

Oregon's Agricultural **PROGRESS**

Pollen Explodes
From Tripped Alfalfa Flower



Figure Ownership vs. Custom Hiring "Break-even" Machinery Costs

Increasing Milk Sales by Bulk Home Delivery

OREGON STATE COLLEGE

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Advisory Board: R. M. Alexander, assistant director; G. H. Arscott, poultryman; M. H. Becker, extension agricultural economist; R. F. Cain, food technologist; W. J. Ross, extension administration; L. C. Terriere, agricultural chemist.

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COVER:

Pollen flies from alfalfa bloom after OSC agronomist trips it with tweezers. Cross breeding between two plants—originally from Canada—may result in new alfalfa variety which will grow well in various places throughout Oregon and the Northwest.

Photo: Bill Reasons

THE NATION'S business activity entered the final quarter of 1960 with a mixture of trends that could lead to most any type of economic forecast.

Basically, there are two schools of thought concerning our future prosperity. There are those who believe that the slow-down in business evidenced now will prevail for another six to eight months and then show a substantial pickup by a year from now. The second group believes that our post-war period of prosperity is at an end; that we are already in a recession which will get much worse by next spring; and that the recession will hit harder by the last half of 1961. It is difficult to accept the forecast of this latter group.

It is true that the rate of economic growth has been slower in 1960 than for several years. We are in a period of relative economic stability which is a healthy sign on our economic highway. Consumer incomes stay at record levels in spite of increasing unemployment in October. The so-called built-in income stabilizers will pick up a lot of slack for short periods and we see this force at work in the income figures.

The two most important forces which will pull us out of our so-so state of affairs are continued high levels of consumer income and increased government spending for defense. The Federal budget for fiscal 1961 calls for an increased spending of about 1.5 billion dollars. This has been slowly programmed since last July and its real effect probably will not be felt until after the first of the year. The odds are that the new Congress will add still more defense spending in view of our strategic position in world affairs.

Housing starts in 1961 likely will be slightly better than for 1960. Expenditures for new plant and equipment probably will show no change, but investments in plant modernization and automation undoubtedly will be greater next year. While the inventory position of our nation's businesses likely will continue in a short-term position, this always provides a solid basis for expansion when business activity steps up.

The best guess now is more of the same during this quarter and the first quarter of 1961. All economic indices should be at higher levels a year from now. Our psychology, which also af-

Slaughter cattle prices likely to strengthen . . .
hog prices expected to decline . . . higher
prices likely for winter pears . . .

Farm Outlook

By Agricultural Economists G. B. Wood, S. C. Marks, R. H. Groder

fects our willingness to spend and move ahead, will be better too.

Beef cattle

In agriculture, slaughter steer prices this fall have declined more and at a faster rate than a year earlier, but feeder cattle and calf prices have held relatively stable following the sharp decline earlier in the year. Slaughter cow prices also have held fairly steady.

Most recent developments in the cattle market situation lend support for optimism during the next few months. Favorable signs:

¶ Feedlot inventories at the start of the current quarter were only 1% larger than a year earlier.

¶ Pork, beef's greatest competitor in the retail markets, is increasing seasonally but supplies are down from a year ago.

¶ Although business conditions have slowed, employment is still high and

personal incomes are up from a year ago.

¶ Western range feed conditions, though not as favorable as a year ago, are better than average.

¶ Winter wheat pastures are producing an abundance of forage for fall and early winter grazing.

¶ National feed grain supplies are record large and prices average lower than last fall.

¶ Feedlot operators are showing increased interest in feeder cattle.

¶ Current slaughter steer prices remain above the level of prices paid for feeder cattle since last June.

¶ Prospects are fairly good for at least average feeding returns.

Looking closer at some of those signs, the October Cattle on Feed Report shows that farmers and feedlot operators plan to market only 3% more fed cattle during the fourth

quarter this year than last. But there are fewer heavy cattle on feed, 900 pounds and up, than there were a year ago.

This fact lends substance to the common belief that fed slaughter cattle prices, particularly on the higher grades, are likely to strengthen some as 1960 draws to a close. There is already some evidence of a higher price trend. Choice steer prices have advanced 50 cents at Portland since late October and Midwest markets show similar signs of strength. This does not include the general advances due to the election-shortened marketing week.

Cornbelt farmers who usually fatten a large percentage of the country's slaughter cattle have more room in their feedlots this fall. Their feedlot inventories on October 1 were down 5% from a year earlier. This reflects the 13% decline from a year earlier in stocker and feeder cattle shipments into these states during the July-September quarter. And, while California has a record number of cattle on feed, that state reports a 17% increase in feedlot capacity during the past year. Now that Cornbelt farmers are in their slack season, they have more time to shop around for feeder cattle. Feed grain and roughage supplies are particularly abundant in the Cornbelt. The corn crop there has escaped serious frost damage but high moisture content is a general problem.

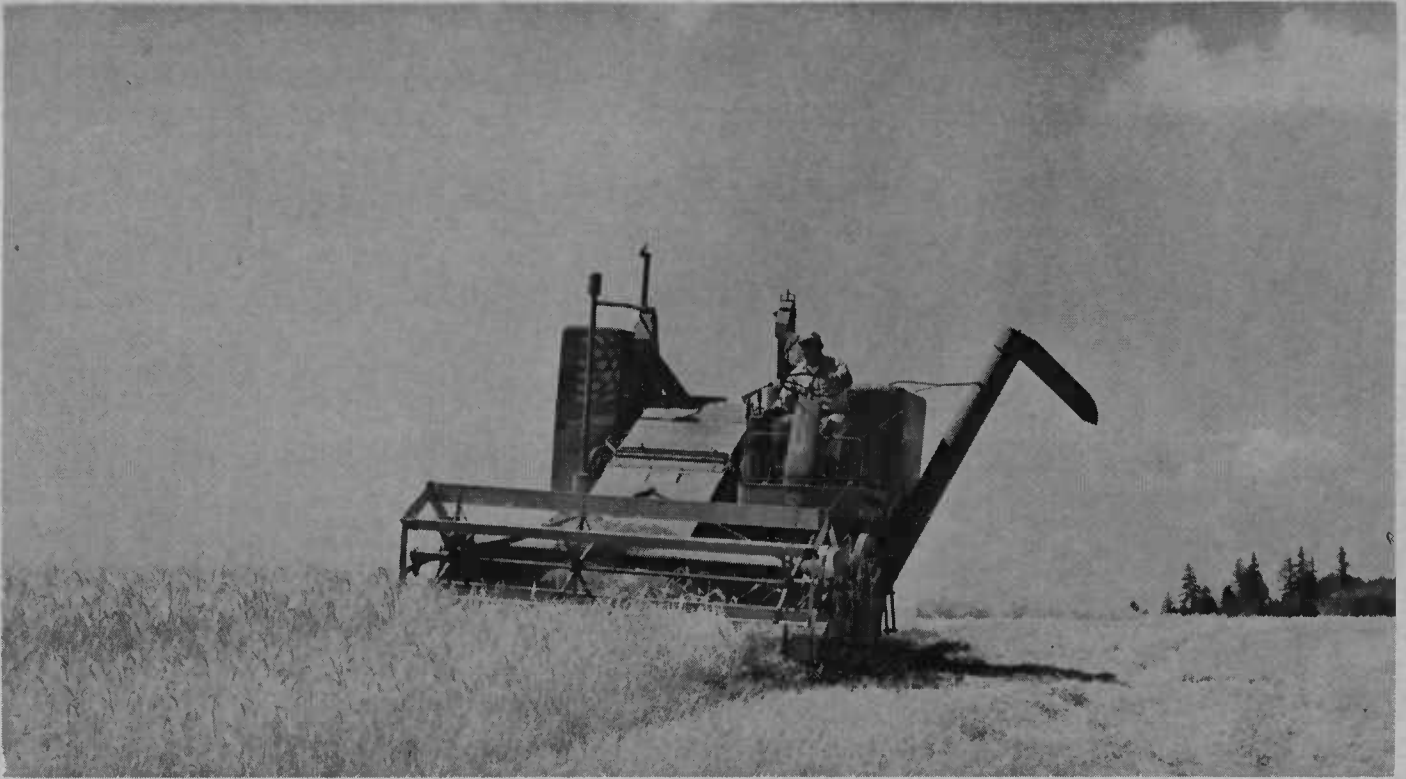
Increased country trade and buyer interest in recent weeks has sparked a rally in Western feeder cattle and calf prices. Early November bids on 500 to 700 pound, Good and Choice

(Continued, page 16)

FEEDLOT operators plan to market only 3% more fed cattle this fall, compared to last fall. But there are fewer heavy cattle on feed than there

were a year ago. This means that fed cattle prices are likely to strengthen, particularly on higher grades, as this year draws to a close.





SPECIALIZED farming equipment, such as this self-propelled combine, is highly priced these days. Research shows growers how to figure whether machinery investments will save or lose money. In the long run, farmers may save money by renting, hiring custom operators, working with friends.

Farm Machinery---Own or Hire?

Research shows how farmers can more closely figure probable costs between owning or renting farm equipment. Comparing these costs may save you money and show ways for figuring other profitable farm investments.

POTATO harvester is example of machine for which ownership costs should be compared with cost of renting or custom operating. Research in Jefferson County developed method for figuring these costs.



IS THAT HIGH priced machine you're thinking about buying going to make or lose money for you?

A new study by OSC Agricultural Economist Emery Castle and Extension Farm Management Specialist Frank Conklin shows ranchers how to figure their "break-even" point when comparing machinery ownership with custom hiring.

Much specialized farming equipment carries a high price tag these days, and the wise operator balances this high initial cost, plus all the other costs of maintenance and operation, against cost of custom hire and rental.

Before sinking large sums of money

in new machinery, the wise operator might compare per-acre or per-hour-cost-of-use with cost of rental or custom work.

If ownership rates are too high, a rancher might be better off to rent equipment, hire custom work, or pool costs with his neighbors.

Cost of ownership, say Conklin and Castle, declines with increasing use because costs that don't change—depreciation, interest, taxes, shelter, insurance, repairs—are spread out over a greater number of hours or acres of use.

The table below includes these fixed, as well as variable, costs of owning and operating three highly specialized pieces of equipment. Cost of custom hiring is shown, and the rancher's break-even point is determined.

While machines in this example were used mainly for potato growing in eastern Oregon, this same analysis can be applied to any piece of farm equipment.

Figure fixed costs

First step is to figure your fixed costs. The table lists these, and footnotes show where the economists got their figures. This method of determining fixed costs is the one generally used by economists and accountants.

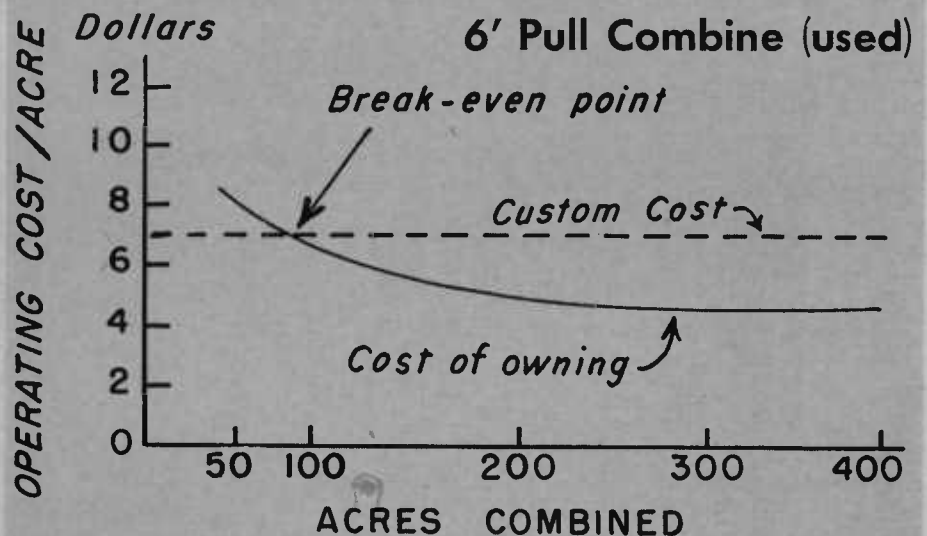
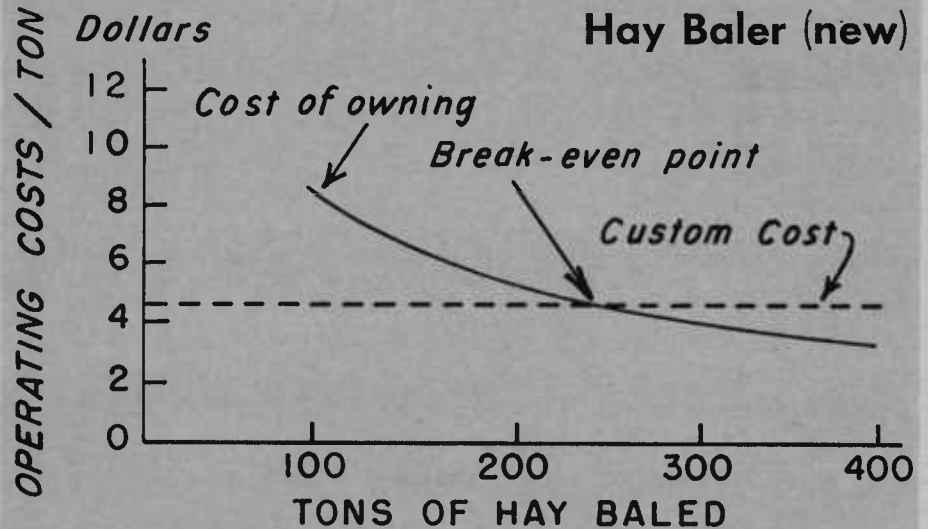
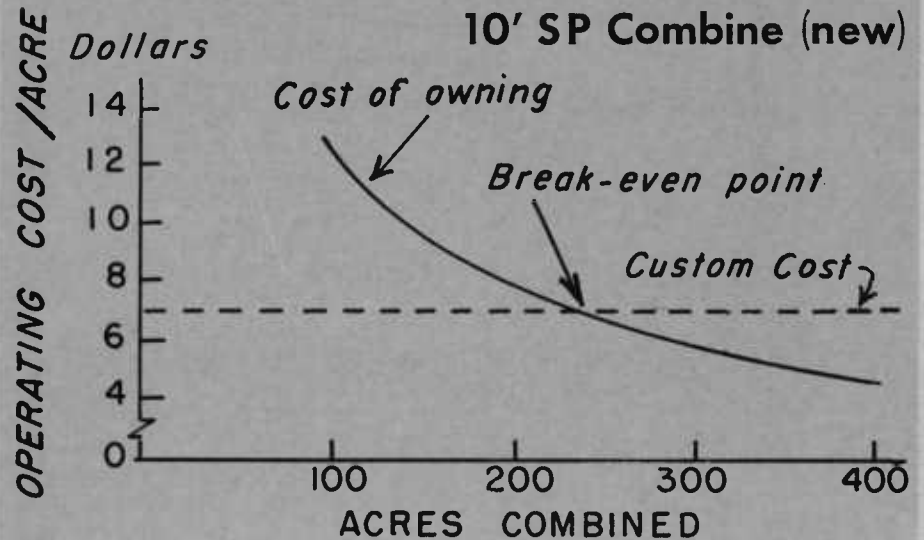
Variable costs are also given in the table below. Economist Conklin emphasizes that these costs are hard to pin down and will vary with each situation. Footnotes also explain these figures.

Cost of custom hiring will vary from area to area, but rates in your neighborhood should be fairly easy to come by.

It's a matter of simple division and addition to convert fixed and variable costs to either total costs per acre or per ton. Simply divide per acre or per ton figures into the total fixed cost per year, add the total variable costs. With the hay baler, for example, suppose you were baling 100 tons. $\$634/100 = \6.34 . $\$6.34 + \$1.74 = \$8.08$. This is the figure plotted on the graph for 100 tons. Repeat this arithmetic for 200, 300 or whatever tonnage you bale per year. The arithmetic is similar for the combine, except you divide the number of acres combined into total fixed costs per year.

When all these figures are assembled, make a graph, using the one

"Break-even" Owning, Custom Costs





USDA Photo

HAY-BALER may save time, money. Wise operator figures exactly what it costs him in the long run.

above as an example, and decide where the break-even point is for your equipment. If you get stuck, ask your County Agent for help—he probably will have some suggestions.

Cost is not the only thing to consider, the economists pointed out. If getting money to invest is a problem, a rancher must decide whether his available capital is best invested in machinery—which may stand idle part of the year—or in fertilizer or livestock.

Timeliness is also important. Cost of owning a machine at the exact moment it is needed should be offset by the decreased risk of jeopardizing a crop. This question will be answered differently by different ranchers—type of crop, nature of climate, and availability of custom work all have a bearing on this problem.

Labor saved can also be deceiving. Conklin and Castle emphasize that several days of work may be saved—but how are these saved days spent? If they aren't spent productively, they cost in income. Leisure time costs money—can you afford it?

This method of analyzing machinery cost was developed by the economists while they were studying the North Unit Irrigation Project in Jefferson County. Results showed that at least

one-third of the farm operators in that area have over-invested in machinery of one type or another. (Part of this over-investment is explained by conditions in the early 1950's—clover prices were high and custom services limited.)

An operator who has already over-invested in machinery and equipment must decide what to do about it.

Figure all costs

Conklin and Castle suggest that cost of keeping a machine and using it as long as possible be carefully compared with what the machine would bring if sold immediately. Quite possibly, a

rancher could get a satisfactory price by selling now—while if he kept the machine and worked it out he would get only salvage value. Also, the machine would cost him money throughout the time he was using it.

Operators thinking about buying new machinery may save themselves money by carefully working out all the costs ahead of time, according to the researchers. Cost of ownership and cost of custom hiring can be carefully compared.

Partnerships in machinery ownership are sometimes successfully worked out between neighbors and friends and are also worth considering.

Ownership vs. Custom Hiring of Farm Machines.

Item	Baler (new)	10' S.P. Combine (new)	6' Pull Combine (used)
Original Cost	\$3400	\$6200	\$1250
Useful Life (years)	10	12	13
Fixed Costs Per Year			
Depreciation ¹	\$ 306	\$ 465	\$ 87
Interest ²	102	186	38
Taxes ³	56	102	21
Shelter ⁴	26	46	9
Insurance ⁵	8	16	3
Repairs ⁶	136	248	50
Total Fixed Cost Per Year	\$ 634	\$1063	\$ 208
Variable Cost			
	\$/ton	\$/acre	\$/acre
Fuel ⁷ .....	.08	.63	.49
Lubricants ⁸ .....	.01	.02	.03
Supplies (wire)	1.00		
Labor ⁹			
Tractor-Gas, Oil, Grease .....	.22		1.26
Operators Labor ⁹ .....	.43	1.36	2.50
Total Variable Cost	\$1.74	\$2.01	\$4.28
Cost of Custom Hiring¹⁰ (variable by area)	\$4.50/T	\$7/A	\$7/A
Approximate "break-even" point	230 tons	210 acres	75 acres
	or		
	77A @ 3T/A		
	58A @ 4T/A		
	46A @ 5T/A		
	38A @ 6T/A		

¹ Original cost less 10% of original cost divided by years of useful life.

² 6% (amount you could earn on other investment) of $\frac{1}{2}$ the original investment.

³ Original cost x 1.65% (personal property tax varies by area but is usually about 1½% of original cost).

⁴ Estimated at .75% of original cost.

⁵ Estimated at .25% of original cost.

⁶ Estimated at 4% of original cost.

⁷ 23¢ per gallon (does not include tax).

⁸ Estimated at 2¢ per hour of operation.

⁹ \$1.50 per hour (typical cost in area of study—North Unit Project in Jefferson County).

¹⁰ Machine rental (varies by area).

New Peach Varieties Available

New peaches for basket or local fresh fruit trade have been tested for eye-appeal, flavor, texture, dependability.

FIVE NEW PEACH varieties particularly adapted for small orchardists, have been tested by OSC Horticulturist Quentin Zielinski. The new varieties will make a good peach for basket or local fresh fruit trade.

Flavor, flesh texture, eye-appeal, cropping dependability, incidence of split pits, and handling qualities have all been evaluated by OSC researchers.

Over 50 varieties were tested, and the ones listed, in order of ripening, are recommended for the July ripening season.

Cardinal—Ripens $6\frac{1}{2}$ weeks before Elberta. One of the best varieties among the very early yellow-fleshed peaches. A nonpatented USDA variety introduced commercially in 1951, Cardinal has large, attractive, colorful fruit of excellent quality, ripening July 10 to 20.

Dixired—Ripens about three days after Early East and Cardinal or about six weeks before Elberta. An attractive, highly colored cling, of good size and good shelf life. Flesh is firm and flavor is good. Probably as hardy as Elberta.

Sunhaven—Ripens 10 days earlier than Redhaven and 35 to 40 days before Elberta. Highly colored, bright red peach with a yellow flesh. Ripens in the Dixired season and may ultimately replace it—if it proves more tolerant of bad weather. Trees are

large, vigorous, productive. Fruit is firm, handles well, and is uniformly round with attractive color and good flavor. Zielinski points out that Sunhaven should be considered an excellent basket or fresh market variety.

Dixigem—Ripens about 3 to 8 days earlier than Redhaven and 10 to 12 days before Rochester. It has a moderate to excellent production record in Oregon. Medium to large in size, and a good dessert peach. Excellent early variety for dessert, canning, and freezing. Has nonbrowning flesh qualities.

Coronet—A nonpatented, USDA variety that appears to be highly promising. Ripens 4-5 weeks before Elberta and a few days after Dixigem and Jerseyland. A yellow-fleshed freestone, firm, high in quality, and most attractive. One of the earliest freestone varieties. Is firmer and will handle better than Dixigem. Trees are large, vigorous, and productive.

Zielinski reports that limited budwood of these varieties is available to nurserymen from the OSC orchards. This will help Oregon growers establish bud source trees.

Old faithful varieties such as Mayflower, Admiral Dewey, Champion, and Arp Beauty, seriously lack the flavor, firmness, color and flesh quality which make a good peach for basket or local fresh fruit trade.

Zielinski believes these new varieties will eventually replace older types.



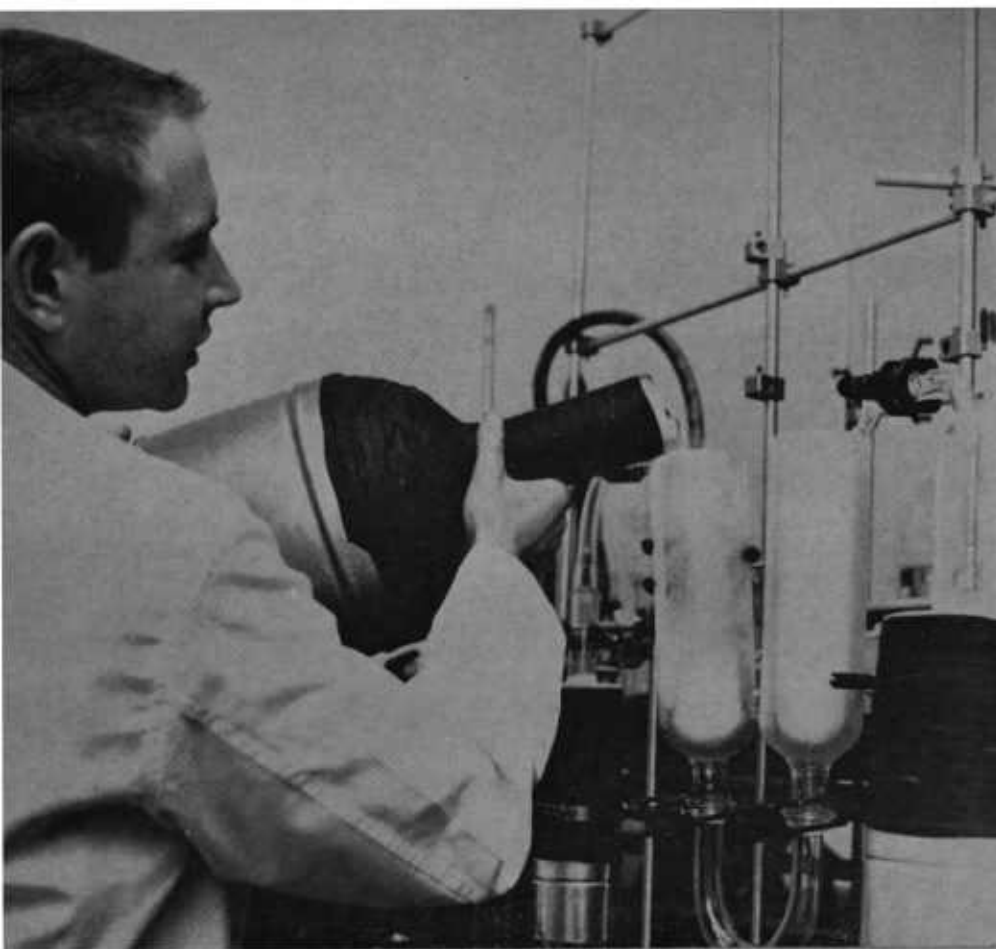
CARDINAL peach ripens July 10 to 20, has large, attractive, colorful fruit of excellent quality.



SUNHAVEN ripens 35 to 40 days before Elberta. Is bright red peach, and may replace Dixired.

DIXIGEM has moderate to excellent production record in Oregon. Is excellent dessert peach.



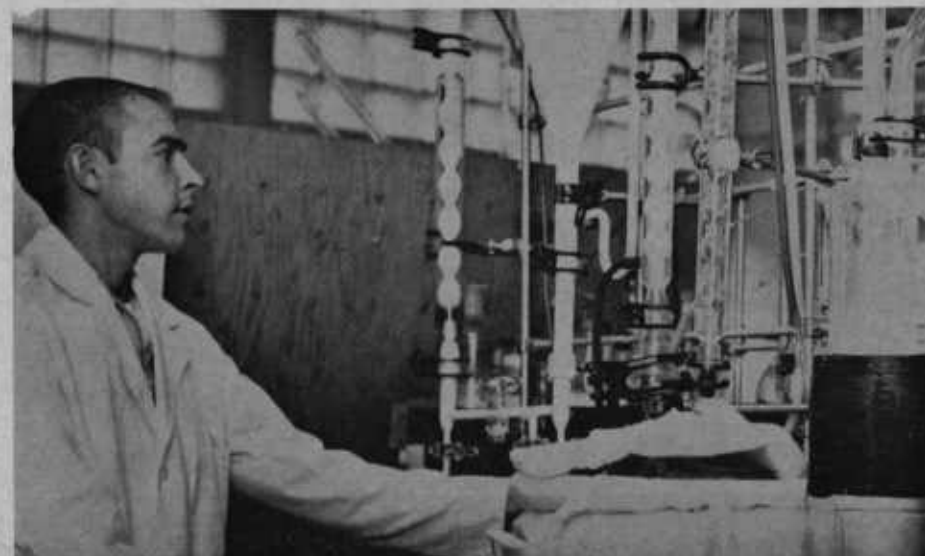


OSC scientists are working to pin down the exact compounds that make butter taste good. Graduate Assistant Robert Lindsay is isolating flavor, in a laboratory, which will be tested by a taste panel.

In the Future . . . Better Tasting Butter

Flavor being defined in OSC labs will help put that old-fashioned taste back in your butter.

BUTTER produced in the OSC lab is as nearly "perfect" as modern science can make it. Scientists use a special butter culture made for maximum flavor content, add it to fresh cream, then make the butter.



DID THE BUTTER on your toast this morning taste quite as "buttery" as it used to?

If not, never fear. OSC scientists are working to capture that old-fashioned butter taste and put it back where it belongs—on your hot pancakes and muffins.

Don't think that elusive, tangy, slightly salty taste has been completely gone from the butter you've been buying during the last few years. It hasn't—but it *has* been in semi-retirement.

Years ago butter was made by adding bacterial cultures to sweet cream. This bacteria grew in the cream and developed a mixture of compounds which gave butter its unique taste.

In those days, when butter was quickly sold from the dairy, never stored, and rarely transported over long distances, this method of making butter presented no problems.

Bacteria cultures temperamental

But the bacterial cultures which produce the buttery taste are temperamental. Skilled dairy technicians are necessary to make sure bacteria don't change character overnight. Also, if cultured butter is exposed to air it may oxidize—and flavor will deteriorate.

Dairymen, faced with these problems, and also concerned over long-distance shipments and long-range storage, solved the problem by using a distillation of the real old-fashioned butter culture.

Thus the consumer was assured of fresh tasting butter. But the taste just wasn't quite as buttery as it used to be.

Today, scientists armed with the latest scientific equipment are learning just what substances made bacterial cultures give butter that special taste.

When they pin down these compounds, learn how they are combined with each other, and in what proportion they occur in a given amount of butter, scientists will be able to chemically duplicate butter taste.

So far, some 15 different elements have been identified in butter taste. OSC Dairy Technologist E. A. Day believes there are many yet to be discovered.

Finding the parts of a flavor is a long, tedious, research job. OSC Bacteriologists P. R. Elliker and W. E. Sandine prepare butter cultures for lab use by adding them to treated milk or some other medium. These cultures, which are originally prepared for maximum flavor content, are used to make butter in the OSC experimental lab.

This butter, which is as nearly ideal in taste as modern science can make it, is then tasted by 10 experts on dairy products—they know how the best butter should taste.

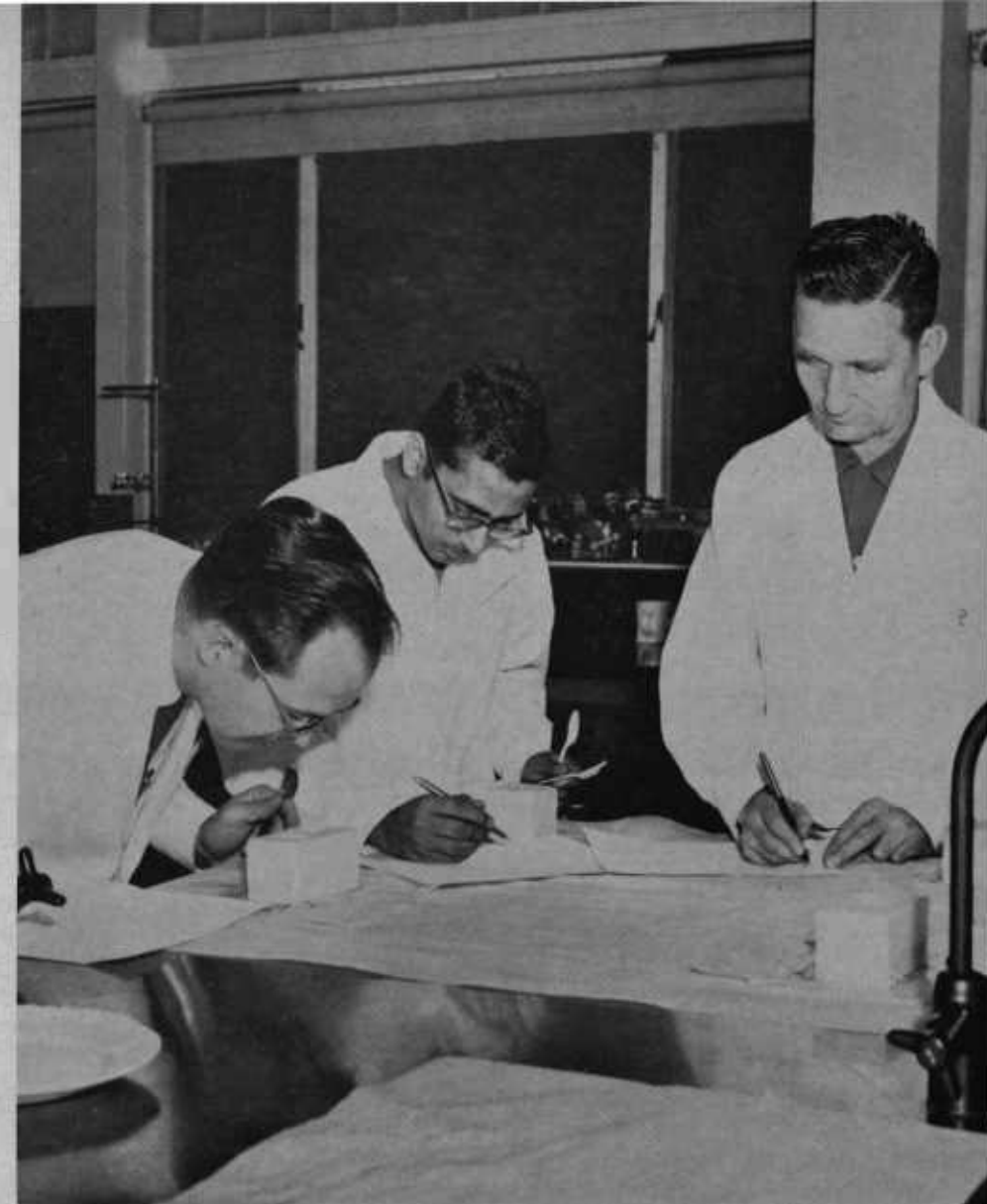
If the panel agrees this is the tastiest butter possible, scientists go to work on it and remove the flavor. The butter is distilled, all excess water is removed, and Scientist Day is left with pure concentrated butter flavor.

The concentrate is then broken down, with sensitive equipment, into its component parts and these parts are measured.

When the scientists are sure they have measured and identified all possible parts, they carefully analyze what they've sorted out and try to put the flavor back together chemically.

When they finish, they have a new butter—supposedly as tasty as the old kind, but one which won't rapidly go rancid or lose much of its freshness.

BUTTER concentrate made in the lab will be broken down by sensitive equipment and parts will be measured. Lakho Khatri, of University of Bombay in India, works with Lindsay to develop pure butter concentrate for use in test.



TASTE PANEL is made up of dairy experts who know how best butter should taste. Object is to find compounds which will make butter taste stand up during storage, transportation, temperature change.

This new butter goes back to the taste panel and experts decide if it is as good as the original batch made with old-fashioned cultures.

If it is, the new butter goes to a consumer testing panel, to be rated on taste. If it fails to pass either taste test, scientists hunt for the missing compound and then start over again to develop a slightly different and more accurate butter flavor.

Spreadability studied

Butter spreadability is now being studied at labs throughout the country and some scientists believe the best way to make cold butter really spreadable is to change its chemical composition. If this research succeeds, a flavor

concentrate like the one under development at OSC will be needed to restore butter to its original delicious state.

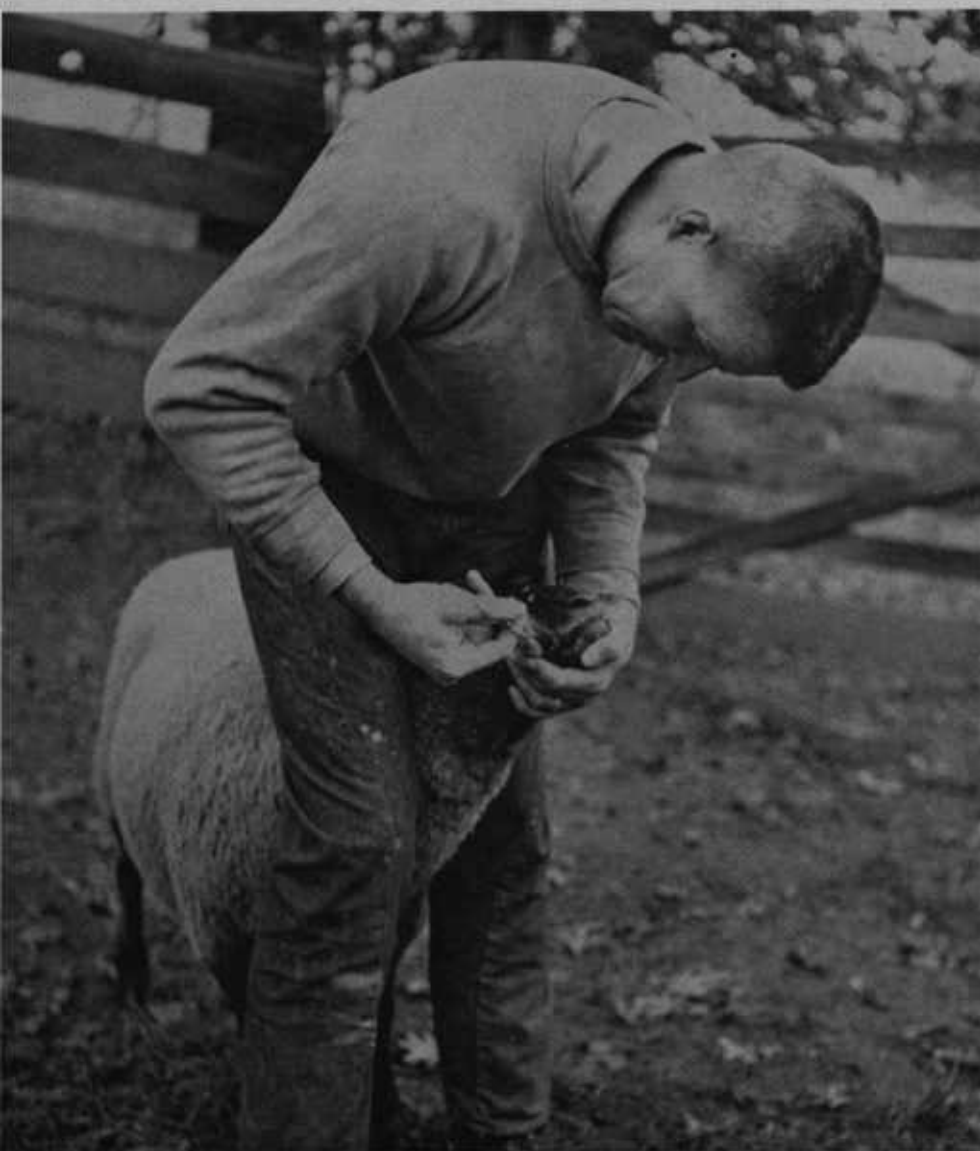
(OSC scientists have already developed a butter which is moderately spreadable when cold—this butter was perfected by changing manufacturing methods, and not by changing chemical composition of the butter, so it retains the real butter taste.)

Final result of all this work will be to provide the dairy industry with a flavor concentrate which can be counted on to give butter the best possible taste. This also will probably assure butter which will hold freshness and flavor in spite of demands of modern storage and transportation methods.

Drugs play important part in sheep-drenching, reports OSC scientist, but for drugs to be successful . . .

Dosage Time Vital In Parasite Control

PROPER drenching is essential for controlling internal parasites. Worms take toll in reduced weight. Douglas County lambs which were dosed with Purified Fine Particle Phenothiazine were protected.



TIME OF DOSAGE is essential for control of internal parasites in sheep.

That's the report of OSC Parasitologist Stuart E. Knapp, who is engaged in a long-range research project to develop controls for internal parasites.

So far, two significant results have come out of this long-range research.

Drugs are not the whole answer to parasite control and time of dosage is vital.

Purified Fine Particle Phenothiazine and Ruelene—two relatively new compounds—were used on top quality lambs on a Douglas County ranch.

(Knapp explains that his research occasionally allows him to test new commercial drugs on which little information is available. Purified Fine Particle Phenothiazine has also been tested in California.)

The twist to this experiment was that Knapp and the rancher, working with County Agent Wayne Mosher, decided to dose the lambs at two different times—in March, the rancher's usual dosing time, and in May.

May dosage tested

Knapp's research into the habits of parasites led him to believe that a May dosage might be especially effective. By that late in the spring sheep have been on pasture longer and parasite larvae have built up on the pastures. Each animal has a greater chance to pick up parasites off this infested pasture.

If sheep can be dosed at this strategic time then the entire parasite population may be set back. Worms already in the sheep will be killed and further parasite infestation will be reduced.

This helps lambs reach market condition without developing serious parasitism.

Results of this Douglas County experiment showed that heavier lambs were produced in the group where Purified Fine Particle Phenothiazine was strategically administered (See graph).

Stomachs and intestines of the lambs were saved by the packers, working in cooperation with Knapp and Animal Husbandman C. W. Fox, and were carefully examined in the OSC laboratory for parasites. Worms were counted, and final experimental conclusions were made.

Results indicate that an early spring dosing time is considerably less effective because parasites may not have had time to build up in the lambs—and drugs may be totally wasted.

Lambs fed Ruelene and Purified Fine Particle Phenothiazine differed only slightly in weight, and control lambs, which were given no drugs, weighed in close to lambs receiving the other treatments—with the exception of the Purified Phenothiazine fed twice.

Knapp emphasizes that the May date may not be the best time to drench sheep—but it does appear to be better than earlier in the year. Future experiments probably will show that the best time differs with place and climate, but Knapp is convinced that drugs used without consideration for time, place, and climate are well-nigh useless.

Sheep used in this experiment grazed on subclover-ryegrass pasture, and Knapp points out that animals on irrigated pasture might be most benefited by treatment at a different time. Animals on irrigated pasture are closed in, graze close together, and cover the same territory time after time.

All this research to find controls for internal parasites points to the importance of linking treatment time to the parasite's life cycle, time of year, and possibly, forage being grazed.

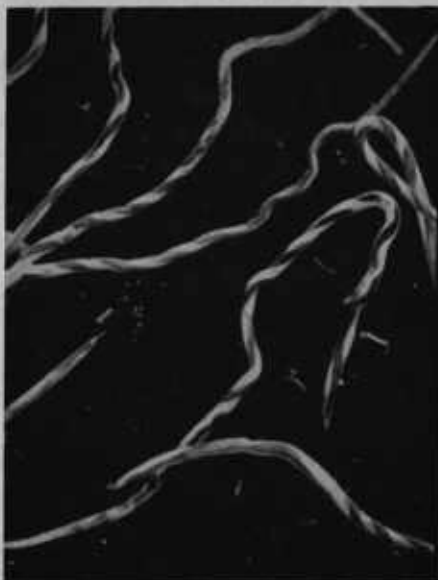
Best approach to a control, Knapp believes, is a complete understanding of the parasite itself. How and when parasites thrive, forages which provide the best haven, effect of climate and various agricultural practices, must all be known and understood before really effective parasite controls can be developed.

Conditions may vary by climate, type of forage, type of pasture, and the rancher's practices and skill in handling animals.

Second major finding which will help producers ties in with knowing as much as possible about the parasite itself.

Eastern stomach worm—also called the barber's pole worm—does live through the Oregon winter.

Livestock producers who run cattle and sheep on irrigated pastures will now have to take yearly precautions against this parasite—for years, scientists believed the worm died off in winter.



EASTERN stomach worm—also called barber's pole worm—does live through the mild Oregon winter.

Knapp also learned that yield and survival of eastern stomach worm larvae were greater on some types of forage than on others.

Perennial ryegrass, velvetgrass, red clover, subterranean clover, alsike clover, and New Zealand white clover all were infested with parasite larvae early in the fall. Perennial ryegrass and velvetgrass had the highest percentage of larvae, consistently, throughout winter and into spring.

Additional research planned

Knapp and W. S. McGuire of OSC's Farm Crops Department plan additional research to examine characteristics of the various forages. In years ahead, growers may be able to limit parasites by growing certain grasses and clovers.

To do all this work properly, Knapp is in the parasite raising business in a

big way. To procure pure cultures—solutions—of specific worms, he isolates and bottle-feeds new-born lambs. The lambs are then artificially infected, and a study is made of how parasites affect lambs under these carefully controlled conditions.

Knapp is also experimenting with effects of radiation on parasites. Some possibility exists that parasites, like many other animals, can be sterilized by certain radiation dosages. By working on these theories, it may be possible to develop a vaccine which would protect sheep and other animals from internal parasites.

All this research takes time, but Knapp and other researchers are sitting up nights in an attempt to find the best, most practical solutions to the costly problem of internal parasites.

Meantime, the OSC scientists have these control hints for sheepmen . . .

¶ A highly nutritious ration helps animals resist effects of parasites.

¶ Worm egg production should be reduced by drugs—preferably phenothiazine—before large quantities of eggs have been passed on to the pasture.

¶ For best results, drench with phenothiazine in the fall, spring, and sometimes during midsummer. Since the drug is not effective against immature parasites, give a second treatment 10-14 days following the first.

Fall drenching helps eliminate parasites acquired during the summer and which otherwise might live through winter. Spring drenching helps check a buildup of worms which is apt to occur then.

Knapp believes that if ewes are treated according to these suggestions, a possibility exists that lamb treatment can be eliminated—but more research is needed on this particular point.

Time of Dosage and Drug Important in Controlling Lamb Parasites

TREATMENT	DATE	FINAL AVERAGE WEIGHTS, JUNE 26, 1960					
		93 lbs.	94 lbs.	95 lbs.	96 lbs.	97 lbs.	98 lbs.
FINE PARTICLE PHENOTHIAZINE	3/60						
FINE PARTICLE PHENOTHIAZINE	3/60 & 5/60						
PURIFIED PHENOTHIAZINE	3/60						
PURIFIED PHENOTHIAZINE	3/60 & 5/60						
RUELENE	3/60						
RUELENE	3/60 & 5/60						
NO DRUGS	-----						



CANS for home milk dispensers are filled in Portland dairy. Dispensers, used in a few Portland homes, have raised milk consumption as much as 24%.



DELIVERY MAN installs can in dispenser located in Portland kitchen. Some satisfied homemakers would redesign kitchens to make room for dispensers.

New Way to Increase Milk Sales

Home milk dispensers may increase dairy profits, give children better milk to drink, make life easier for the homemaker, according to new OSC research.

A NEW TECHNIQUE in milk delivery may make life easier for the homemaker, give children more and better milk to drink, and, in the long run, bring in more profits for dairymen.

Refrigerated milk dispensers, used domestically, may bring about a better day for the dairy business. Institutions and restaurants are prime users today, but with the rapid growth of the American family, the home kitchen may become a logical place for a dispenser.

Lyle E. Moe and S. Kent Christensen, former OSC agricultural economists, report that in a group of Portland families using dispensers, milk

consumption rose 24% soon after the units were installed.

Advantages listed

Homemakers interviewed cited the following advantages, in this order, to having dispensers in their kitchens . . .

¶ Convenience . . . no need to open refrigerators and bottles to get that midmorning glass of milk for the children.

¶ Saving of refrigerator space . . . large families needn't have cold areas taken up with milk containers.

¶ Better quality milk . . . most homemakers thought the milk tasted better, and researchers pointed out

that the dispensers keep milk colder and hence preserve freshness longer than the usual home refrigerator.

Units which one Portland dairy is making available to customers are stainless steel inside, white outside, and hold two 3-gallon cans. These units are placed in the customer's home under several different plans.

Some users buy the unit outright for about \$135. Others rent from the dairy for \$1 monthly, or buy the units on the installment plan for \$5 monthly. In certain cases where income is low and consumption unusually high the dairy will loan the unit to a family for no charge.

A Denver dairy which has had success with milk dispensers offers the unit free—with the hedge that the customer must buy six 3-gallon cans per month or pay a \$2 monthly fee. Another dairy, in Albuquerque, charges a flat \$3 monthly rental.

Portland families using dispensers appear generally well satisfied, according to the researchers. The Denver firm reports that many homemakers in that area are so enthusiastic about dispensers that they say they would not be without one again.

Dispenser accounts in Denver refused to shift back to conventional containers even when a competing dairy offered milk at 15 cents a gallon less than the dispenser users were paying.

Portland homemakers told interviewers that if they were building homes, they would design kitchens to make room for dispensers.

Moe and Christensen report that these satisfied customers had certain characteristics in common . . .

¶ Relatively high income level . . . 70% of the households interviewed had gross incomes of over \$6,000 per year.

¶ Larger than usual family . . . average family interviewed had more than six members.

¶ Educational level of homemaker was high . . . 43% had college training.

All these differences point out that the milk dispenser may have a special place with a special kind of family.

Researchers interviewed 38 Portland families who had requested that dispensers be removed from their homes, and the primary difference between this group and the satisfied families was one of income. Higher income families did not object to higher milk bills and usually had more space in their kitchens for the dispenser.

Major disadvantages mentioned by all homemakers were kitchen space requirements, cost of increased consumption, and milk spillage and spout drip.

Several homemakers had the dispenser installed in a garage or porch near the kitchen.

Interviewers reported that the complaint about increased cost occurred because of the additional rent for the unit as well as the increased milk

consumption. Half the families thought that, since they were now buying substantially more milk, they should not be charged for the dispenser. The other half suggested that the price of the milk should be reduced since they had become volume users.

Dripping when a new can was cut seemed to be a problem in most homes. Spillage caused by little children lifting the spout when parents weren't around also created a problem—some households had a lock device designed to prevent this, but the children figured out how to work it or parents forgot to put it on the spout.

Customer contact good

Few of the homemakers interviewed objected to having delivery men enter their homes to service the dispenser. Some dairy men believe this additional customer contact is good because the delivery man has an opportunity to suggest other dairy products to the homemakers.

Limited promotional work has been done in Portland, and the majority of homemakers interviewed heard about dispenser milk delivery through their friends and relatives. Dairy solicitors visited 27% of the group (visits were made only to high income families) and 24% learned about dispensers through a trade fair and through non-advertising articles in the newspapers.

Power of word-of-mouth advertising was reported by an Albuquerque

dairy which put 20 units in customer homes, did no active promotion, and within the next eight months obtained 350 dispenser accounts merely by customer requests.

The Portland dairy studied by Moe and Christensen reported that few savings resulted from processing, packaging, or distributing milk via dispensers rather than in the conventional manner.

Since this dairy did a small-volume dispenser business, researchers set up a model dairy with a specific daily volume, necessary equipment, and labor force. They figured costs of processing milk into quart and half-gallon paper containers and then went on to figure costs of volume processing for dispensers.

Results show that increasing dispenser volume, under the conditions of this model plant, at the expense of paper container volume was to decrease daily plant costs by 57 cents.

Hence it appears that in volume business, cost of dispenser processing is very nearly the same as conventional processing.

Some economists believe that milk dispensers, with their convenience and with the added advantage that they do increase family milk consumption, may point to one way for dairies to recover business they may have lost to grocery stores and also may provide an ideal method for developing new customers in high income groups.

JOHN KELLY of Portland, his seven brothers and sisters, like having a milk dispenser in the kitchen. Research shows dispensers are most popular with large families in high income and education groups.



Research Briefs

How 2,4-D Kills Plants Reported • Co-ops Can Increase Income by Merging • Anemia Causes "Cotton Fur" in Mink

Alfalfa Being Developed That May Grow Well in Most Parts of Oregon

A NEW ALFALFA VARIETY which will grow well under many different conditions is being developed in the OSC Farm Crops Laboratory.

Agronomist Rod Frakes reports that alfalfa, sometimes called the queen of forage crops, is producing a grandchild which may be a boon to growers everywhere.

Five parent plants with a creeping root growth habit were increased 20-25 times—this increasing is done simply by breaking the parent plants into pieces and then planting the pieces—and were planted at Astoria, Oregon City, Klamath Falls, Squaw Butte, Redmond, and Ontario.

Traditionally, alfalfa doesn't grow well in acid soils—but several of these plants grew surprisingly well in Astoria and Oregon City, where soil acidity is relatively high. The same plants did well in Klamath Falls and Ontario—areas with soil and climatic conditions about the reverse of those in Astoria and Oregon City.

Frakes points out that this research, started several years ago by OSC Agronomist Ritchie Cowan, shows that

certain alfalfa plants will do well in different areas. It may be possible to develop varieties from only two parent plants which will respond favorably on widely differing types of soils, under different management and climate conditions. Most widely adaptable alfalfa varieties are the result of many parent plants.

The two plants which performed so successfully around the state—originally obtained from Canadian researchers—are being crossed again and Frakes is hopeful that their progeny will have wide adaptation.

Seed production a problem

If they prove adaptable, the scientist will then face a problem of seed production—final aim of plant breeding work is to make seed of new varieties available to growers. Getting enough seed, at a reasonable cost, from two parent plants will be a major obstacle.

Alfalfa, the most widely used and most nutritious of all forages, is a mixture of many kinds of plants. Frakes says that hidden characteristics of several of the many ancestors of

alfalfa have apparently been combined in the new variety to produce an unusually adaptable plant.

Alfalfa was first grown in the United States in Georgia in the mid 1700's. George Washington and Thomas Jefferson both grew alfalfa on their Virginia farms.

2,4-D Helps Science Understand Plant Growth

2,4-D, THE CHEMICAL usually thought of as a plant killer, has become the key to understanding how plants use their food.

Agricultural Chemist S. C. Fang points out that scientists have wondered for years just why small amounts of 2,4-D, applied to young plants, stimulated their growth.

To find out just what happened, Fang fed young bean plants with radioactive carbon atoms from glucose. The radioactivity enabled him to trace the way the beans used this glucose.

Plants use food in two ways—to grow and to maintain life. The younger the plant, the more food is needed for growth and the less for maintenance.

Fang's research showed that small amounts of 2,4-D caused the young plant to cut down on the amounts of food it was using to stay alive, and to use more of the available food for growth—hence the plant grew faster and produced greater yields.

This research helps explain plant metabolism—the way plants get and use energy for growth—to scientists and also shows how this metabolism can be altered by chemicals.

Scientists will now be able to measure effects of growth-stimulating chemicals on various plants in the laboratory. Field trials to check stimulators have been expensive and often unreliable because so many variables—climate, farm practices, and so on—could bias and change results.



AGRONOMIST Rod Frakes prepares to cross-pollinate alfalfa varieties. Pollen is released from flower and used to develop new variety which will grow well under many different Oregon conditions.



NORMAL mink pelt (top) is rich, luxurious. Mink suffering from cotton fur condition produce flimsy, sleasy, pelts with white underfur (bottom). The cotton fur condition may be hereditary in mink.

Iron Added to Mink Diet Reduces "Cotton Fur"

EVER SEE a mink with anemia? He's not a pretty sight, and probably has a definite inferiority complex because he'll never wind up around a pair of pretty shoulders.

Mink have been plagued for years with a condition called "cotton fur," and growers have suffered wide economic loss because "cotton" pelts have low values.

OSC Animal Husbandman F. M. Stout and his associates have recently discovered that a mink suffering from cotton fur is also an anemic mink. In addition, the scientists have pinned down many of the whys of cotton fur and are advising growers how to avoid the problem.

Normal ranch mink have deep, thick, soft, dark, luxurious pelts. Cotton fur animals have flimsy, sleasy, undersized pelts—and worse yet, most of their underfur is white.

This unhealthy condition, says Stout, is a direct result of dietary deficiency. Many mink foods contain a high proportion of fish—and one particular fish, whiting, had been used widely in eastern and middle western ranches where cotton mink often occurred.

Stout experimented with whiting and hake—a west coast trash fish which is very similar to whiting—and discovered that mink fed these fish raw developed cotton fur.

But when hake and whiting were

cooked, up to 50% of the mink ration could consist of the fish—and a normally colored, salable pelt resulted.

Mink—like all animals—need iron, and Stout's research shows that these particular raw fish contain some factor which prevents mink from making best use of iron in their food.

Mink injected with small doses of iron will not develop cotton fur but so far no satisfactory way has been devised to supplement a ration with adequate supplies of iron. John Adair and J. E. Oldfield, animal husbandmen working with Stout, point out that all animals, including man, have difficulty absorbing iron, and in addition, mink don't like the taste of rations containing large proportions of the mineral.

Experiments with mink families have shown that certain ones seem to have more tendency toward cotton fur and anemia than others. Stout will continue genetic tests to determine if certain mink families have a tendency to use iron ineffectively. In years ahead, mink ranchers may be able to select breeding stock from families which show no inclination to develop cotton fur.

Scientists agree that the practical cure for cotton fur is to cook whiting and hake prior to feeding. Iron injection is difficult and time-consuming, and iron supplementation of rations is not yet fully satisfactory.

Farm Co-op Mergers Can Increase Income

MERGERS OF FARM COOPERATIVES can lead to increased income for members.

That's the result of a study of five Oregon supply and marketing cooperatives by Agricultural Economists G. E. Korzan and Howard C. Hogg.

An additional \$418,000 might have been distributed to members of these co-ops over the past three years—as increased receipts from marketing grass seed—if they had merged in 1956.

Sizeable savings would have resulted from combined bookkeeping systems and other economies brought about through merger.

Korzan points out that cooperatives, like other businesses, have been feeling the pinch of increased competition and decreasing net margins.

One way to avoid this squeeze is to enlarge the business and modernize procedures—thereby saving money in operating costs and bringing in more dollars for co-op members.

Larger firms can reduce risk through diversification of interests, more orderly marketing, easier financing, and better management.

Before a merger is possible, co-op members must be convinced . . .

¶ They will get better prices for the products they are selling through the co-op.

¶ They will get lower prices for products they buy through the co-op.

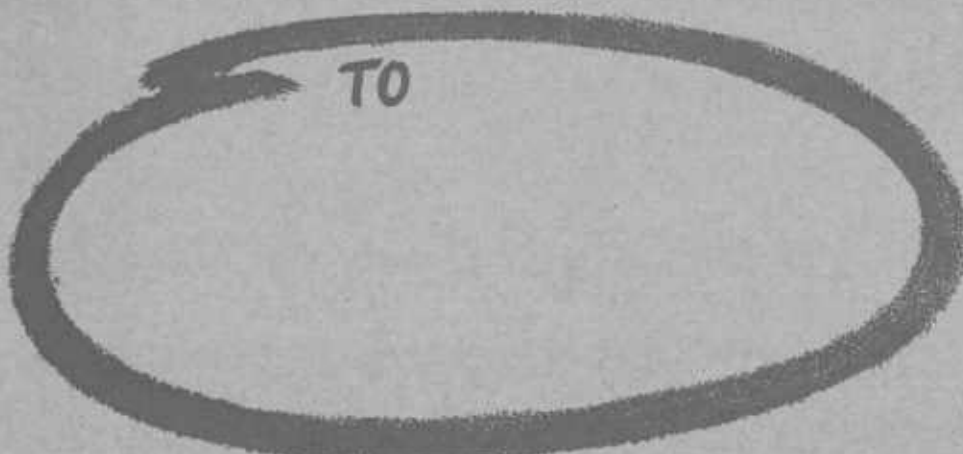
¶ Their assets will not be used to bail out a weak or failing cooperative organization.

Personnel shifts beneficial

The firms investigated would have benefited from shifts in personnel which would have permitted managers more opportunity to specialize in grain or grass seed marketing.

Over the past three years, average price received by these businesses for grass seed was less than average market price in Oregon. Managers who could devote nearly full time and attention to marketing methods would probably have been able to bring prices into line.

Korzan estimated that a saving of \$15,500 could have been realized in bookkeeping alone—assuming modern methods and machinery were used.



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Farm Outlook

(Continued from page 3)

yearling steers at Ontario averaged \$23.50. This is \$1.30 above the September average, but still \$2.25 under a year earlier. There are no distress sales because of a lack of range forage.

Good to excellent range and pasture conditions, particularly in the important feeder cattle-producing southern Great Plains, are a major cause in aiding orderly marketing this fall.

Sheep and lambs

The outlook for sheep and lambs the next two or three months is not as bright as it appears to be for cattle. Unless domestic sheep slaughter and imports of lamb and mutton decline, odds are that live market prices the rest of this year will show little change from the currently low levels. Year-end prices are likely to match those of December 1959.

Lamb feeding is particularly heavy in the Cornbelt this fall. This had been encouraged by prospects of at least average feeding returns. Feeder lamb prices are down more than fed lambs are, compared to a year ago. Inshipments into those states in September alone were up 30% from the same month last year. A large percentage of these lambs are used to clear up crop aftermath and many are placed directly into feedlots for 30 to 60 days. Increased lamb feeding in the North Central states this fall contributed to the recent increase in sheep and lamb slaughter.

Federally inspected lamb and mutton production in October average right at 15 million pounds per week—2 million pounds more than the weekly average for October last year.

Hogs

The late summer hog market has surprised many observers and the fall market seems to be no less of a puzzle.

Market prices have held up unusually well the past six weeks despite seasonally larger marketings. Some observers attribute current strength in the hog market to the business slowdown and a shift toward cheaper meat products, such as pork, by families in which the breadwinner is unemployed.

Hog prices are still expected to decline seasonally. But, because of smaller available market supplies this fall, chances are good that the decline will be less than usual and prices will likely remain well above the level of late 1959.

Processed crops

Canned and frozen supplies of most fruits and vegetables are in better position this fall than they have been for several years. Packs in many instances turned out smaller than expected. If current movement from storage warehouses continues as present sales would indicate, burdensome carryovers will be nonexistent.

This should create optimism for most processors and could mean higher prices at the farm level. The only sign at the present time to change this would be a continuing increase in pro-

cessing costs. Cost of cans, labels, labor, and transportation have increased during recent months and increases have been indicated prior to the next packing season.

Storage crops

The nation's apple supply is shorter than previously expected. Keeping quality is reported "good." Sizes generally are running smaller than normal. Marketing has been slow thus far and prices are expected to strengthen at the turn of the year. Growers and packers who have good storage quality and large-sized apples should do well by holding.

The winter pear crop also turned out smaller than a year ago, resulting in a smaller packout of marketable pears. This should result in higher prices provided orderly marketing is maintained.

The potato crop, if marketed in an orderly manner, should pay storage costs and return growers, packers, and storage operators more money than a year ago. The fall crop is only 4% larger than that of 1959 with an increased percentage heading for processing outlets. This would indicate prices at, or near, last year's level. But holding in storage too long could cause "bunching of sales" late in the season resulting in lower prices at that time. Close attention to reports of stocks on hand in December and the first part of 1961 will be helpful in making marketing decisions. If higher than a year earlier, it would be a signal to start selling. Orderly marketing is the key to favorable returns.