Oregon's Agricultural PROGRESS

Mink Kits On Feeding Studies

Incorporating the Family Farm Is Worth Considering!

How to Establish Sub-Clover on Hill Soils

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COVER STORY: Baby mink are used in feeding tests at OSC mink farm. These 5-month-old kits thrive on a mixture including turkey waste. Latest research in mink feeding is reported on page 15.

Photo: Bill Reasons

PRICES of many Oregon farm products during the current marketing season will not be as high as most farmers would like to have them—mainly because of super-abundant supplies.

But some products will be scarcer and all will be dearer than they would have been if we were still in last year's economic slump. The economic snapback in the state and nation has been near-spectacular. It has been sufficient to boost employment and consumer spending to new all-time highs. Likewise, lumber production, factory production, new construction, retail sales, new orders, and numerous other economic indicators have moved up sharply. It all adds up to a business boom and stronger demands for the things farmers buy and sell.

Mid-year questions

Now, at mid-year, some big questions are: How long will the boom last? When will the next letdown come? What about tight money? Will the steel strike end soon?

These questions, of course, cannot be answered with certainty. Yet, there are many reasons to believe that the economy will show a generally satisfying rate of growth through the rest of 1959 and probably 1960 as well.

Most moves by government certainly will be aimed to stretch out the boom. The steel strike itself can be more of a boom-stretcher than a boom-breaker. It will permit manufacturers to use much of the steel inventory they have accumulated and postpone the eventual cutback in new orders that grow out of inventory building.

Tight money

So-called "tight money" and rising interest rates will slow down borrowing to spend for production as well as consumer goods. If not carried to extremes, this can steady and stretch out good times.

And remember, higher interest rates not only make borrowing more expensive but also make saving more profitable. Invested savings, in turn, become the capital needed to provide the machines that help us get the material things we want.

In any event, without forgetting the possibility that we may be wrong, let's assume that the economic recovery will continue throughout the remainder of

Record corn crop may cause storage shortage . . . barley and oats supply smaller than last year . . . plan to stretch hay supplies . . .

Farm Outlook

By Agricultural Economist M. D. Thomas

1959 at least. Then what does this mean to Oregon farmers?

It means, among other things, that:

¶ Prices received for many farm products—especially meat animals, fruits and vegetables—will be higher than they would have been if the recession were continuing or worsening.

¶ Prices of some farm products will show improvement over other recent years. Other prices will be lower—due mainly to large supplies.

¶ Costs of many things farmers and their families buy for production and living may rise.

¶ Quality products marketed through efficient marketing organizations in forms preferred by consumers will bring premiums.

¶ Value of farm assets will hold up, as farmers and others bid against each other for land, labor, and capital required to satisfy demands of the growing economy.

¶ Opportunities will increase for off-farm jobs for all members of the farm family of working age.

As a matter of fact, those considering doing something besides farming will seldom find a better time to move in that direction. The number of jobs off farms is record large; the number of people looking for work is relatively small.

¶ This is also a good time to lease or liquidate farm assets. Many of those who stay with farming will be eager to rent or buy additional land to increase their efficiency and incomes. As long as business is booming, other demands for land will come from those seeking industrial sites, business locations, and residential property.

This fall more farm land will go into the Soil Bank Conservation Reserve. Funds are available for about 46,000 more acres in Oregon and 5 million more nationally. If these acres sign up, the national total in the program will be about 28 million acres.

Last chance deal? That's what this fall's sign-up will be unless Congress makes new authorizations in years ahead. While the program has not solved all farmers' problems, it has helped many who wished to retire or turn to other work.

A "comer" among farm programs is "Rural Development." Off to a slow start in 1955, increasing attention is now being placed on this method of developing new opportunities in rural areas. It is easing the adjustment from farm to off-farm work in many places. Over the long pull, this approach appears to offer much promise. It cooperates with basic economic forces at work in our economy rather than opposing them.

Looking more closely at commodity prospects, we see perennial problems continuing and a "Duke's mixture" of changes in the making.

Wheat. Wheat, still Oregon's number one crop, is frequently termed the nation's number one farm problem, largely because of the record-breaking carryover now on hand. Coming on top of this carryover is a new crop at least equal to the amount we were able to dispose of during the past season. The program promised for 1960 has price and planting features similar to other recent years.

We shall be lucky indeed to avoid a

(Continued, page 16)

CATTLE business looks like a good long-term bet in many parts of Oregon. Ranchers selling feeders fairly early probably won't be sorry this year. Odds are against a fall pickup in prices. Slaughter markets will be space gives seedlings a chance to develop without competition from weeds.

CORPORATE organization simplifies the problem of dividing ownership of acreage and equipment between brothers and sisters or other family members. Machinery shown above would be represented by stock certificates, and no individual would own, or be responsible for, a single combine.

CORPORATION FARMING---Is It for You?

Latest trend in family farm management is incorporation. Below are some questions and answers to help you decide whether or not to incorporate. The corporation may help with estate planning or division of property between members of your family.

HAVE YOU EVER considered incorporating your farm or ranch? Probably not, since most of us think of corporations as big, impersonal, business organizations.

But incorporating your farm or ranch can have advantages. And a trend toward incorporation by family farmers is in the making, according to OSC agricultural economist Grant Blanch.

With costs, investments, and taxes going up, many family farmers are noting every method for better protecting their investment. And laws pertaining to corporations have certain financial advantages for the family farmer.

Blanch is evaluating the various angles of incorporating family farms in Oregon. His research has pinpointed some of the advantages and disadvantages of incorporation.

Questions to answer

How much of an investment should a farmer have before incorporating? What type of farm—dairy, livestock, general—should incorporate? Where are incorporated farms located? Has incorporation paid off financially? Are corporation laws and regulations too complicated for the average farmer? Is too much red tape involved? How can farm corporations be organized to provide the most flexible management? Should farm corporations have unique features written into their organizational rules?

Answers to all these questions depend on the individual farmer-rancher, his present method of operation, and the nature of a farm-ranch corporation, according to Blanch.

Most businesses are organized in one of 3 ways: as individual proprietorships, with one man at the head; as partnerships, with 2 or more people in control under certain specified rules; or as corporations, with the corporation owning the business, and the owners of the corporation—called stockholders or shareholders—owning a certain share of the business as repre-

sented by stock certificates. Today 20% of all businesses in the United States are corporations.

A corporation is considered a legal person—authorized by the laws of the state where it is organized. A corporation has most of the rights of any other person. It can own property, buy, sell, trade, sue, be sued, borrow, loan, make contracts, pay taxes, conduct business, and so forth, just as an individual.

Owners of the corporation—the stockholders—elect a board of directors. This board makes major policies and appoints officers to manage the corporation within the framework of these policies.

Keep family control

In farm-ranch corporations, various members of the farm family are stockholders, board of directors, officers, and employees. So, for all practical purposes, farm ownership and operation are still the same.

A corporation differs from an individual in that it can live forever—at least in most states—providing certain legal requirements are met. Nearly all farm-ranch corporations in Oregon have been organized to live forever—"in perpetuity."

You may wish to consider incorporating your farm or ranch business, if any of the following situations apply to you. *Remember that good legal advice is a must.*

Do more than 2 people own your farm or ranch?

For instance, 3 brothers, or father and sons? If so, a corporation provides a method of dividing ownership and control in a fair and businesslike manner. Land, buildings, equipment, livestock, supplies, grazing rights, and so forth, are owned by the corporation. Corporation ownership is represented by shares of stock, in form of stock certificates, which give holders of the stock evidence of ownership. These certificates can represent any number of shares or fractions of shares. Therefore, shares can be divided equitably between owners of the farm corporation.

Shares of stock initially are worth the amount stated on the face of the stock certificate. This amount is agreed upon when the farm is incorporated. For example, if a farm is incorporated with authorized capital of $25,000 and the incorporators wish to divide this amount into 250 shares or parts, each share would be worth $100. Some farm-ranch shares in Oregon are valued as low as one dollar each, but about three-fourths of Oregon's incorporated farms have shares valued at $100. Also, Oregon farm and ranch corporation stock is held almost entirely by members of the immediate family—father, mother, sons, and daughters.

Could a problem arise in dividing the property of your farm?

For instance, would it be difficult to divide the "home place" equally among the heirs? You may wish to distribute part of your property before death. Since shares of stock can be bought, sold, traded, willed, or passed by law to heirs, the corporation may offer a solution. Corporate organization permits you to give shares of stock, as gifts, prior to death without diminishing the size of the farm business operation. As long as you retain 51% of the shares, you retain control because each share has one vote. Hence, inheritance or estate taxes can be eliminated or reduced for the heirs. The property can be passed on, as you wish, without interrupting business or breaking up the farm.

Have you considerable property which is not part of the ranch or farm?

Since a corporation is responsible for only its own assets (what it owns) and liabilities (what it owes), and since assets and liabilities of stockholders are separate from corporation assets, other property cannot be seized or attached to pay debts of the corporation. In case of hard times or large liability judgment, a farm home or other property not part of the corporation couldn't be taken to pay corporation debts.

Do you hope operation of your farm or ranch will continue within your family, after the death of all present owners?

Here, too, the passing on of shares of stock by law can distribute farm ownership as you wish. Family ownership can be maintained, even though members of the family aren't actively engaged in farming. Heirs could possess stock shares and hence control of the farm, but management could be delegated to a farm manager working for a salary.

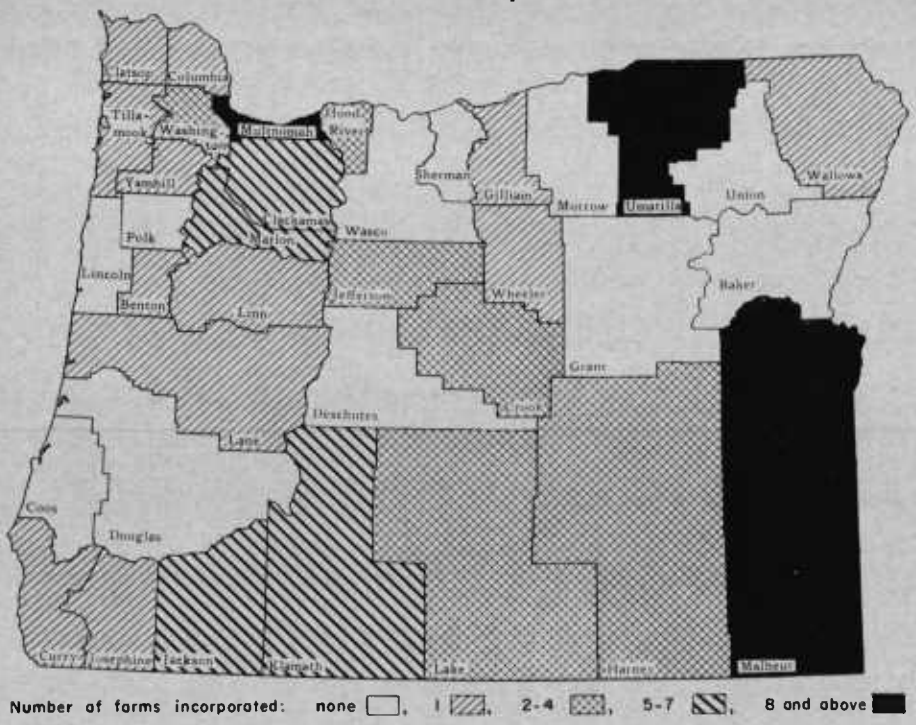
Would incorporating your present farm business give you an income tax advantage?

The tax rate on corporation income is less than the individual tax rate on medium and large incomes. In addition, the Small Business Tax Revision Act of 1958 outlined new provisions for taxing certain corporations. Some

(*Continued, page 6*)

A HIGHER percentage of cattle ranches is incorporated than any other single type. But over 50% of Oregon's incorporated farms are considered as "general." Majority are family-owned businesses.

Distribution of Incorporated Farms



(*Continued from page 5*)

farm income can be paid to directors as salary, and reasonable salaries are deductible as business expenses. Since all situations differ, this question is one to be discussed carefully with your lawyer.

Some insurance and retirement benefits also develop when a farm is incorporated. As a corporation, the business can purchase group insurance—both liability and life—and can also set up retirement plans for its employees and directors. A corporation pays social security premiums for its employees as operating expense and is permitted to set up pension and profit-sharing plans for employees and directors. All these advantages have special provisions to be discussed with your lawyer.

Even though the trend toward incorporation of farms and ranches is new, and still slow, you might want to consider the various advantages in light of your own situation, Blanch reports. Today, Oregon has over 100 incorporated farm-ranch businesses, and 80% of these have been created since 1945. Nearly 25% were formed during the last two and one half years.

All sizes of farms and ranches have incorporated. Twenty-eight percent had authorized capital stock of $10,000 or less and 21% from $10,000 to $25,000 —so nearly half of Oregon's incorporated farms were incorporated for $25,000 or less. About one-third had authorized capital stock of $100,000 or more.

Fifty percent of Oregon's incorporated farms are classified as "general," having a variety of crops and livestock. A higher percentage of cattle ranches are incorporated than any other single type.

Oregon farm corporations

Incorporated farms and ranches are located in 24 of Oregon's 36 counties. Heaviest concentration is in lower Willamette Valley, and in Umatilla and Malheur Counties.

Basic requirements for incorporating are simple. At least three people, 21 years of age, are needed to form a corporation. Paid-in capital must amount to at least $1,000. Purpose of the corporation must not harm the public.

Articles of incorporation, and by-laws, must be carefully prepared, detailed, and understood by everyone involved in the corporation. Initial preparation may make or break the actual operation of the business, according to economist Blanch.

Articles and by-laws usually include the name, life, purpose of organization, number of shares of capital stock, agent and office, directors and incorporators, issuance of stock certificates, stockholders meetings, voting rights, elections of directors and officers, duties of officers, special restrictions, and a description of records and reports.

Costs of incorporating depend on the size of the farm or ranch, license fees imposed on the new corporation, and other organizational and legal expenses. A farm incorporating with $100,000 authorized capital stock might have an initial cost of approximately $500.

Dissolving a corporation requires the consent of the people who formed it, and also requires that certain legal steps be followed.

Incorporating your farm or ranch is a procedure to be considered carefully and thoroughly. The forward looking farmer-businessman is becoming more and more aware of the advantages of incorporating, says Blanch.

ALL SIZES of farms and ranches have incorporated. Nearly half of Oregon's incorporated farms were incorporated for $25,000 or less. About one-third had authorized capital stock of $100,000 or more.

County agent's advice will be available soon to help you use methods tested to . . .

Measure Changes In Range Conditions

RANGE researcher measuring plant cover on a small plot along a 25-foot line. Ring in left hand guides his estimate of cover.

INFORMATION on accurate measurement of range conditions—whether carrying capacity is going up or down—will be available soon from your local county extension agent. This service already is available from range technicians of various Federal land agencies.

After 2 years of testing 3 common range condition measuring methods, OSC range researchers D. W. Hedrick and Gene Conrad report 2 of the 3 methods reliably indicate changes in range conditions.

The methods tested:

1. A wire "belt" 2 by 25 feet randomly distributed in the sample area. Type of vegetative cover (grass, browse, weeds, etc.) is estimated within the area framed by the belt. Number of samples will depend on the area.

2. A 25-foot wire laid at random throughout the area. Ground cover of species growing along the wire is measured.

3. Using the same 25-foot wire, but counting the number of "hits" made by lowering a $\frac{3}{4}$-inch loop at each 6-inch interval along the wire.

Area on which these methods were tested were typical sagebrush-bunchgrass ranges in 2 Bureau of Land Management exclosures—one east of Baker, the other southeast of Burns. Measurements were taken both inside and outside these 2 areas. Both were fenced to exclude livestock grazing.

Results indicate either the first or third method is satisfactory. The second method—developed primarily in the Great Plains area where turf-type grasses are prevalent—proved too time-consuming for measuring Oregon ranges.

These methods were tested primarily to tell ranchers the change in types of grass species, not necessarily to estimate yields. Yield estimates can be determined by clipping 3.1 foot-square (9.6 square feet) plots from 10 representative areas. These samples, weighed in grams, summed, and divided by 2, give a fairly accurate, usable yield figure.

MEASURING methods can be used to determine accurately forage increase from rotobeaten range.

The research workers point out that yield alone isn't enough for estimating carrying capacity. Knowing how many of the better grass species are available also is essential.

Figuring both yield and herbage species will be most helpful to ranchers improving their range, Hedrick points out. Yearly range trends will tell a rancher how much improvement he is getting.

Work at the Squaw Butte branch experiment station and in Grant County, where similar measurement methods were used, indicate it takes several years before yields of better grasses are increased. (*Oregon's Agricultural Progress,* Spring 1957). Early yield increases came primarily from such mediocre grasses as bluegrass and squirreltail. After 5 or 6 years, yield increases in bluebush wheatgrass, Idaho fescue, and needlegrass were noted.

SHEEP grazing on red clover pasture at OSC experimental farm. Red clover and other legumes contain isoflavone, a compound which impairs the reproductive functions of ewes and some other animals.

In Red Clover Pastures . . .

Low Fertility Found

Legume compounds hinder fertility in sheep and small animals. More research is ahead.

RED CLOVER interferes with fertility in ewes, according to animal husbandmen C. W. Fox and R. W. Mason.

But red clover isn't the only villain. Other legumes seem to contain a compound which has an adverse effect on reproduction. Early in 1940, Australian sheepmen noticed a lowering of fertility among ewes pastured almost entirely on a certain variety of sub clover. This variety is not grown in this country.

Research was started at OSC when Western Oregon sheepmen reported a lowering in percent of lambs produced, more dry ewes, and an extended lambing time when ewes were pastured entirely on red clover during the breeding season.

The animal husbandmen knew that strains of red clover as well as other legumes might contain reproduction-hindering compounds called isoflavone. These compounds—the name comes from a Greek word meaning yellow color or pigment—are absorbed by sheep feeding on clover and other legumes and causes chemical and physical changes in the reproductive organs.

Researchers Fox and Mason point out that the exact nature of these changes isn't known yet. But concentrated doses of these compounds have produced milk in unbred ewes and in wethers. In Australian experiments, ewes fed on clover 6 months to a year have difficulty in lambing and sometimes suffer a prolapsed uterus. Spontaneous abortions also often occur. Ovulation and conception are both delayed and reduced and are sometimes prevented.

Early OSC experiments used small animals to determine effects of red clover on reproductive organs. Mice, fed clover as part of their diet under carefully controlled laboratory conditions, were unable to reproduce.

Guinea pigs were fed fresh red clover, red clover hay, and a stock ration for 21 days before breeding, and for 41 days during breeding. Of 6 females fed fresh red clover, 4 littered; of 6 fed red clover hay, none littered; and of 6 fed the control diet (stock ration), all littered.

Fifteen rabbits were divided into 3 groups and were fed fresh red clover, red clover hay, and a stock ration for 23 days prior to breeding and 10 days after breeding. Of the 5 females fed fresh clover, only 1 littered; of 5 fed clover hay, 3 littered; and of 5 fed the stock ration, 4 littered.

Females affected

Since results of these small animal experiments indicated that primarily fresh red clover had a bad effect on female reproduction, the researchers moved on to experiments with sheep.

In a recent experiment, 27 ewes were pastured on red clover 17 days before and 60 days during the breeding period. Only 14 produced lambs.

Nineteen ewes were on irrigated grass—Ladino clover pasture for the same length of time—and all except 3 lambed.

Samples of red clover were analyzed at the U. S. Department of Agriculture's western utilization research laboratory at Albany, California. Scientists there reported the clover contained a compound called "coumestrol" which they had isolated previously from Ladino clover. An isoflavone, this compound seems to interfere with normal reproduction.

OXYGEN consumption of mice fed different estrogens or isoflavones—two animal and two plant estrogens—is being checked to find if these isoflavones cause different effects in metabolism, growth rate.

Isoflavone compounds seem to be most harmful to ewes. Six months continuous feeding of red clover to rams has not reduced semen production.

The amount of isoflavone found in different legumes also seems to differ from time to time during the year.

For instance, alfalfa has a high isoflavone content at early-growing and during the early-bloom stage. For the few weeks in between early growth and bloom, the content is low.

Generally, isoflavone levels in red clover seems to be highest in the first cutting, decreases in later cuttings, and reaches a low point in fall growth. Different varieties also have different amounts of isoflavone. Isoflavone content of other legumes is still under study.

Since isoflavone seems to aid growth, it may be isolated in the future and used to stimulate rate of gain in the feed lot. When specific chemical effects of isoflavone are discovered, research will help point out the best use for the compound.

Researchers Fox and Mason recommend that farmers not breed animals on straight red clover pasture. In years to come, clover and legume strains with low and high isoflavone content may be used in combination to benefit the livestock industry.

EFFECT of a natural plant estrogen—genistin—is being tested on OSC lambs. Lot below is being fed alfalfa pellets that are naturally low in this isoflavone. Lambs will be fed to 100 pounds.

LAMBS on feed with alfalfa pellets naturally high in a plant estrogen—comparable to about 6 micrograms of stilbestrol. Increase in udder size of ewe lambs has been noted, but growth rate may increase, too. Alfalfa came from Ohio.

Looking for a simple, economical way to incrase yield? Here's a new method to . . .

Establish Sub-Clover on Hill Pastures

OVERALL view of the pasture renovator, or duck-foot plow, recommended for use in establishing sub-clover. This type of plow could probably be built by most farmers who have complete farm shops.

CLOSE-UP of the duck-foot plow. Main features are heavy shank, fertilizer applicator, and a seeding attachment. The shank must be strong enough to open a shallow furrow in hard, dry, soils.

SUB-CLOVER can now be established for $6 to $7 an acre—including seed, fertilizer, and machinery cost—on many western Oregon hill soils.

This is considerably less than the usual cost of establishment, according to soil scientist T. L. Jackson and Douglas County extension agent Wayne Mosher. Three years of experiments and demonstrations have shown that a "pasture renovator" or "sod-seeder" can be used to establish sub-clover.

This method eliminates usual seedbed preparation, and assures a stand of clover before the complete fertilizer program is needed.

Several pieces of equipment which can do the job are on the market. Essential features of these pasture renovators are a heavy shank strong enough to open a shallow furrow in dry soil, a fertilizer applicator which will place fertilizer in the furrow, a seeding attachment to distribute seed in the opened furrow.

This renovator, or "duckfoot plow," probably could be built by a farmer who has a shop and some knowledge of welding.

Steps to follow

Establishing sub-clover successfully by this new method includes the following steps:

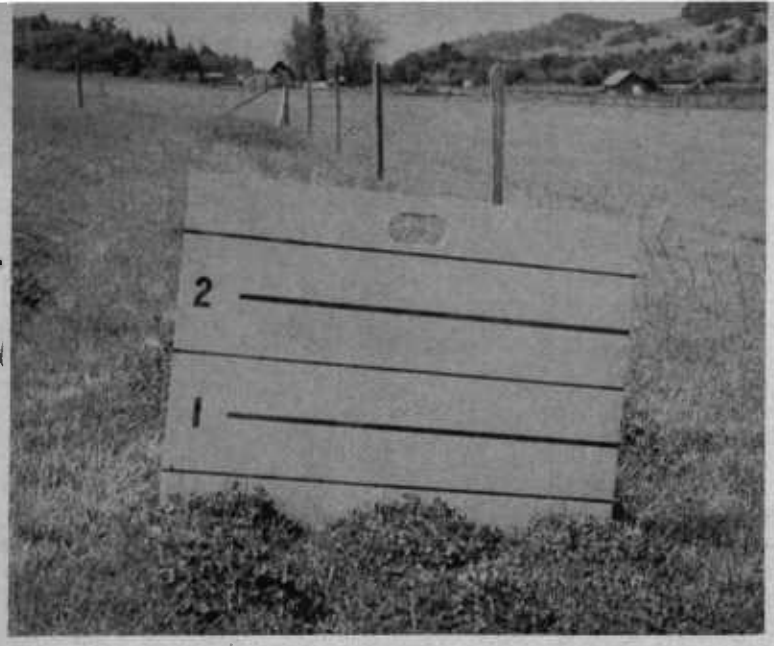
1. **Remove Competition.** Remove weeds, cheat grass, rose briars, and other brush by heavy grazing or burning.

2. **Furrow.** An open furrow, about 3 inches wide and 2 inches deep, bares soil for seed and fertilizer. Three-inch space gives seedlings a chance to develop without competition from weeds.

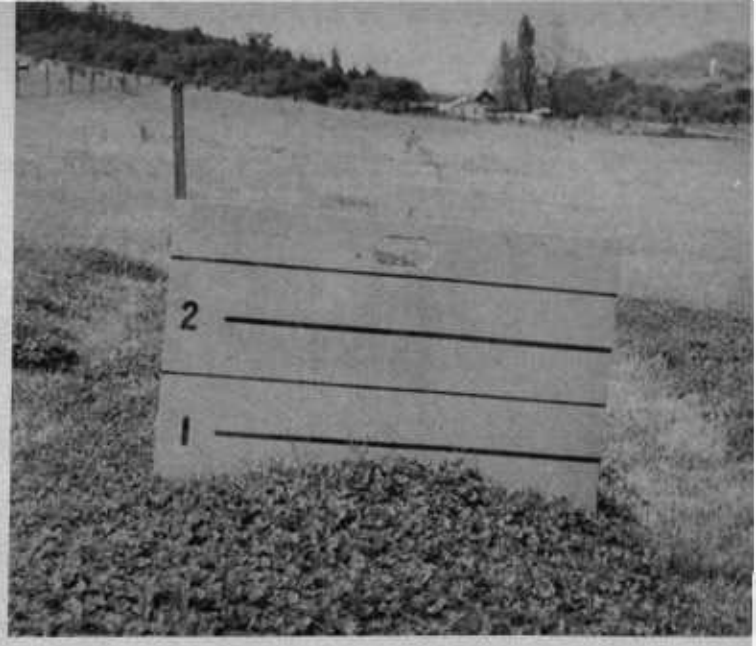
3. **Seed.** Seeding and fertilizing can be done in the same operation. Two pounds of seed per acre is enough for a good stand. Seed must fall on bare soil. One-half inch of soil covering the seed gives protection from birds, rodents.

4. **Fertilize.** Needs will differ for various parts of Western Oregon. A soil test is necessary for planning a fertilizer program. In Douglas County trials conducted to date, a 40-pound per acre application of phosphorus plus some sulfur produced excellent seedling vigor.

Equipment is available so light lime applications can be banded along with



SUB-CLOVER showing effect of no fertilizer broadcasting during second fall. Phosphorous was banded at seeding time, using the pasture renovator.



SUB-CLOVER which was fertilized during second fall of growth. This application insures vigorous sub-clover growth between rows planted first fall.

fertilizer. Thirty to 40 pounds of potash per acre (plus 10 to 15 pounds of nitrogen per acre) could be included in the band without burning seedlings.

Legumes will respond to boron application on most Western Oregon soils and boron or borated fertilizers should be broadcast the second year. Banding borated fertilizers under or near the seed at planting time will burn seedlings.

5. Grazing. Grazing is essential the first spring after seeding to remove grass competition. Seedlings will not establish a solid stand if shaded. Growth also provides food and protection for mice, and increases weed competition.

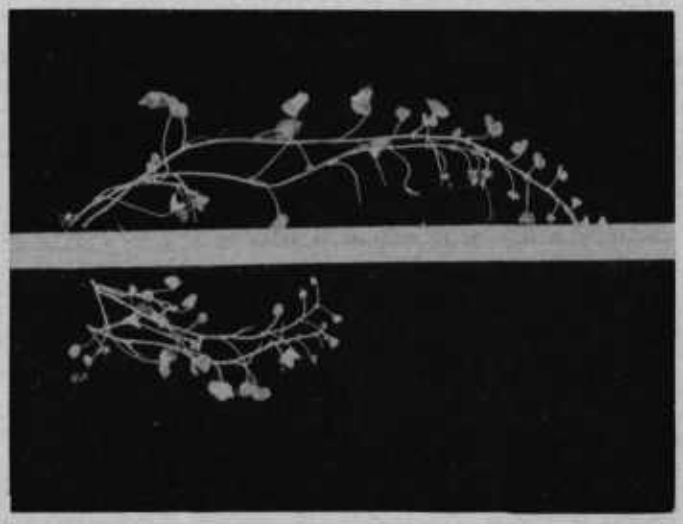
6. Broadcast fertilizer. Broadcast application of fertilizer is necessary the second fall to insure vigorous sub-clover growth between rows planted the first fall. Complete recommendations for fertilizing and management of established sub-clover stands are available from your county extension office.

7. Full use. The sub-clover stand should be ready for full use the second spring, but very little grass can be expected the first 2 or 3 years. This lack of grass can cause bloat in cattle. So far, bloat has not been a problem with sheep grazing sub-clover. Nitrogen produced by clover stimulates grass growth, and various grasses can be seeded in the second year of clover establishment.

Over one million acres of rough western Oregon pasture could be improved by using this method of establishing sub-clover. Normal yearly forage production on many of these pastures is 700 to 1,000 pounds per acre. Establishment of vigorous, well fertilized stands of sub-clover could increase forage production from 5,000 to 8,000 pounds per acre.

Sub-clover seedings made during September and just after fall rains begin have been successful on most hill soils. Seed hill soils that get "sticky" after a rain before fall rains start.

FURROW, three inches wide and two inches deep, cut by duck-foot plow. The width gives seedlings a chance to develop without competition from weeds.

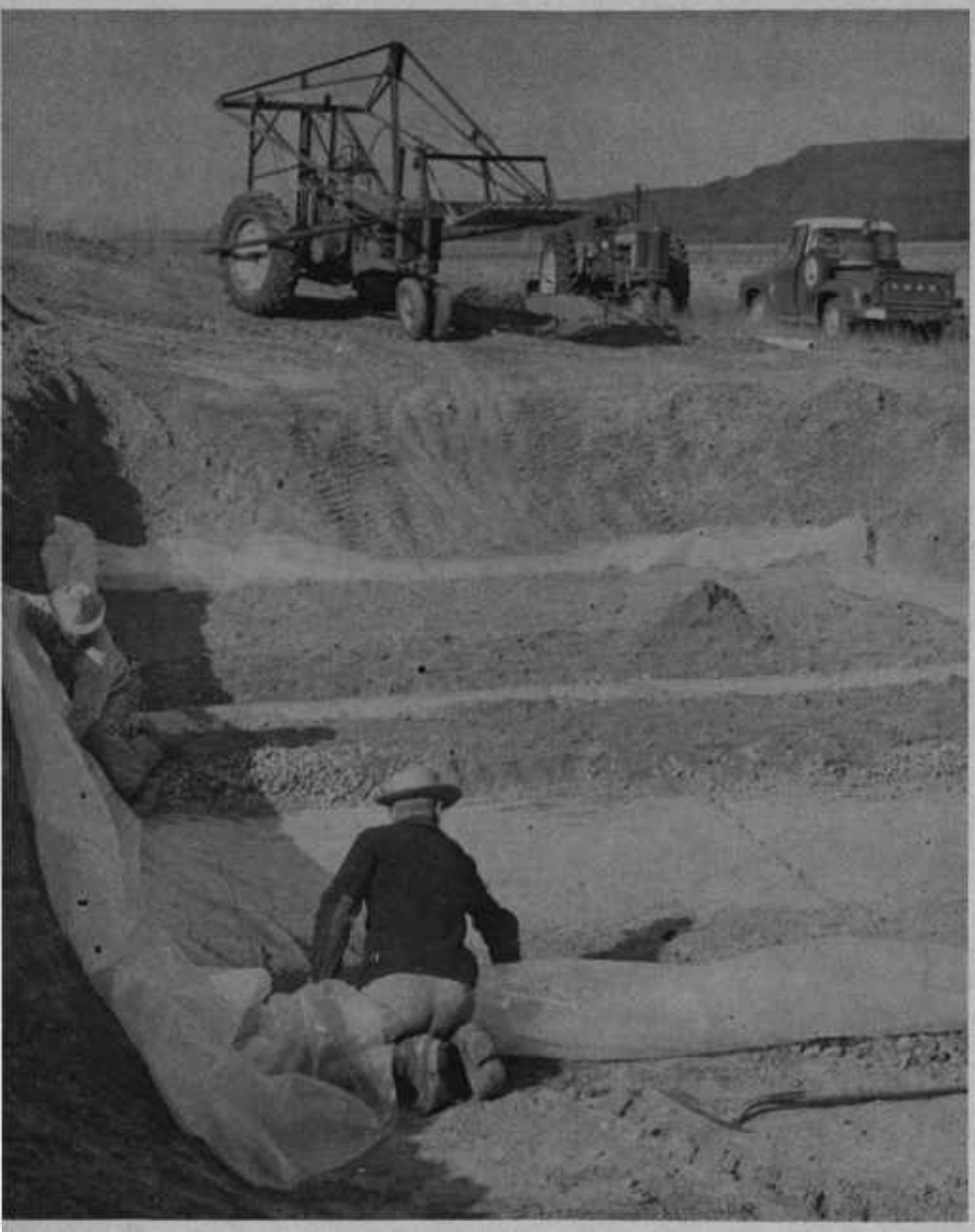


SUB-CLOVER at top received complete fertilizer program recommended for the first year of establishment. Clover at bottom received no fertilizer.

Bee Beds Increase Alfalfa Seed Yields

Artificial beds for alkali bees help alfalfa pollination, may more than triple seed yields. Bees will use beds if soil texture, moisture, are right.

MAN-MADE bee bed in process of construction. Materials used include plastic, gravel, soil of proper texture, water, and salt. Soil selected for use must contain right percent of sand, silt, clay.



ALKALI BEES—transplanted to man-made beds—can more than triple alfalfa seed yields, according to entomologist W. P. Stephen.

Beds constructed with plastic, gravel, the right textured soil, water, and salt and transplanted with several thousand bee pupae have made the difference in seed increases near Milton and Ontario where OSC trials have been conducted since 1957.

Alkali bees are one of the few who will brave the kick of a "tripper" in the alfalfa flower to get at the nectar. Tripping is essential to insure pollination. Most other insects, including honey bees, sneak down the flower, steal the nectar. Result: where non-tripping bees are around, yields have averaged about 150 to 200 pounds per acre.

But the alkali bee is particular about where it builds its nest. The soil must have the right percent of sand, silt, and clay; soil moisture must be fairly exact, and the right amount of salt must be present.

Eggs laid 6-10 inches deep

The bee does not live in a hive. After gathering enough pollen (females will cover a 2-mile radius to obtain nectar, and seem to prefer that of alfalfa) they dig from 6 to 10 inches in a suitable site, deposit a pollen ball, lay an egg on top of it, and plug the chamber with soil. From a single entrance, a female digs elaborate branches leading to individual egg-pollen chambers.

Eggs are laid in July, and bees overwinter as prepupae. In the spring, when soil temperature and moisture rises, bees emerge—usually when al-

CONCRETE pipes were set in soil to allow addition of water. In dry soil 5,000 to 8,000 gallons of water were required for a 30 by 60 foot bee bed.

BED being used by alkali bees. Bees like soil where the surface is moist. They then burrow without any soil dribbling into the egg-pollen chamber.

falfa is flowering. Male alkali bees hover over the nesting site, pounce on emerging females, and mate. Females spend the next 2 weeks gathering nectar and laying eggs, then die. Stephen estimates a single female will lay up to 24 eggs. A good nesting site 60 by 30 feet will have, on the average, at least 300,000 cells. Not all will develop, however. Disease, other insects, mice, skunks, and birds all take their toll. Depending on the weather, bees will be active from late May to late July, usually peaking from mid-June to early July.

Stephen found early in his studies that if bees were given reasonable protection from insecticides, the main things limiting bee increase were presence of sufficient pollen and sufficient nesting sites.

He tries to solve the problem by building suitable artificial beds near alfalfa fields. After field observations, greenhouse tests, and full-scale field trials, several commercial beds were established last spring near Milton and Ontario with the help of local county extension agents, interested farmers, and townspeople.

Prepupae in natural sites were dug with specially-designed metal cores and transplanted to artificial beds. From 10 to 20 cores were placed in each site. Each core contained about 300 bee larvae.

To date, adults are emerging in artificial beds. But more important, beds are attracting bees from natural sites. In the process, a lot of alfalfa is being pollinated. One grower near Milton claims yields of 1,200 pounds per acre. Before artificial beds were set out, his seed yields were estimated at 300 pounds per acre.

The photos show the major steps for building an artificial bed.

Proper soil moisture, texture, and salt are the most crucial requirements for bee establishment, according to Stephen.

Soil must be lightly textured, not more than 8% clay-size particles by aggregate analysis. The OSC soil testing laboratory runs such analysis for a small fee. Too much clay slows down the natural upward movement of soil water. Result: upper soil is usually too dry.

COMPLETED bed. Good nesting site will average at least 300,000 cells. Not all eggs develop.

What bees like, according to the entomologist, is a soil where the surface is moist enough so they can burrow without the soil dribbling into the egg-pollen chamber. High salt concentrations in the upper soil level seal the soil surface, as in the common black alkali in many eastern Oregon areas. Salts compact the soil surface, prevent water loss, and seem to absorb moisture from the air. Such natural sites with exact texture, moisture, and salt, are rare.

In selecting artificial sites, Stephen and local extension agents first had soils tested for proper texture. Concrete pipes were set in the beds so water could be added. Where soil was dry, between 5,000 and 8,000 gallons were required for a 30 by 60-foot bed, enough so moisture content of the soil was about 20%. This was enough to last at least 2 years—maybe more.

From 1,500 to 3,000 pounds of salt were mixed in the upper levels of the backfill soil. Soil was packed with truck or tractor. After the soil had settled, bee larvae were transplanted.

The entomologist is studying other methods by which bee beds can be improved, methods for reclaiming old natural sites, and improving the bee through genetic selection.

Research Briefs

Flavored Apple Chips Taste Like Candy • Pears Used For Fruit Drinks • Store Filberts 2 Years

Mink Fed Turkey Waste Produce Good Pelts

YOUNG MINK appear to thrive on turkey waste, according to recent experiments by animal husbandmen John Adair and Jim Oldfield.

For a good many years Oregon's mink growers relied on whole fish and horsemeat for feeding. Recent trends have been toward development of feed mixtures made up of various kinds of fish and other animal by-products.

To determine which type of diet provided the best growth rate and fur production, OSC researchers are testing turkey waste, tuna scrap, and other experimental rations. Turkey waste and tuna scraps are being fed for the first time this year.

Turkey waste consists of heads, feet, offal, and is fed raw. Tuna scrap includes heads, tails, fins, offal, and is cooked during processing. Both these mixtures are by-products of human food packing industries and are available in quantity. Both diets also contain marine scrap fish, cereal, and red meat.

Three mixes were used for the experiment. First, tuna scraps were mixed with beef liver, other fish, and a cereal mix. Turkey waste was also mixed with liver, scrap fish, and cereal. Fish and horsemeat, also with the liver and cereal supplements, was used as a control diet.

Young mink were fed on these 3 mixes from the first week of July to pelting time in about mid-December. They were weighed monthly.

Tuna scrap refused

Mink on tuna scrap began to refuse feed after 3 weeks of the experiment and several animals died. Examination showed they had "yellow-fat" disease, usually thought to be caused by rancid fats in the diet.

Vitamin E was then added to the tuna scrap mix, and no more mink died. Growth improved after this, but the tuna-fed mink didn't achieve the growth rate of the animals fed turkey waste or horsemeat.

Turkey waste produced good growth throughout the experiment and results equalled those produced by the more expensive horsemeat mixture.

Mink were pelted in December and pelts were evaluated by an expert commercial fur grader. Colors were rated as good for both turkey and tuna-fed animals.

Value of the tuna-fed pelts was lowered because of small size and incidence of several low grade pelts.

Overall results show mink can be fed turkey by-products successfully. Rapid growth and high quality pelts resulted from a food mixture of turkey waste, beef liver, and cereal.

Tuna scrap has lower nutritive value than the turkey waste, and could not be used successfully without special additives.

YOUNG MINK on OSC fur farm being fed mixture of turkey waste, marine scrap fish, cereal, and red meat. Rate of growth was rapid, and pelts, judged by experts in December, were of excellent color.

Store Filberts - - - Avoid Market Dumping

FILBERTS can be successfully stored for as long as 2 years.

Food technologist Earl M. Litwiller reports inshell filberts stored at 26° F. and 0° F. and wrapped in plastic or sealed in moisture-vapor proof bags, are still edible after 2 years' storage.

This storage information will help filbert growers hold nuts past the peak season and will avoid dumping and glutting the market.

High temperatures damaging

Nuts which are damp deteriorate rapidly when stored in rooms with humidities as high as 70 to 80%. Filberts with a moisture content greater than 8% should not be stored. High temperatures in storage rooms also damage nut quality.

Filberts can be held for a year if storage room temperature is not above 70° F. (lower temperatures are better) and if nuts are protected against moisture by plastic or moisture-vapor proof bags.

ONE POUND dehydrated apples makes 5, 9-inch pies. Belt-trough dried apples can be prepared in 8 to 10 minutes for use in pies. Mincemeat producers use largest percentage of all dried apples.

Flavored Apple Chips Make Good Pies

DEHYDRATED APPLE CHIPS may be coated with sugar, chocolate, or other flavorings and eaten like candy, according to food technologist Lois Sather.

These flavored apples, which also may be used in most recipes calling for fruits and nuts, resulted from experiments aimed at finding greater commercial use for dehydrated apples.

Approximately 3 million bushels of apples are dehydrated annually in the Northwest. Another 30 million bushels, which do not meet fresh market standards, could be processed if a market existed for them.

A belt-trough dryer recently perfected by the Western Utilization Research Branch Laboratory of the United States Department of Agriculture, dries apples in 45 to 50 minutes. The old tunnel counter-current method of drying apples required approximately 6 hours.

Since one new dryer already has been installed in this area and several others will be in operation by fall, more dehydrated apples soon will be available for the market.

Mincemeat manufacturers now use the largest percentage of commercially dried apples. Baker's supply houses use a much smaller percentage.

Belt-trough dried apples can be prepared in 8 to 10 minutes for use in pies. One pound of dehydrated apples makes 5, 9-inch pies.

Mrs. Sather suggests the following recipes for dehydrated apples:

APPLE PIE

For an 8- or 9-inch pie.

1 package of apples (3¼ oz.)
3½ cups of water

Empty the apples into a 2-quart sauce pan. Add the water, bring to a boil, cover pan, and continue a gentle boil for 10 minutes, stirring occasionally.

Mix together and add to the cooked apples:

⅔ cup sugar
½ teaspoon of cinnamon
¼ teaspoon of salt
2 tablespoons of cornstarch

Let cool while preparing the pie crust. Put bottom crust into pan. Add lukewarm filling. Dot with butter. Put on top crust.

Bake 425° F. for 15 minutes, then turn oven back to 350° F. for 30 minutes. Remove from oven, set on rack to cool.

Pears, Other Fruits, Combined For Nectars

IMPERFECT PEARS soon may be used as a base for more fruit drinks.

Bosc and D'Anjou pears, winter varieties which do not find the early market available to Bartletts, produce high quality nectar when they are ripened and peeled before processing.

Food technologists W. A. Sistrunk and A. H. Bockian report pear-pineapple nectar, now on the market, soon may be followed by pear-cranberry and pear-raspberry mixtures.

Combinations produced

Combining pear pulp with other fruit pulp produces a variety of tasty and inviting drinks. Orange, pineapple, raspberry, blackberry, plum, and strawberry pulps were combined with pear pulp for recent experiments.

Four parts pear pulp were used for each part of other fruit pulp. Citric acid, sugar, and water were added as needed. Addition of ascorbic acid or other vitamins depends on the individual packer, and appears to have no effect on taste of the drinks. Vitamin A added to lighter colored juices provides an inviting color.

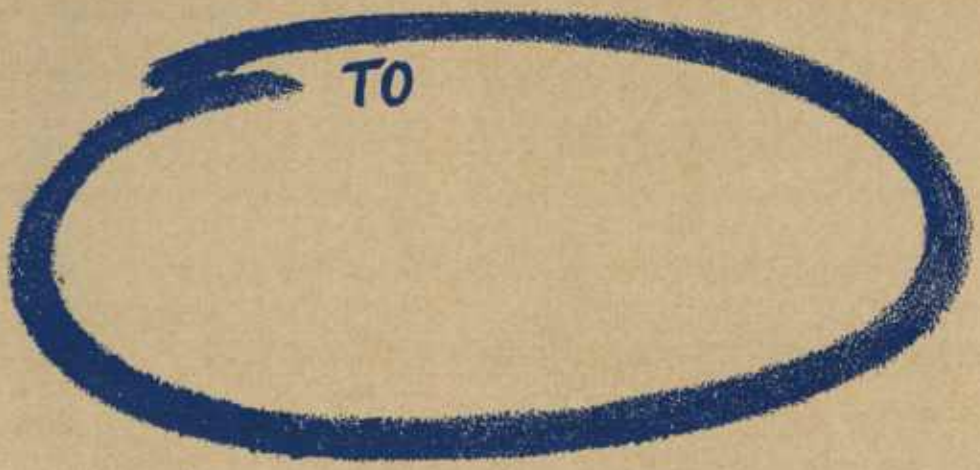
Pear-raspberry and pear-cranberry appear to be the best combinations developed and may soon be on the market. Pear-strawberry drink is satisfactory if a higher ratio of strawberries to pears is used.

Pear-plum is weak on flavor and color, but addition of color improved appearance. Pear-blackberry does not appear to be a good flavor combination. Pear-pineapple and pear-orange are tasty.

Color added

Addition of color to orange gives it a different color from pineapple mix so the two can be distinguished if marketed together. Pear-raspberry and pear-cranberry are highly colored, attractive, and tasty.

All these drinks are heat processed and frozen in the form of pulp mix. They are reconstituted like most other concentrates now on the market by adding 3 parts water to the mix before serving. Pear-pineapple, already on the market, is sold with the water added.



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Farm Outlook . . .

(*Continued from page 3*)

further buildup in inventory. This high inventory exists because of a pricing mechanism which has failed to reconcile the desire to protect incomes with the basic changes in supply and demand. Other mechanisms have been suggested but remain unadopted. Until they are, wheat is likely to remain an urgent problem.

Feed Grains. Wheat is not alone in its unenviable position among the nation's perennial farm problem commodities. Ranking close alongside are corn and other feed grains.

Under a revamped price support program the nation's corn growers plan to harvest the largest corn acreage in 10 years after planting 14% more than in 1958. Mid-summer prospects pointed to a crop at least 400 million bushels larger than last year. That crop exceeded the past season's disappearance by about 100 million bushels.

Here in Oregon and the Northwest, corn production and marketing is entering a new era. In the past corn has been shipped in for feeding. This year, for the first time in the memory of corn producers and handlers, this area is likely to produce more corn than normally used here. This can cause sharp adjustments in prices and marketing methods. In any event, storage facilities will be a critical need whether the corn is to be fed on the farm, sold to others, or put under loan. Producers with adequate storage will be in a much better marketing position than those without.

The supply of barley and oats for the coming season here in the Northwest and for the nation as a whole will be smaller than last year, unless yields turn out much better than midsummer prospects indicate. Yet, supplies for feed do not seem likely to be small enough to keep prices above the reduced support levels. In sizing up when to buy or sell these crops keep an eye on the corn and sorghum situation, too. It has much to do with prices of other feed grains. Also worth watching are livestock prices and foreign prospects.

Forage. Hay is likely to get dearer before it gets cheaper. A feeding season like Oregon's past one would leave hay very scarce here. It's none too soon to begin making plans to stretch hay supplies. Use of Oregon supplies during the past winter exceeded 2 million tons for the first time. This year's visible supply based on July prospects and including some 300,000 tons of carryover totaled only a shade over 2.1 million tons. Adjoining states may run short of hay, too. Odds are it will take more than this year's million acres to meet Oregon's future needs for hay.

There is also much evidence that considerable land now in grains in many parts of the state would net more in pasture in years ahead. Here again it's none too soon for each farmer to take a close look at the income possibilities of pasture, silage, and hay either as cash crops or as feed crops. Keep in mind the possibilities of pelleting, wafering, and other technological developments when making decisions.

Beef. Warnings about the consequences of the current buildup in cattle numbers are being hoisted thick and fast. Will these stretch out the good price years and ease the bad ones? That's the hope. It could be fulfilled if warnings are heeded at the right time in the right degree. Yet, there are strong temptations to go all out for beef. These grow out of the combination of abundant grain supplies, a strong slaughter market, and none too promising alternatives.

For those who are sure they want to stay with beef, this is the time to get set for the rougher going ahead. For those who have doubts, the near future could be a good time to liquidate. But over the long pull, the cattle business in one form or another looks like a good bet in many parts of Oregon.

Ranchers selling feeders fairly early probably won't be sorry this year. Odds are against a fall pickup in prices. Slaughter markets will be under pressure from feedlots and pork, even though consumers are after meat.

Hogs. Best prices for 1959 are past. Prices will go lower before they start up again. Perhaps they will go low enough next spring to end the current series of increases in farrowings. That, in turn, will give Oregon producers a chance to move ahead in efforts to supply a larger part of the Pacific coast market for meat.