during harvesting.

Red Clover—Those growing clover seed should continue to produce Tennessee Anthracnose Resistant clover due to a better chance for a favorable market.

Hairy Vetch—The acreage of hairy vetch is expanding rapidly until in the fall of 1935 about 8000 acres were seeded. There is no need for further increase in the acreage of this crop until it is seen whether the South can use an increased production, the South being the market for this crop. Growers are urged to watch the price of cotton and in those years when news reports indicate very low cotton prices they should go slow on planting hairy vetch for seed production.

Austrian Winter Peas—This is a companion crop to hairy vetch and the same recommendations apply.

Hungarian Vetch—The market for Hungarian vetch is expanding and those producing this crop for seed should make an attempt to get pure seed. Increased seed production would aid shipments from Yamhill county.

Grasses—The acreage of English rye grass, chewing fescue, tall oat, and orchard grass could be increased to advantage.

Crimson Clover—Is an important crop that will produce 500 to 1000 pounds per acre in Yamhill county. The price is likely to be from 4 to 5 cents per pound. It should be grown only on the large farms as a crop that will compete in returns with wheat, oats, and barley. An exceptionally good place for seeding is in corn stubble

after the corn has been cut for silage.

Vegetable Seeds—Marion county is producing considerable quantities of vegetable seeds. These crops adapt themselves to small farms since the returns per acre and labor requirements are high. These crops offer possibilities for smaller farms that have good land.

Potato Production Small.

Yamhill county never has been a large potato producing county and doubtless never will be. About 1000 acres are grown annually and these scarcely meet local demand although in some seasons the county exports potatoes, shipping about ten cars per year.

Potatoes should be planted chiefly for home use except on some of the better river bottom soils and in locations permitting early planting for the summer market. The July, August, and September market in the Willamette valley ordinarily is 25 to 50 cents per hundred pounds better than the late market.

Katahdin potatoes are recommended for home use particularly on the soils inclined to be heavy. This variety will not make second growth whereas such varieties as Burbanks and Netted Gems are likely to produce knobs, jelly ends, and a low quality of potatoes.

TREE FRUITS

Yamhill packers, growers, and canners should take concerted action before the Interstate Commerce Commission in an effort to secure railroad tariffs permitting shipment of mixed cars of canned, dried, frozen and barreled fruits at their respective minimum car-load rates to Midwest and Southern markets.

Restoration of the weekly prune market information service to Oregon prune growers was asked by the Yamhill Outlook Conference. Oregon Agricultural Experiment station officials were asked to contact the bureau of agricultural economics concerning these services.

Deep Soil Needed For Tree.

The soil for fruits and nut trees should be 8 to 10 feet deep and well drained. Trees will grow, and sometimes yield profitably, in soils of less depth, but on shallow soils, especially those underlaid with rock, hardpan, and high water tables, the growers will be faced with production difficulties early in the life of the orchard. These troubles are more pronounced during dry seasons.

Orchard soils need annual additions to the humus supply to assist with the maintenance of soil fertility, and also as an important aid in preventing soil erosion. A cover crop is not a luxury but a necessity in keeping up the per acre production and for growing quality products.

Suggestions for soil maintenance in the orchard are as follows:

1. Planting of cover crops annually is the most important single item in fertility.
2. Stable manure, 10 or 12 tons spread over the orchard annually.
3. Clover straw, 2½ to 3 tons per acre annually, or alfalfa hay refuse.
4. Straw, 2½ to 3 tons annually, supplemented by addition of 100 to 150 pounds of nitrogen fertilizer.
5. Nitrogen fertilizers applied in late winter often greatly increase the cover crop yields.

Vetch and barley lead as an orchard cover crop. Amounts of seeding vary, but 30 to 60 pounds of vetch and 60 to 100 pounds of barley are recommended. Seeding is done early in the fall.

Other cover crops are: vetch, 60 to 80 pounds per acre; rye for thin soils, 75 to 100 pounds per acre; winter barley, 60 to 80 pounds; crimson clover, 12 to 15 pounds. Mixed grains and vetches may be used but avoid noxious weeds.

All cover crops should be turned under in early spring. Moisture should never be sacrificed for plant growth and the first cultivation should precede the blossoming time whenever possible.

Before planting a new orchard obtain advice from canneries or other marketing agencies rather than from nurserymen.

Prunes Decrease in Yamhill.

The prune acreage in Yamhill county, according to the United States census was 7,632 acres in 1919 and estimated at 6,631 acres in 1935. Prunes and plums for the state of Oregon are listed as 43,311 acres in 1919 and 54,825 acres in 1933.

Production of dried prunes in the three Pacific Coast states reached a total of 280,090 tons in 1935. During the same year production of the tart sweet Italian prune which is confined to the northwest reached

a total of approximately 37,090 tons, and in addition approximately 1,200,000 cases of Italian prunes were canned.

European trade barriers have closed the outlet for about 50 per cent of the Northwest output of dried prunes and the surplus resulting has been increased this year by a heavy dried prune crop in California. Although the peak of production apparently has been passed in the Northwest, there is little indication of material improvement in the prices of dried prunes under existing conditions.

Growth of World Dried Prune Production Since 1899 *

Year	California	Northwest	U. S. Total	World Total
	tons	tons	tons	tons
1899	57,114	1,500	58,614	113,614
1909	75,000	22,250	97,250	158,950
1919	135,000	16,600	151,600	
1920	97,500	16,950	114,450	181,350
1925	146,000	11,900	157,900	207,900
1930	261,000	21,250	282,250	310,714
1934	170,000	32,200	202,200	238,699
1935		37,090	280,090	

* Giannini Foundation.

Dried Prune exports for 1934 were 31,171 tons less than the average for the five-year period 1928-1932:

United States average, 1928-1932 ----- 116,797 tons
 United States exports for 1934 ----- 85,626 tons

The pack of the Western canned prune has increased from 459,591 cases to more than 1,000,000 cases in 1935. This continued annual increase of the canned prune pack may be one solution for the marketing of Italian prunes, but growers and packers must take more interest in the quality of prunes going into the canned packs.

The Western canned prune pack since 1927:

1927 -----	459,591 cases	1932 -----	506,880 cases
1928 -----	715,749 cases	1933 -----	794,024 cases
1929 -----	960,392 cases	1934 -----	846,000 cases
1930 -----	719,960 cases	1935 -----	*1,200,000 cases
1931 -----	759,271 cases		* Estimated

High Production Necessary.

Under existing and probable future market conditions cultivation and care of prune orchards that are not capable of producing an average yield of around 2000 pounds of dried prunes per acre or sizes larger than 50 to the pound is decidedly questionable.

New planting is discouraged and growers who wish to plant under present conditions must realize that the most severe competition in marketing prunes on an over-supplied market must be faced.

In many instances growers may find it desirable to remove part of the trees in orchards where trees are spaced less than 24 feet apart, thus improving conditions for the production of larger size prunes.

Greater care should be exercised in harvesting. The prunes should be picked at the proper stage of maturity and every effort made to

keep out rotten, ill shaped, or damaged fruit.

Proper handling in the drier is doubly essential. As one means of increasing quality, charges for drying could be made on the green ton basis instead of on the dried ton basis. Adoption of a reasonable standard of perfection that will be recognized and adhered to by growers and drier operators is imperative before there can be any hope of expansion of domestic markets against competitive commodities which have been rigidly standardized.

Careful grading by growers of prunes for canning is equally essential. Continued indifference to those points is largely responsible for the relatively poor position of Oregon prunes in the domestic markets today. Growers must take the initiative in correcting the situation.

Recommendations for marketing are:

Favorable consideration of a plan to bring growers together for a state marketing organization for collective bargaining.

This body favors further study of classifying dried prunes according to quality and elimination of some of the present grades.

Requesting the Northwest Dried Fruit Association to adopt the same inspection of rail and truck shipments as is now in force on water shipments.

Oregon adopt a standard brand for marketing and advertising canned prunes with the compulsory assessment of a set amount per ton to be deducted from the receipts of the grower by the canner or buyer in accordance with the plan proposed by Mr. Kenneth Miller on January 24, 1936.

New legislation prohibiting open-end contracts and consignment of prunes.

Oregon dried prunes smaller than 70 to the pound should be declared sub-standard prunes.

Cherry Production Light.

The income from cherries for Oregon amounts to 6 per cent to 10 per cent of the state income for all fruit production. Oregon produces approximately 10,000 tons annually, 40 per cent of the state production being Royal Annes. The 1935 cherry production for Oregon, Washington, and the United States: *

	Oregon	Washington	United States
	tons	tons	tons
1933	15,000	16,330	117,454
1934	11,000	12,500	113,886
1935	12,000	10,400	117,430

* Bureau of Agricultural Economics, Portland.

Sour Cherries—Oregon plantings of sour cherries are insignificant, being .68 per cent of the United States total. Less than 1 per cent of all cherry trees in Yamhill county are sour varieties. Oregon has had a reduction of 22 per cent of sour cherry trees of all ages from 1920 to 1930 and conditions do not justify any new planting of sour cherries.

Sweet Cherries—A 1934 fruit survey in Yamhill county shows 62,023 cherry trees, 99.2 per cent of this number being sweet cherries; 58 per cent of all sweet cherries are Royal Annes, and 42 per cent other sweet varieties. The following table shows the importance of sweet cherries according to variety in both Yamhill county and the United States:

**Relative importance of Sweet Cherries in Yamhill County
and the United States**

	Yamhill	United States
	Per cent	Per cent
Royal Annes -----	58	42
Bings -----	28	15
Lamberts -----	7	26
Others -----	7	17

It is estimated that in 1930 Oregon had approximately 5,000 acres of bearing cherry trees and 2,500 acres that were coming into bearing, California approximately 13,260 acres of bearing trees and 5,647 acres coming into bearing, and Washington 5,000 acres of bearing trees and approximately 2,000 acres coming into bearing.

The 1920 and 1930 United States census figures show Yamhill county fifth in number of cherry trees, being excelled by Polk, Marion, Wasco, and Lane counties.

Cherry trees in Polk, Marion, Wasco, Lane and Yamhill Counties:

	1920	1930	Increase
	trees	trees	Per cent
Polk -----	66,282	108,850	64
Marion -----	59,745	171,235	187
Wasco -----	57,251	102,630	79
Lane -----	55,667	79,873	43
Yamhill -----	35,427	66,290	87
Total of all counties	463,560	804,884	74

Sweet cherries are brined, barrelled, canned, and shipped fresh. The following table shows disposition of Northwest and California cherries for 1934:

	Northwest	California
Brine -----	25,000 barrels	31,800 barrels
Barrel -----	56,000 barrels	40,000 barrels
	West	East
Canned -----	996,449 cases	1,557,443 cases
Fresh Shipments -----	968 tons	827 tons
Canned, 1933 -----	8,756 tons	6,542 tons

The imports of cherries in all forms has greatly declined since the cherry tariff revision of 1930. This revision has changed the imports from 23,263,267 pounds in 1930 to 1,865,856 pounds in 1934.

Present Cherry Acreage Sufficient.

The number of cherry trees now in orchards in the 12 states of most importance in the production of commercial cherries is sufficient to at least maintain the present level of production during the next five years, and possibly sufficient to cause a continuation of the upward trend of production that has been evidenced during the last six years.

Tariffs must not be reduced from the present rates if the Northwest cherry industry is to continue in the future.

Recommended cherry sprays are: a dormant clean-up spray, wettable sulphur for the control of leaf spot, and fly spray.

In recent years returns have been low, and abandonment of acreage may be expected to increase if prices to the growers do not improve materially.

Improvement of quality of all varieties through better production and harvesting methods is urged. The excessive percentage of off-grade cherries delivered to processing plants is a serious handicap to the industry.

No cherries should be permitted to be shipped out of the state from infested areas unless adequately sprayed for the cherry maggot and state inspected before shipping. In cases where maggot infested cherries are transported to processing and packing plants in orchard or field lugs, state laws prohibiting transportation of insect infested fruit should be rigidly enforced.

Syneta beetle causes much damage to unprotected cherry orchards and renders fruit unsalable, or lowers the grade to a point where it must compete with all other low grade cherries of the country. Growers have demonstrated that the 30-70 lead-arsenate lime dust will effectively control this destructive insect.

300 Acres of Pears In Bearing.

The 1934 fruit census shows approximately 325 acres of pears in Yamhill county, 300 acres being in bearing. Eighty-six acres are under eight years of age, indicating 26 per cent not yet in heaviest production. A larger portion of these young trees are Japanese root stock which is not suitable for this section, and Japanese root trees less than three years old should be pulled if French stock can be secured for replacement. New trees should be secured from reliable nursermen using French root stock. The Bartlett is the recommended variety.

Prune to prevent growth of more than 18 or 20 feet, increased height adding to the cost of harvesting and spraying.

Spray notices issued by the Oregon State College and available from the county agent's office should be carefully followed. New sprays should not be used extensively before being tried under accurate tests.

Pears produced in Yamhill county and the Willamette valley cannot compete successfully with already established pear producing sections. The greatest use is for local markets and canning. At this time the canning market does not justify any extended plantings.

Any desired increase in production can be obtained readily by better care of existing orchards. Maturity testing equipment should be obtained by the county agent and these tests made available to growers.

500 Acres of Peaches in Yamhill

Yamhill county has approximately 600 acres of peaches, 500 of which are now in bearing.

The most preferred varieties at the present time are: Elberta, Charlotte, Crawford, and Improved Crawford. They are late varieties, heavy yielders, and good canners.

The Rochester is a satisfactory early variety. There is a limited sale for early varieties other than from roadside markets, the sales being largely for fresh consumption.

Two Bordeaux sprays are essential for peach production, the first a 4-4-50, after picking and before fall rains begin for the control of California peach blight; and the second a 6-6-50 Bordeaux for the control of curl leaf, applied late in November and early December.

Brown rot of the fruit is controlled by dusting with a fine grade dusting sulphur one month before picking and any time before or after when brown rot appears.

Insect control is accomplished in the following manner:

Twig Miner, San Jose Scale, and Red Spider—Dormant spray, 12-100 lime sulphur with a test of 32 degrees Baume. The dormant spray should be applied before the first buds appear.

Peach Root Borer—Paradichlorobenzene treatment, $\frac{1}{2}$ to 1 ounce per tree from August 25 to September 25 depending on the season. The entire orchard should be treated at definite periods.

One of the greatest improvements in marketing would be the stressing of standard packs and labels. Too many peach growers jumble-pack peaches, not grading as to size and quality.

Educational meetings should be held to demonstrate the correct method of grading and packing.

Canneries should be encouraged to provide outlets for surplus peaches, thus preventing a depressing influence on the market. Only peaches of standard packs should be delivered to any local store for sale.

There are about 600 acres of peaches, 500 acres being in bearing. New plantings of peaches should be made only on well-drained soil and in sufficiently large plantings to make it possible to maintain a spray program and specialized marketing.

Apple Acreage Decreases.

During the inflation period boom of 1908 there was a great expansion of apple plantings. Many of the plantings were made on poor land and were removed a few years later because of poor locations, and market conditions. The following table shows the reduction of apple trees in the United States that occurred during 1911-1915, 1919-1930, and 1930-1934. The total reduction of 120,000,000 bushels accounts for 50 per cent of the acreage.

Reduction of Apple Orchards in United States

Period	Trees pulled out	Bushels production
1911-15	79,100,000	216,000,000
1919-30	21,700,000	165,000,000
1930-34	20,000,000	152,000,000
Total	120,800,000	

Yamhill county, according to an SERA fruit survey conducted in 1934, will have approximately 1333 acres, 12 per cent in plantings smaller than one acre.

Common varieties are Rome Beauty, Newtowns, Spitzenburg, Delicious, Gravensteins, Jonathans, and Winesaps.

No new plantings but better care of existing orchards is suggested for the future. Trees not producing about 250 packed boxes to the acre when given proper care should be removed and the land used for other purposes.

Recommended varieties for replacement plantings are: Red Delicious, Jonathan, Romes, Gravensteins, Ortleys, Winesaps, and Spitzenburg. In general few deep-colored varieties should be grown and replacement plantings made only on well-drained and frost-hazard-free areas.

Spray recommendations sent out by the State College should be followed carefully and in no case should the anthracnose spray be omitted.

Under no condition should apples be consigned. When this happens the consigner usually receives very small returns for the product and there is an all-around harmful price cutting influence upon the industry.

For roadside and store markets the products should be faced and filled. Apples for export should be wrapped and packed. Prospective owners should develop their own local markets either through roadside stands or local stores before purchasing orchards.

Canneries should be encouraged and additional markets secured and action taken to protect the Oregon grower from the competition of low-grade apples and other fruits from out-of-state points.

SMALL FRUITS AND VEGETABLES

Soils for high production of small fruits should be deep, well-drained, fertile, and have ample moisture holding capacity for there is no satisfactory method of building up a depleted or worn out soil after small fruits have been planted.

Cover crops should be grown and plowed under previous to planting small fruits. This adds to the humus supply, the available plant food supply, and increases the moisture holding capacity of the soil.

Commercial fertilizers and barnyard manure frequently can be used advantageously in growing a heavy cover crop.

A special berry survey in 1935 credited Yamhill county with approximately 900 acres of berries. The county has approximately 430 acres of strawberries. The following table shows that the Oregon strawberry acreage was 10,500 in 1935 as compared to 5,930 acres in 1925 and that there was an increase of 7,640 acres of strawberries in 10 years in Oregon and Washington.

Oregon and Washington Strawberry Acreage 1925-1935

	Washington	Oregon	Total Northwest
	acres	acres	acres
1925	5,430	5,930	11,360
1926	6,090	7,320	13,410
1927	7,670	8,400	16,070
1928	8,900	10,000	18,980
1929	7,900	10,500	18,400
1930	7,500	9,450	16,950
1931	7,880	9,930	17,810
1932	8,980	12,120	21,100
1933	7,200	6,189	13,380
1934	7,500	8,500	16,000
1935	8,500*	10,500*	19,000

*Estimate from "Facts in the Food Market".

Strawberry Crop Sold Canned, Frozen, Fresh, and Cold Pack.

Canned—The West in 1933 canned approximately 72,118 cases of strawberries, 76 per cent of the United States pack. Oregon canned 27,142 cases or 36 per cent of the 72,118 cases.

Frozen—Washington and Oregon froze 25,788,354 pounds of strawberries in 1934. The 1935 cold pack was estimated at 48,000 barrels by "Facts in the Food Market". The total frozen fruit production (all fruits) for the United States in 1934 was 68,040,000 pounds, the West packing 45,090,000 pounds.

Fresh Fruit—The 1934 reports of strawberries shipped to 66 important United States cities show 12,029 cars, eleven shipped from Oregon. In 1932 Oregon shipped 112 cars and the United States total was 12,931.

Oregon's chief outlet for strawberries is the cold pack, the berries being marketed in 50-gallon barrels. This pack was 32,332 barrels in 1926, 73,544 barrels in 1928, 65,559 barrels in 1932, and 46,487 barrels in 1934.

There is no shortage of strawberries in the United States in full crop years, although there may be lack of distribution facilities. In

full crop years growers who do not have dependable outlets for their crop are forced to sell at buyers' prices and often below the cost of production.

Oregon strawberry growers have three ways of marketing:

Cooperative associations.

Packers on time contracts.

Selling outright at harvest time.

Generally the marketing situation for the Oregon strawberry grower is not dependable or stable.

Additional commercial strawberry acreage for Yamhill county is not advisable at this time, except when growers can assure themselves of a satisfactory and dependable market. Growers must avoid dumping strawberries at buyers' prices if a satisfactory return is to be expected for this crop.

Varieties of strawberries for Yamhill county are:

Fresh fruit markets—Narcissa, a new early strawberry of good quality competing with and in some places replacing the Gold Dollar for early market; Marshall, Redheart, and Corvallis.

Barreling or preserving varieties—Marshall (or Oregon, or Improved Oregon).

Canning varieties—Ettersberg 121 on heavy soils. Redheart is gaining in popularity, commercially and for home use, on rich soils especially in the uplands. Corvallis is another popular new variety for canning in some localities and is suitable to rather heavy moist soils and for irrigation.

Everbearing strawberries—Rockhill and Mastadon.

OTHER YAMHILL SMALL FRUITS LISTED

Loganberries—The acreage in Yamhill county is approximately 80, the state, according to United States census, having 2,755 acres of loganberries in 1919, 3,013 acres in 1929, and 2,117 acres in 1933. Loganberry planting is not to be encouraged except when the grower can arrange a reliable and dependable outlet in advance of planting.

Youngberries—This is a new berry in the Northwest that has been increasing in popularity to a limited degree, 26 acres planted in Yamhill county. Wholesale planting of the youngberry is not recommended, although growers are justified, however, in making plantings of this berry when market outlets are assured.

Boysenberry—The boysenberry is a new, highly advertised variety on trial in Oregon and it may have considerable promise providing markets can be developed.

Red Raspberries—The red raspberry acreage in Yamhill county is approximately 20. In Oregon, according to the United States census, the acreage was 1,460 acres in 1909, 1,176 acres in 1919, 4,167 acres in 1929, and 5,392 acres in 1933. Cooperative marketing of red raspberries has been developed in Multnomah and Clackamas counties, thus helping growers in this county for better markets. Only planting stock free from disease should be used.

Cuthbert is the leading commercial variety. Newburgh, Lloyd, George, and Chief have some promise.

Blackcap Raspberries—The blackcap raspberry acreage in Yamhill county is approximately 300 acres. Increased acreage of blackcap raspberries is justified to a limited extent providing the grower establishes an outlet with some well-organized marketing agency.

Avoid planting blackcaps on fields that have grown potatoes in recent years because of verticillium wilt, a soil-borne disease common to potatoes, blackcap raspberries, and watermelons.

Varieties of Blackcaps.

Plum Farmer is the recommended variety for Yamhill county. Munger is a fine quality berry but is subject to mildew. Cumberland is another variety which is favored in some sections.

Blackberries—The present acreage in Yamhill county is about 18 and for Oregon 1,598 acres. Should the red mite continue its destruction of the wild evergreen blackberry, commercial production may fall to the cultivated areas where this pest can be controlled by sprays. Growers, however, should determine market outlets before making additional plantings of this crop.

Grapes—Oregon now produces more grapes than are marketed to the advantage of the grower. Until marketing arrangements are improved additional commercial plantings of grapes are not justified. For individual or home use such American varieties suggested are: Concord, Worden, Campbell's Early, or Niagra (a white grape). New varieties that appear to do well are Golden Muskat, a light green, large grape of pleasing quality, and Keuka, a rich red grape that ripens about the same time as the Concord.

Satisfactory returns to the grower cannot be expected from moderate or average yields of small fruits under present conditions. This means that small fruits must be grown on fertile soils, well cared for, and disease and insect pests which lower quality must be controlled.

Small Fruit Diseases Are:

Strawberry diseases—**Crinkle** is a serious degenerate disease of strawberry plants in Oregon. Crinkle plants have a dwarfed wrinkled appearance and growers should select only those strawberry plants that show normal vigorous conditions characteristic of the variety being planted, or growers may buy selected or certified strawberry plants from growers who specialize in controlling this strawberry disease. **Strawberry fruit worm**—has caused losses in certain Yamhill localities. Spittle bug demonstrations to show control on strawberries should be conducted.

Spray Loganberries and Youngberries.

Leaf spot, Bordeaux mixture for control.

A narrow band of clover planted between rows of cane fruits will assist in preventing erosion and will supply humus and plant foods for crop and plant maintenance. Nitrogen fertilizers should be added to cover crops in late February to "boost" cover crop growth.

Barnyard or poultry house manure may be used between rows when available.

Vegetable Crops Grown in Yamhill.

Approximately 20 vegetable crops comprising 1,930 acres were produced in commercial quantities in Yamhill county in 1935.

There is need of a cannery outlet centrally located in Yamhill county to afford markets for such crops as beets, carrots, beans, corn, rhubarb, spinach, tomatoes, and other crops that Yamhill county can produce in abundance in many locations which have soils well adapted to these crops. At the present time the outlets are confined to local demands, roadside markets, and truck shipments to nearby outside markets.

Sweet corn acreage in 1927 was 70 acres and in 1935 it was estimated at 500. More sweet corn was raised in 1935 than could be marketed and additional acreage will only add to a chaotic market condition. Enforced grades for marketing sweet corn would aid the local industry. Golden Cross Bantam, Improved Golden Bantam, Golden

Bantam, and Golden Early Market are the recognized varieties.

Cost of Production Per Acre.

Plowing land and seed preparation -----	\$ 5.08
Fertilizer, if any -----	.87
Planting costs and seed -----	4.25
Cultivation four times and hoeing -----	6.66
Irrigation costs where practised -----	1.00
Sacks -----	3.75
Labor for harvesting ears -----	8.33
Taxes per acre -----	2.37
Depreciation on machinery -----	1.61
Pest control, squirrels, crows, moles, worms and pheasants --	4.50
	\$38.42
Marketing three tons of sweet corn per acre -----	18.00
	Total ----- \$56.42

The Oregon Experiment station is urged to continue research work on the control of Corn Ear Worm, a pest that destroys 20 to 25 per cent of the Yamhill county sweet corn crop.

The melon acreage for Yamhill county for 1935 was estimated at 400 acres. Rigid enforcement of cantaloupe and muskmelon grades is recommended. Yamhill county should have a copyrighted brand for melons to be used only on melons meeting certain high quality standards.

A central warehousing agency or organization should be formed which will be empowered to make a uniform pack, and grade and assist in disposition of melon crops at equitable prices.

Oregon Delicious, (Spear) (Hearts of Gold) or Hale's Best, and Superfecto are varieties suggested for rich soils. Trials of seed production for melons may be made in Yamhill county so a dependable source of seed can be developed.

Wilt is a serious menace to the melon crop and causes an estimated loss of 20 per cent annually. This disease is said to be verticillium, common to potatoes and black raspberries. Melons should not follow potato crops except at intervals of several years.

Estimated Cost of Cantaloupe and Muskmelon Production Per Acre:

Fertilizer or cover crop -----	\$ 5.00
Rent -----	12.50
Plowing -----	2.00
Preparation for planting -----	5.00
Seed -----	5.00
Planting -----	3.50
Thinning and hoeing -----	8.50
Cultivating -----	3.50
Pest control -----	3.50
Insurance of workmen and equipment -----	1.00
	Total ----- \$49.50

Harvesting and Marketing Cost Per Crate Muskmelons and Cantaloupes:

Crates and labels -----	.13
Picking and packing -----	.12
Freight -----	.10
Advertising and selling -----	.15
Shrinkage -----	.05

Depreciation and investment on all equipment -----	.05
Insurance of workmen and equipment -----	.01
	\$.61

The average yield per acre over a five year period was 110 crates.

Production cost of cantaloupes and muskmelons per crate, \$.45.

Harvesting and marketing cost per crate (1.06 crate) \$.61.

Approximate cost of growing and marketing watermelons \$25.00 per ton.

Tomatoes in Yamhill county increased from 50 acres in 1927 to 125 acres in 1935. At present tomatoes are dumped at ruinous prices on the market and no increase in acreage is justifiable. One serious drawback to the marketing of tomatoes is the used container which in effect places such tomatoes in the second grade class.

Bonny Best is the leading tomato variety, Pritchard is also making a good showing.

Tomatoes cannot be produced for less than 40 cents per flat and 75 cents per bushel.

NUTS

For nut production in Yamhill county the Franquette with proved pollenizers like the late Meylan is recommended for walnut planting. The Barcelona with DuChilly and Daviana as the main pollenizers are the best filberts for planting.

Soils, cultivation, and cover crops are similar to those governing fruit trees.

Imports of walnuts have declined 84 per cent in the last 10 years while filberts have decreased 69 per cent in the unshelled basis. All imports of nuts have declined an average of 62 per cent from 1920-25 to 1930-35. The present duty on both shelled and unshelled walnuts and filberts should be maintained.

The consumption of nuts in 1935 was 258,000,000 pounds, not including peanuts, a consumption of less than two pounds per person. The percentage of nut consumption in the United States is as follows:

Walnuts	34 per cent	Brazil nuts	12.8 per cent
Filberts	3½ per cent	Pecans	16 per cent
Chestnuts	5.7 per cent	Almonds	12.3 per cent
Cashews	13.9 per cent	All other nuts	1.8 per cent

The price trend on both walnuts and filberts from 1925 to 1935 was downward, due probably to the economic condition of the country in the case of filberts, and excess of production in the case of walnuts.

Oregon had 85 per cent or 8500 acres of filberts in 1935, 37 per cent or 4000 acres being in production. Yamhill county has 1490 acres with 900 acres in bearing.

Walnuts in Oregon total 27,000 acres, Yamhill county having 6300 acres, 5500 bearing.

Frequent picking should be made of both walnuts and filberts to preserve the appearance and quality of the nuts as well as preventing subsequent loss to the growers. Extra expense in picking is repaid many times.

Marketing should be done through cooperative associations and laws enacted for enforcement of present grades and standards.

Where nuts are bought on contract for future delivery, the buyer thereof should be required to apply to the State Department of Agriculture for a license authorizing him to operate within the state of Oregon as a future buyer. The buyer also should be required to post in the hands of the Oregon Department of Agriculture a bond to cover his future contracts.

Present Acreage Sufficient.

The present nut acreage is excessive and before planting either walnuts or filberts the prospective planter should investigate the present net returns of the leading growers.

SOILS AND IRRIGATION

The soil is Yamhill county's most valuable resource and all phases of agriculture are directly dependent on the soil, lasting no longer than the soil upon which it is founded. Since 1880 the average size of farms in Yamhill county has been reduced approximately 50 per cent.

A sound agricultural program must be based on proper soil utilization, crops being grown only on soils adapted to their growth. Every farmer should consult the soil survey report of Yamhill county to determine for what crops his soil is adapted. This is particularly important when planning production of long-time crops such as orchards.

Conservation of Fertility is Important.

To continue farming on a permanent basis it is necessary that every precaution be taken to conserve the fertility of the soil. The best possible way of conserving the soil is to follow farming practices that retain the organic matter supply in the soil. On the general farm the best means of keeping up the organic matter supply is to follow crop rotation including some legume crop. This legume crop not only builds up the supply of organic matter but also adds a valuable supply of nitrogen to the soil. On many of the soils in Yamhill county it may be necessary to add lime in order to grow legumes.

Lime tests are made free of charge in the office of the county agricultural agent.

With orchards or other permanently cultivated crops, cover crops afford the best means of maintaining organic matter. The kind of cover crop will be determined largely by the individual soil type. This cover crop is essential to avoid unnecessary loss of plant food by leaching and the actual loss of soil by washing or erosion.

The proper conservation of soil fertility requires that all crop residue be returned to the soil. In this connection the practice of burning straw stacks, combine rows, and stubble is a wasteful practice. When burning is practiced, plant food and organic matter are destroyed. Present knowledge indicates that the addition of 20 pounds of nitrogen (100 pounds of 20 per cent nitrogen fertilizer) will greatly increase the value of straw added to the soil. On farms with livestock, a loafing shed is recommended as a means of making the best possible use of this straw.

All barnyard manure should be conserved to prevent the waste of plant foods. On dairy farms the liquid tank method of handling manure should be more widely adopted. When used in combination with a loafing shed saving of all possible manure produced on the farm will result. Further information on liquid tanks is available through the county agent's office.

Best use may be made of manure by applying it to the soil in the early spring previous to seeding the crop, usually when applications are not in excess of 8 to 10 tons per acre. More increase yield per ton of manure will be secured in this manner than when heavier applications are used.

Lime, when brought in contact with barnyard manure, causes a loss of a good portion of the nitrogen supply of the manure. Superphosphate should be used as a deodorant and disinfectant around the dairy barn instead of lime because the superphosphate assists in holding the nitrogen in the manure and prevents fermenting. Manure is very low in phosphorus as compared to other plant foods and the addition of this phosphorous would result in securing better results. The bureau

of public health for the City of Portland and the State Department of Agriculture should approve the use of superphosphate instead of lime by dairies Grade A and B.

Rotate Pastures

On farms with livestock it is worthwhile to plan the rotation so that every field will be in permanent pasture once every 10 to 20 years.

On farms low in fertility it may be advisable to plant cover crops in the fall and plow them under in early spring to assist the regular rotation in building up the organic matter.

Results secured by using commercial fertilizer in Yamhill county so far have not been consistent enough to make any general recommendations except that the application of landplaster to legume crops usually is considered a profitable practice. In the future it may be desirable to further try out the use of superphosphate on these legumes instead of landplaster since the Yamhill county soils generally have a lower supply of phosphorous than other plant foods. An increased yield from the use of phosphorous before the use of other plant foods is necessary may be expected. Fertilizer trials should be continued to determine which fertilizers may be most profitable.

Purchases of commercial fertilizers should be based on the amount of plant food contained in the fertilizer so small trials may be advisable before buying any of the commercial brands.

Soil Erosion Costly

Soil erosion that occurs in this area usually is so gradual that it is not generally noticed. Nevertheless, there are some farms in Yamhill county where the loss of soil from erosion has been so serious that these farms no longer can be farmed profitably. Under average conditions ordinary good farming practices that maintain a good organic matter supply in the soil and provide a good cover for the soil during the winter months will largely prevent erosion losses. On any sloping soil, farming practices should be followed that will not leave the soil unprotected during the winter months. If at all possible, some other system of farming should be worked out that will make it unnecessary to plow the land in the fall or winter leaving it exposed to washing during the winter previous to spring seeding.

Much Land Needs Draining

According to the Yamhill soil survey report, there are 85,132 acres that need drainage and full utilization of soil resources will require that this land be drained.

Tile drainage is the most satisfactory drainage where possible. One Yamhill county farmer, John Bernards, has installed nearly 100,000 feet of drained tile on his farm and states that it was the most profitable investment that he ever made. Another farmer, Jake Duerst, has installed 25,000 feet and concurs in this opinion.

The actual method of laying tile will depend on conditions encountered on the individual farm. Anyone installing tile should secure the services of some experienced person in determining the depth for the tile, the distance between the laterals, and the different sizes of tile to use. The proper depth and distance will vary greatly with types of soil. It is well to have drainage plans for the entire farm worked out before laying any tile.

It is not economical to use any tile smaller than four inches in diameter, and unless exceptional conditions are encountered, the tile

should be placed at a depth of 24 inches or more.

There are conditions where it is impossible to install the tile drainage, either because there is a lack of finances on the part of the individual farmer, an outlet that will not permit the tile to be placed at an adequate depth, or a soil type in which drain tile will not work. Where such conditions are encountered, open ditches should be used to carry off the surface water.

In some sections of the county, community organizations will be necessary to gain access to adequate drainage outlets for individual farms.

Because of light summer rainfall in Yamhill county irrigation is a sound practice. Weather records at McMinnville for the past 43 years indicate there never has been an adequate supply of moisture to maintain crops expected to grow throughout the summer months. Contrary to popular opinion, these records do not indicate that the summers are drier at the present time than they were 20 or 30 years ago, indicating that one may start irrigation with the idea that it will be a permanent enterprise.

The actual expense a farmer can afford for irrigation can be told only after a careful consideration of the cost of irrigation when compared with increased returns from irrigation. Experience has shown that under proper management, yields of many crops may be doubled under irrigation.

According to the soil survey report of Yamhill county there are 118,656 acres suitable for irrigation, 53,504 acres being Willamette, Chehalis, Newberg, and similar free-working soil series upon which horticultural crops, vegetables, potatoes, alfalfa, and clover may be grown under irrigation. The remaining area of 65,152 acres are Amity, Dayton, Wapato, and similar heavier soils adapted to pastures and field crops under irrigation.

At the present time water is available for only a small percentage of this area, being limited to the natural flow in the streams and in a very limited area to pumping from wells. Irrigation on a much larger area of land than permitted by present water supply is a sound development and the program of the United States Army engineers in studying storage sites to provide a more adequate supply of water during the summer months is commended. Their findings on ground water if made public as soon as possible would aid persons contemplating irrigation from wells.

Water Brings Profit

As an example of possibilities under irrigation during 1935, Mendenhall Brothers of Willamina reported a gross return of \$90 per acre from a nine acre field of ladino clover grown under irrigation. This return was based on the seed crop produced together with the value of the pasture received. The total expense of carrying this project was \$25 per acre which included cost of repairs, harvesting and threshing the clover seed, depreciation on equipment, and taxes, leaving a profit of \$65 an acre. Greater returns than this have been received in previous years.

Other crops grown successfully under irrigation have included red clover for both hay and seed, alfalfa, potatoes, berries, and a variety of vegetable crops.

Irrigation is of special value in increasing summer pasture for dairy farms. Ladino clover and grasses respond excellently to this practice.

Because of the fact that the irrigation problems will vary greatly

on individual farms, it is recommended that each individual planning installation of an irrigation project have the plant designed carefully to fit his individual conditions. Such assistance is available through the county agent's office. Because of the increased interest in irrigation the Extension Service at the Oregon State College should make available more technical assistance on irrigation so individuals may avoid costly mistakes.

Water Filings Are Protection

Any person starting an irrigation project should file an application for a water right with the state engineer at Salem and complete the work necessary to secure this right as soon as possible. This water right is for the individual's own protection. If a farmer does not file he may have the water taken away by those who do file, thus losing the money he has invested in his irrigation system.

Some type of surface irrigation generally is recommended although there are many places where rough land, soil type, water supply or nature of the crop might mean some form of sprinkler system would be more desirable. Where flood irrigation is contemplated, the importance of properly leveling the land before irrigation cannot be too strongly emphasized. For field crops, if the topography of the land permits, the strip border system of surface irrigation is recommended. Experience has shown that the expense of properly leveling the land is repaid by the saving of water and labor of application.

If ladino clover is to be sown, the land should be prepared for irrigation in the fall or early spring. The successful seedings have been made early in April. Seedings are made at the rate of 3 to 5 pounds of seed per acre on a well prepared, firm seed bed. Better returns may be secured from this clover if it can be handled so livestock may be kept off of the land immediately after irrigation. Best results have been secured by dividing the pasture into at least three fields and rotating the stock.

Where it is necessary to irrigate by pumping, the plant should be selected carefully to fit the individual requirements. In most cases the centrifugal type of pump seems to be the most economical. Every centrifugal pump is constructed to fill a certain requirement and if placed under conditions other than those for which it was designed it will not be an efficient piece of machinery. For this reason the pump should be purchased on the basis of the water required, the total pumping head against which the pump must operate, the water available and type of power available.

The beginner in irrigation is urged to determine these conditions, turn the information over to a reliable pump dealer, and let the dealer select the pump best-suited to the job. Pumps offered by dealers may be compared on the basis of the amount of water delivered with a given horse power and purchasers are entitled to a guarantee of performance from the dealer. After every pump is installed it should be checked to determine whether it lives up to its guarantee.

Because of the variation in construction of centrifugal pumps and due to outward appearances they all may look the same and yet have entirely different performance. Second hand pumps should be avoided unless the farmer has absolute assurance that the pump is fitted to his individual requirements.

To achieve the best results from irrigation, crops should be irrigated as soon as they show signs of needing water. Past experience has shown that many people do not get full value out of irrigation because too long a time elapses between irrigations. Another mistake frequently made is that the first irrigation is delayed too long. It is good in-

surance to have the irrigation equipment ready for use by May 1 to 15, since in many years it is necessary to start irrigation by May 15. Best results also will be received from irrigation if the crops are never allowed to slow down their growth because of lack of moisture.

Further work is urged upon the Oregon Experiment Station to determine the actual amount of water to apply on different soil types and crops, methods of applying water to achieve the most economical use, and best varieties of crops to be grown under irrigation.

DAIRYING

The development of the dairy industry in Yamhill county from the time that figures are available and its relation to the dairy industry in the State of Oregon, the 11 Western states and the United States is shown on the following table.

Dairy Cattle in United States, 11 Western States, Oregon and Yamhill County 1890-1935

	United States	11 Western States	Oregon	Yamhill County
1890	16,512,000 (1)	721,000 (1)	114,000 (1)	4,295
1900	17,136,000 (1)	867,000 (1)	109,000 (1)	3,731
1910	20,625,000 (2)	1,341,000 (2)	152,000 (2)	7,751
1920	*21,455,000 (3)	1,541,000 (3)	200,000 (3)	8,563
1925	*22,575,000 (3)	1,623,000 (3)	217,000 (3)	9,358
1930	*23,106,000 (3)	1,814,000 (2)	222,000 (3)	9,024
1935	*26,236,000 (3)	*2,264,000 (3)	270,000 (3)	9,900 **

(1) June 1. (2) April 15. (3) January 1. * Estimates by B. A. E. ** Estimated.

Source—United States: U. S. Census. 11 Western States: U. S. Census. Oregon, 1920-30: Livestock, Meat and Wool Market Statistics.

Dairy cows of milking age in the United States increased during the period 1928 to 1934 at about 3 per cent per year, reaching their all time peak in the spring of 1934 of an estimated 26,185,000. During that same period, due to low prices for butterfat and poor pastures in the larger dairying states, milk production increased only 1 per cent per year. Since 1934, due to the great drought of that year and the natural decline in cycle of cattle number, the total number of milk cows decreased to an estimated 24,500,000 on January 1, 1936. At the present time prices of dairy products are relatively low compared to feed, grains, beef, veal, and hog prices.

In the 1936 United States Department of Agriculture Outlook it was indicated that dairymen of the country are planning to increase their herds, but at the present time there are fewer heifers under two years old on farms than will be needed for replacements in the present national herd, and there is no immediate prospect of any increase in dairy cow numbers for the next two years. The present number of cows is but little different from the total on farms in 1933 when there was an accumulation of 100,000,000 pounds of butter placed in storage above the normal storage figures. Should consumers' buying power decline as shown particularly by industrial payrolls, the demand for dairy products probably will fall off, and by the same reasoning, if consumers' buying power increases the demand should increase and prices for dairy products should improve.

Yamhill in Portland Milk Shed

Dairying is a sound enterprise in Yamhill county and from 1926 to 1930 furnished approximately 18 per cent of the cash farm income of the county. During the past few years the milk shed of Portland has been extended through Yamhill county resulting in a considerable por-

tion of the milk produced locally going into the bottle and can trade in Portland. There also are two cooperative, three private creameries, and one condensery operating in the county.

There are adequate facilities for marketing dairy products and the average price paid in 1935 compares favorably with the average price in Portland.

The following table shows the average price from 1930 to 1935 of the wholesale price of 92 score butter in Portland, San Francisco, and Chicago:

Average Wholesale Price Per Pound of 92 Score Butter, 1930-1935

	Portland	San Francisco	Chicago
	cents	cents	cents
1935	29.2	30.12	28.78
1934	24.3	25.05	24.78
1933	20.4*	21.11	20.79
1932	23.5**	21.98	20.07
1931	29.4**	28.13	27.05
1930	35.5**	36.31	35.28

* 10-month average (no prices for July and August).

** Jobbing quotations, 92-93 score prints. (Source, Northwest Daily Produce News).

Source: (San Francisco and Chicago) 1930-1934, U. S. D. A. Year book, 1935. 1935—Monthly Review of Domestic Dairy Markets, B. A. E.

These quotations are all at wholesale except the Portland prices for 1930, 1931 and 1932 which are jobbing for 92-93 score prints.

The following table shows the average prices paid for butterfat by the Carlton and Sheridan creameries per month for 1934 and 1935:

Average Price Per Month Paid by Two Yamhill County Creameries

	1934	1935
	cents	cents
January	18.7	34.2
February	23.0	35.8
March	22.7	30.9
April	18.7	29.8
May	19.5	27.2
June	21.1	26.2
July	22.0	25.9
August	26.0	27.7
September	27.2	29.6
October	29.0	32.3
November	33.3	36.1
December	32.6	38.9

As indicated by check of the Bangs' disease testing that has been done in the county, the following table shows the size of herds. The general average is 8.4 cows per herd.

Number of Herds	Cows in Herd	Percent
655	1- 3	39
265	4- 6	15
393	7-12	23
310	13-20	18
131	21-50	7
9	51 and over	5

These figures include all females over six months of age in the herds tested and while they do not cover all herds in the county, they do give a cross section of range in size of herds. It will be noted that 39 per cent of the herds are in the family cow class, 1 to 3 cows; while the majority of the test herds come in the 7 to 12 and 13 to 20 cow size.

There is an adequate amount of roughage grown in the county at the present time to supply the present livestock population of the county. The hay grown is largely oats and vetch, clover, alfalfa, and some grain hay.

The weakest point in the feed situation is inadequate pasture during the summer season.

Yamhill county and the State of Oregon are modified accredited tuberculosis free areas. During the past 15 months 14,065 Bangs' disease tests have been made in cooperation with the federal Bangs' disease program with 5.2 per cent reactors and 2.8 per cent suspects.

Dairy Recommendations for Yamhill County

The greatest problem of the average dairyman in Yamhill county is to reduce the cost of producing milk and butter fat. The first requirement for low cost production is high production per cow, and the need in this county's dairy industry is not more cows but better cows. The best method of improving the quality of milking herds is the wider use of dairy herd improvement association testing. At the present time the tester for the Yamhill Dairy Improvement Association has 14 days in this county. It is recommended that as soon as work in adjoining counties can be turned over to local associations in those counties that a campaign be put on to secure enough new members to fill up the association within this county.

A preliminary survey shows that 47 per cent of the sires used in the county are grade or scrubs, which is an indication that there is a lot of room for improvement in the quality of dairy herd sires used.

Yamhill county and the Willamette valley are fortunate in having a relatively large number of purebred breeders from which to buy sires.

An adequate supply of high quality legume hay is necessary for the most economical milk production. There is room in Yamhill county for considerable increase in the amount of alfalfa and other legume hay produced. On some farms clover may fit into the crop rotation plan for the farms to more advantage than other hay crops. These two hays with vetch and oats should make up all of the hay used except emergency hay crops as may be necessary due to freezing out or other causes.

The most successful pastures at the present time are irrigated ladino clover. This type of pasture can be developed on many farms.

On many farms special seasonal pasture crops and some soiling crops are necessary to supply succulent feed through the summer seas-

on. There is some danger from bloat on ladino clover, sweet clover, and alfalfa and care should be used in pasturing these crops especially when cows are first turned out in this type of pasture. Every dairyman should, if possible, provide a minimum of 25 pounds of succulent feed per day for each cow in milk either in the form of pasture, soiling crops, root crops, or silage.

A silo is recommended for every herd having 10 or more cows. In the average year kale can be used to good advantage until about December 15. It is undoubtedly the best succulent dairy cow feed there is and occasional losses by freezing should not discourage its planting in a reasonable amount every year.

Several thousand tons of prepared dairy feeds are shipped into the county annually and at the same time large amounts of grain are shipped out. More consideration should be given to locally prepared and mixed dairy feeds and home-grown grains in order that cheaper and just as good feeds can be secured.

Feeding of minerals is necessary on many Yamhill county farms and for information on this subject see Station Circular 309, "Mineral Feeds."

Yamhill county has made notable progress in the control of Bangs' disease under the federal program and it is recommended that all dairymen cooperate in this program while Federal indemnities are available. Tuberculosis testing should be continued in connection with the Bangs' disease testing under this act.

Sterility and mastitis are causing serious losses to dairymen of the county but there is little information on these diseases. The Oregon Experiment station could make a thorough investigation of these diseases so that the present losses might be eliminated.

It is recognized that the cost of production decreases as the size of the herd increases within the limits of feed and labor resources and on many farms where dairying is a major enterprise the size of the herd could be profitably increased.

Yamhill county has made notable progress in improving the quality of milk and dairy products, but there still is too much low quality milk and cream sold.

There is no need for additional marketing facilities for dairy products.

There is too great a difference between the price received by Yamhill county dairymen for surplus cows and the price California dairymen pay for these cows. It is recommended that a sales agency be formed of Willamette valley dairymen to sell surplus stock in California. Heifer production other than regular replacements should be confined to dairymen who have cheap surplus feed and good pastures.

More effective methods of checking tests and weights of milk and cream should be worked out by the State Department of Agriculture and put into effect to better protect producers and creamery operators.

Dairy calf club work should be encouraged and improved. Purebred breeders are urged to work out a plan to supply these club members with high quality purebred heifer calves at a price club members can pay.

LIVESTOCK

Statistics show that during the period 1926 to 1930 livestock and livestock products in Yamhill county provided 40 per cent of the annual agricultural income from the farm.

One of the greatest problems of farmers in Yamhill county and in the United States is the conservation and restoration of soil fertility. It is recognized by the soil experts that no commercial fertilizer, cultural method, or crop proves superior to barnyard manure in building up soil fertility.

During the past, the main livestock enterprises have been sheep, hogs, some beef cattle in addition, horses, mules, dairy cattle, and poultry.

There has been a very substantial increase in the production of alfalfa hay in Yamhill county as well as other satisfactory hays of high quality that are considered valuable from the standpoint of finishing livestock for market, which lends some encouragement to development of livestock feeding enterprises.

Sheep Show Decline.

Sheep in Yamhill county similar to that of the state and nation, declined 36 per cent between the years 1930 and 1935. Such a reduction can be attributed to low prices received from wool and lambs. In the state and nation this reduction can be attributed to the severe drought that forced heavy sales during 1934. The following table will prove of interest in showing the sheep numbers during the census years in Yamhill county, Oregon, and the United States:

Sheep in Yamhill County, Oregon and the United States

	1920	1925	1930	1935
Yamhill County_	16,229	14,424	36,737	23,950
Oregon -----	2,522,000	2,039,000	3,319,271	2,209,898
United States---	40,243,000	38,112,000	50,503,000	49,000,000

Commercial sheep production dominates other livestock in the county so far as numbers are concerned. Where feed is available sheep might be increased to a certain extent. The table above indicates that the numbers of sheep in the United States are more than at the periods 1920 and 1925, but considerably less than in 1930. It is more than likely that during the 1930 period, more sheep were being carried in the United States than could be fed profitably and consumed within the country. It is therefore the belief that at the present time there is not a shortage in the number of sheep as far as the nation is concerned.

To obtain the best results from sheep raising under Yamhill county conditions the following points are important:

1. Selection of good quality breeding stock and the use of pure-bred bucks.
2. Give the very best care to the ewe flock so that they will thrive and be kept in healthy condition, especially from the time the ewes are bred and until the lamb is dropped.
3. By supplemental pastures or other feeds, maintain the milk flow

of the ewes until after the lambs are dropped and until they are marketed.

4. Market the lambs in the very best possible condition of flesh, properly docked and castrated.

5. Fifty per cent of the lambs marketed from Willamette valley flocks sell for nearly \$2.00 per hundred under top prices because of poor condition. It is possible under proper management to increase the percentage of desirable market lambs through use of pastures and proper care of the ewe to keep the milk flow up. Farm flock owners would find it to their advantage to learn to pick their fat lambs going to market. Market lamb shows to teach the proper method of selecting fat lambs are encouraged.

Beef Cattle Range in Use.

Most all of the available range for beef cattle is now utilized in the county. Finishing cattle for market, however, offers an opportunity in this county on a limited scale as a means of marketing home grown feeds.

Goats Have Future.

The future outlook for goats is more promising than for the past five years, Yamhill county having land well suited to goat production. A few goats on all farms having land suitable for that purpose are a good investment. Goats are valuable as a means of improving range for other classes of livestock as well as a source of return from the sale of mohair. It is recommended that foundation stock be selected from heavy shearing strains.

Swine Production Could Increase.

Oregon produces approximately 50 per cent of the pig products that are consumed in this state.

During the past 15 years there has been a gradual decline in hog numbers for this county, indicated by the following table showing hog numbers in Yamhill county:

Hogs in Yamhill County, Oregon, and the United States

	1920	1925	1930	1935
Yamhill -----	11,747	9,740	8,603	6,844
Oregon -----	267,000	223,000	224,539	168,580
United States --	59,959,000	55,568,000	53,238,000	50,000,000

Hog production in Yamhill county would prove profitable when produced on home grown feeds and the utilization of farm waste and by products such as skim milk. Pasture also can be used as a means of lowering production costs.

Only purebred boars should be used. These often can be crossed on high type grade sows and a superior market hog produced. Hogs should be marketed at 180 to 200 pounds for best prices.

Disease problems should be given attention in order to keep down losses. Sanitary methods should be practiced to reduce internal parasites, especially at farrowing time.

Housing facilities are necessary for farrowing purposes to increase size of litters.

Dairymen who sell cream usually plan to raise at least one pig for each cow milked. Grain farmers also can plan to raise one pig for each five to 20 acres of grain wastes.

Alfalfa, red clover, rape, or ladino clover are good pastures.

Tractor Replaces Horse.

The tractor has largely replaced the horse in Yamhill county as it has in Oregon and the United States. The table shows 40 per cent reduction of horses during the last 15 years.

Horses in Yamhill County, Oregon, and the United States

	1920	1925	1930	1935
Yamhill -----	7,069	5,790	4,313	3,963
Oregon -----	279,000	225,000	176,225	161,279
United States --	19,848,000	16,470,000	13,364,000	

A committee survey shows five registered stallions, 400 mares of breeding age, and 363 colts under three years of age in Yamhill county.

Considering the number of breeding mares and colts under three years of age it is apparent that a majority of all horses in Yamhill county farms are over 12 years of age. It is estimated that the average age of horses in Oregon is from 15 to 18 years.

Costs of raising a colt to three years of age is estimated to be \$100.

During the past few years many horses have been imported into Yamhill county from Eastern Oregon. It is the supposition that more colts can be raised to an advantage where there is plenty of pasture and production of cheap feeds. All colts that are raised should be from good stock.

The greatest demand at this time is for draft horses weighing from 1350 to 1500 pounds and there is a limited demand for light horses for riding purposes.

The increase for replacement purposes can be improved by safeguarding the young colt at the time of its birth. The brood mare should be fed potassium iodide at least five months previous to foaling. This should be fed at the rate of 15 grains of potassium iodide once a week, in solution form sprinkled on grain.

After the colt is born it is of utmost importance that the navel be disinfected by liberal use of iodine, best done by immersion in a bottle.

POULTRY

Oregon produces a surplus of eggs above the needs of state consumption; this surplus must be exported to distant markets, principally on the Atlantic seaboard and California. The major part of the commercial egg industry lies in the counties west of the Cascades and the surplus eggs of Oregon must be of high quality in order to meet competition and to justify transportation costs to distant markets.

Western Oregon is well adapted to commercial egg farming and the extent to which the industry will increase and the extent of its export volume will depend upon the progress Oregon farmer make in shaping their production to meet the requirements of outside markets.

The poultry industry is expanding in Oregon and elsewhere as well, Oregon eggs meeting keen competition from sections near its eastern market centers. If Oregon holds its present market outlets, or develops a real industry for which western Oregon is particularly well-adapted, many small farm flock must be transferred into better business units.

The poultry industry of Yamhill county cannot be considered a unit in itself, but must be considered in relation to the status of the entire industry. Yamhill county produces a surplus of eggs which, as a contribution to a state surplus, must be marketed outside the county and state.

This county in 1930 had 2,690 farms, 83 per cent or 2,223 farms keeping poultry. There were 1,341 farms, or 60 per cent with flocks of less than 50 hens, these small flocks supplying the needs of the home with a few surplus eggs entering the markets; 28 per cent or 636 farms kept flocks above 50 and less than 200 hens, these flocks producing more than home needs and not enough to meet export quality requirements. The remaining 12 per cent or 256 farms kept flocks tended for quality and egg production.

In 1930 the value of chickens and eggs produced in the country was \$623,137.

Producers of eggs have their choice of selling either through established independent dealers or through cooperative associations. The cooperatives of the coast states maintain their own sales headquarters in eastern cities and the grower's choice of market outlets has been brought almost to his door.

Growers also have the choice of purchasing their feeds and supplies from independent dealers or through cooperative channels.

The export demand is for white-shelled eggs. This demand naturally results in the Leghorn and other white egg breeds dominating the situation but does not mean the exclusion of the heavy and brown shelled breeds such as the Rhode Island Reds and Barred Rocks.

The demand for eggs from well-managed flocks to supply hatcheries, both within and out of the state is considered by many farmers as an additional market outlet. A higher premium should be paid for quality hatching eggs over Portland top quotations, to compensate for extra care and expense involved.

Oregon produces only 1 per cent of the nation's poultry products, and with this volume has little voice in setting prices. Producers here must operate on a margin between New York prices minus the overhead of delivering there, eggs of a certain grade.

The industry here and throughout the nation will expand in all phases throughout 1936 as a result of favorable prices in 1935. The Pacific coast states in 1936, as in 1935, likely will show the highest

percentage of hatching increase, the increased number of pullets next fall likely having a depressing effect on prices that may be partly offset by an increased consumer demand.

Egg consumption has declined since 1932 but higher meat prices will tend to place eggs in a favorable position.

As a result of better egg prices in the United States and a favorable foreign rate of exchange, the imports of dried, frozen and shell eggs increased rapidly during 1935. The tariff on foreign eggs was sufficient during the years of low prices and normal exchange conditions. The imports for 1935 were in excess of 15,000,000 dozen shell egg equivalents.

The poultry industry as a planned industry in Yamhill county is sound business. A number of new farms, rehabilitation, resettlement, and subsistence, will keep poultry. If Oregon's expansion is toward barnyard flocks rather than toward flocks large enough to justify commercial care, the state cannot economically long meet export market requirements, 88 percent of the farmers who kept chickens in Yamhill county having less than 200 hens. These flocks are too small to justify frequent gathering, proper farm storage facilities, frequent deliveries in case lots, and other factors necessary to an industry on an export basis.

The outlook of the industry depends largely on whether the farmers who keep poultry make a reasonable effort to adjust their poultry units to meet the demands that prevail from established markets.

Suggestions For Yamhill Poultrymen.

1. On farms desiring small home table flocks, from which eggs do not enter trade channels, it is recommended that only flocks of two dozen hens or less be kept.
2. The farm that plans a sideline cash income from poultry from which eggs will go into trade channels, it is recommended that a flock of not less than 400 to 500 hens be the objective.
3. A farm that expects to derive its major source of income from poultry should develop a business unit of approximately 2000 hens as soon as experience and capital warrant.
4. For a well rounded specialized poultry farm program operated under natural conditions of ranging young stock an acreage of 20 acres is recommended. Where artificial confinement is planned throughout, less acreage is needed. Rearing under artificial confinement is successful for the few but is not given general endorsement for all.
5. It is recommended that from 50 per cent to 60 per cent of the laying flock be replaced each year with pullets.
6. In purchasing day old chicks caution should be exercised that they are from pullorum-free parent stock or from accurately blood tested parent stock with all reactors removed.
7. Chicks under average conditions and equipment should all be purchased at one time, February, March, and April being the three months in which the big majority of Willamette valley chicks are purchased.
8. There are two types of brooder houses in general use by those in the industry, each designed to overcome losses from soil contamination.
The permanent brooder house equipped with artificial yards such as wire, concrete, or board floor. (See county agent for Extension Bulletin 451.)
The portable brooder house equipped with skids for moving to clean soil. (Extension bulletin 446.)

The permanent brooder house is in general use throughout commercial regions because of less labor overhead.

9. Shelter houses closed on three sides are recommended for young stock on the range. (Extension Bulletin 442.)

10. Green feed should be provided throughout the growing period and fed liberally until the pullets are in production, then the ration may be reduced to avoid too dark yolk color. Kale or alfalfa are the main green feed crops with carrots supplying winter succulence in case of a freeze.

11. The greatest economic loss to the poultry grower is in quality of the eggs on the farm after they are laid and before they reach the grader's candle. "How to Construct an Insulated Egg Room," is shown in Extension Bulletin 445.

12. Extremes of temperature have shown that laying fowls do better in partially insulated houses. Plans for this type of house are available from the county agent.

13. More capital is required to develop a safe poultry enterprise than the amateur anticipates. Exclusive of the land and the home, it will require a first year investment of approximately \$2.50 to \$3.00 per pullet before she starts production. This expenditure when prorated will include cost of brooder, fuel, feed, litter, cost of chicks, mortality losses, houses, and equipment. A well-defined plan should be followed to give the best protection to the investment involved.

14. It is urged that poultry growers give consideration to the present plan of turkey and poultry growers to combat thievery by:

- (1) Make poultry stealing a felony.
- (2) Encourage a wider use of tattoo, registered branding.
- (3) Require all dealers to display a list of registered brands.
- (4) Publish annually a booklet of all registered brands and place a copy with every peace officer in the state.
- (5) The present law requires dealers to record all branded stock purchased by them. This should aid the grower in tracing stolen birds.
- (6) A grower purchasing branded birds from breeders would get a bill of sale that he could present when offering birds for sale of a different brand than his own.

15. The present law regulating the disposition of dog tax license money should be amended to include idemnity for fowls destroyed by dogs.

TURKEYS

Oregon produces approximately 700,000 turkeys, more than half being exported to markets outside the state. Turkey growers have adopted modern methods of incubation, brooding, and rearing in semi-confinement. Turkeys from hatching to market age are fed balanced, growth-promoting and finishing feeds, the adoption of these practices making mass production a common farm practice. The trend is toward large commercial flocks in the hands of fewer operators and a decline in number of range-reared birds.

The ready sale of day old poults has stimulated the expansion of commercial hatcheries, the demand for hatching eggs resulting in many farms maintaining mated flocks for the egg production.

Disease factors drove the turkey industry westward in search of new and clean range land, Oregon, under natural methods of rearing, holding a distinct advantage for several years. Other states have also adopted artificial methods of mass production and Oregon's turkey industry now faces increased competition.

Turkey houses, artificial lights, selecting breeders for early maturity, and northern and eastern hatcheries contracting southern winter hatching eggs for early poults are factors that result in an increasing number of early turkeys being marketed each summer and fall. This occurs before the market price has been established and before the cold storage holdings have been consumed. The industry is rapidly losing its speculative possibilities and is becoming a marginal business of narrower profit per pound of meat.

The turkey crop of 1935 has a favorable ratio between feed cost and turkey meat prices. As a result of this favorable year, the general trend toward expansion indicates a strong possibility that the number raised may soon exceed that which the per capita rate of consumption will absorb at fair prices to the growers. The United States turkey crop increased from 14,800,000 birds in 1927 to 18,740,000 in 1934 and further increase is expected for 1936.

Oregon turkey growers have the advantages of experience, reasonably priced feeds, climate and green feed, foundation breeding flocks and both independent and cooperative outlets for their products. During this period of general expansion Oregon growers are engaged in a highly competitive business in which a survival of the fittest by individuals and districts ultimately will generally adjust the industry.

During the past few years the turkey industry of Yamhill county has expanded, and in addition to the production of market turkeys, it has established hatcheries and breeding farms that supply poults and breeding stock to many parts of the nation. In 1935 it raised more than 90,000 turkeys valued at more than \$250,000.00. Most of these had to be marketed outside of the county and state as a part of the export crop of the state as a whole.

The depression aided by the great drouth in the midwest reduced the numbers of chickens and turkeys, the same causes, aided by agricultural adjustment, resulting in reduced supplies of pork and other meats. Turkey growers who plan over expansion for 1936 must recognize the fact that their product will have to compete against an increased supply of chickens, turkeys, and other meats and only an improved consumers' demand can prevent a depressing effect on prices.

Turkey production is an agricultural crop for which Yamhill county is well adapted and in keeping with general economic conditions it should be encouraged among efficient operators. It should not be exploited as an easy money-making deal for amateurs.

Growers have a choice of marketing their turkeys through established produce firms or an established cooperative marketing association. Producers also may purchase feeds and supplies either from established feed companies or cooperative channels.

The existence of both methods of marketing and purchasing of supplies is a great factor in stabilizing the industry in the county and protecting the investments of the producer.

The turkey business is a short term business, during periods of good prices many rushing into it, and during periods of low prices there is a general exodus of marginal and loser operators. The cycle of both high and low prices is short and the business adjusts itself more quickly than many long term agricultural enterprises.

In addition to a thorough study of economic conditions affecting the turkey industry, the successful grower is the one who fortifies his business with proven management practices, knowledge of disease control, overcoming known hazards studying his cost of producing a pound of turkey meat, and establishing ample credit to conduct his business.

Suggestions For the Yamhill Turkey Grower.

1. Breeding stock should be selected early in the fall and kept separated from the market flock during the fattening periods. The breeding stock should be given a breeder's mash from early January throughout the breeding season.

2. Turkeys should not be reared or ranged with chickens or on ground recently used as a chicken range.

3. The cost of producing turkeys can be materially reduced by providing succulent green feed during the growing period, turkeys being great consumers of roughage in this form. In addition to rape, alfalfa, clover, and sudan grass, row crops such as corn or sun flowers should be provided for both green feed and shade on farms where natural shade is not available.

4. Turkey prices are depressed each year, through the arrival on the market of poorly finished birds. No turkeys should be killed out for market until they are properly finished in both flesh and feathering.

5. Ample credit is necessary to properly grow out a band of quality turkeys, beginners too frequently thinking in terms of profits rather than costs. Growers should provide finances to the extent of the cost of one sack of feed for each turkey to be raised.

6. Credit when extended to the extent of furnishing brooder houses, brooders, fuel, poults and feed to new beginners is unfair competition against established growers and results in exploiting an industry to the detriment of all. It is urged that a general credit policy be established for extending credit only to growers who can finance their own poults to eight weeks of age.

7. There are disease hazards that growers must consider, the more common ones being fowl-pox, roup, pullorum, mycosis, and coccidiosis. Each of these hazards can be controlled with a minimum of loss to the grower and producers are urged to protect their investments by having an authentic diagnosis made of disease outbreaks as early as possible.

8. Turkey stealing is a growing hazard against which producers must protect themselves, protective measures being outlined at the end of the poultry discussion.