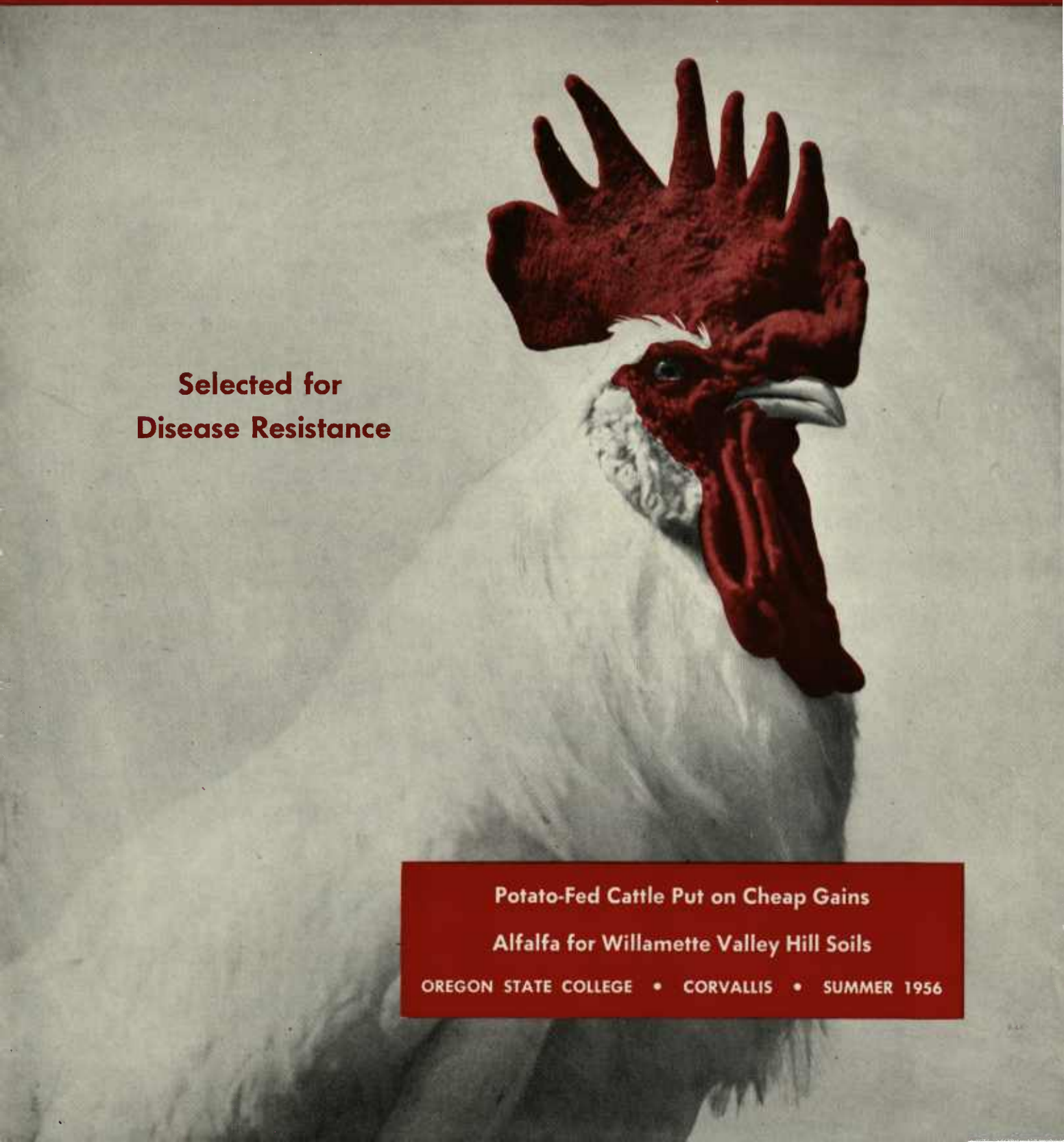
Oregon's Agricultural PROGRESS



Selected for Disease Resistance

Potato-Fed Cattle Put on Cheap Gains

Alfalfa for Willamette Valley Hill Soils

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OREGON'S AGRICULTURAL PROGRESS will be sent free to Oregon residents upon request. Address requests to Bulletin Clerk, Commerce Hall 1, Oregon State College, Corvallis, Oregon, or see your County Extension Agent.

COVER STORY: This proud White Leghorn rooster genetically carries disease-resistance plus high egg production. Story, page 4.

Photo: Bill Reasons

ANY WAY you look at them, farm product prices aren't what they used to be. But they could be a lot worse.

During the last month or two, hay and potatoes are about the only things Oregon farmers sell that have been bringing more than the average for the past 10 years. Hay and potato prices have been around 20 per cent above this long time level.

At the other end of the range, among Oregon's principal farm products, have been cattle, both dairy and beef. Their prices have been more than a fourth under average.

Yet, some things like turkeys, milk, lambs, oats, and hay have been bringing a little more money than last spring.

These higher priced items are the exceptions. Most items are down around 10 per cent from the middle of last year. The average for all Oregon farm products at mid-June was 4 per cent under the same time last year and 10 per cent below the average for the past 10 years. Even so, the worst of the decline in farm product prices seems to be past for the time being at least.

Business

Of course, much depends on how well prosperity is maintained off the farm, but most signs continued favorable at midyear. The weakest spot in the business outlook at the moment is the continued buildup in inventories. Further increase could lead to production cutbacks and layoffs.

Foreign markets

The nation's foreign trade expanded sharply during the past year and prospects continue good.

Our foreign customers are earning

SPRING SHOWERS have emphasized the value of field choppers and silos as forage savers. Although quality of

Cattle prices more than a fourth under average . . .little help from Soil Bank this year. . .hay prices holding up. . .foreign trade expanding.

Farm Outlook

By Agricultural Economist M. D. Thomas

more dollars selling us their products than ever before. We paid them close to $12 billion for farm and industrial products they shipped us during the past year. That's close to 2 billion more than in any of the past 5 years. It's nearly a fifth more than last year.

Most farm products are sharing in the larger exports. Values of grains, livestock products, vegetable oils, and tobacco exported during the first three-fourths of the past marketing season were all up more than a fifth. The big exception to export gains among farm products was cotton. Cotton exports declined more than 50 per cent.

Government programs are helping boost farm exports, but several other conditions have been favorable too. Among these are the bad winter in Europe, the high level of economic activity in many countries, the continuing increase in world population, some relaxation of import restrictions, along with tourist and government spending abroad.

Even so, foreign markets are highly competitive. Gains in trade are difficult to make and hold.

Soil bank

If you haven't been counting much on the Soil Bank this year, you won't be disappointed.

Except for seed growers, there never was much chance for help to Oregon farmers this year by this approach to easing the farm problem. Planting decisions for 1956 mostly were made last fall before Congress began seriously considering this idea.

But don't overlook Soil Bank possibilities in planning for 1957 and later. Details of both "acreage reserve" and "conservation reserve" contracts should be fairly well firmed up before fall planting time arrives this year.

Make no mistake, there will be changes later. But indirect benefits from this plan still seem likely to be greater than the contract payments. By indirect benefits, we mean the boosts to prices and incomes that can come from slowing the rise in farm output while demand catches up. Of course, first to benefit indirectly will be those who produce seeds needed to establish the reserves.

Hogs

Hog marketings probably will reach their summer low in July, then start increasing toward a November or December peak. That means hog prices are now close to the highest point for the year, but they are not likely to decline as much this fall as they did last fall.

Cattle

Supplies of fed beef are usually smallest during July, August, and September. This year they are likely to be smaller than at the same time last year. That's because cattle feeders are discouraged by last winter's cattle-price slump and by present prospects for higher feed grain prices.

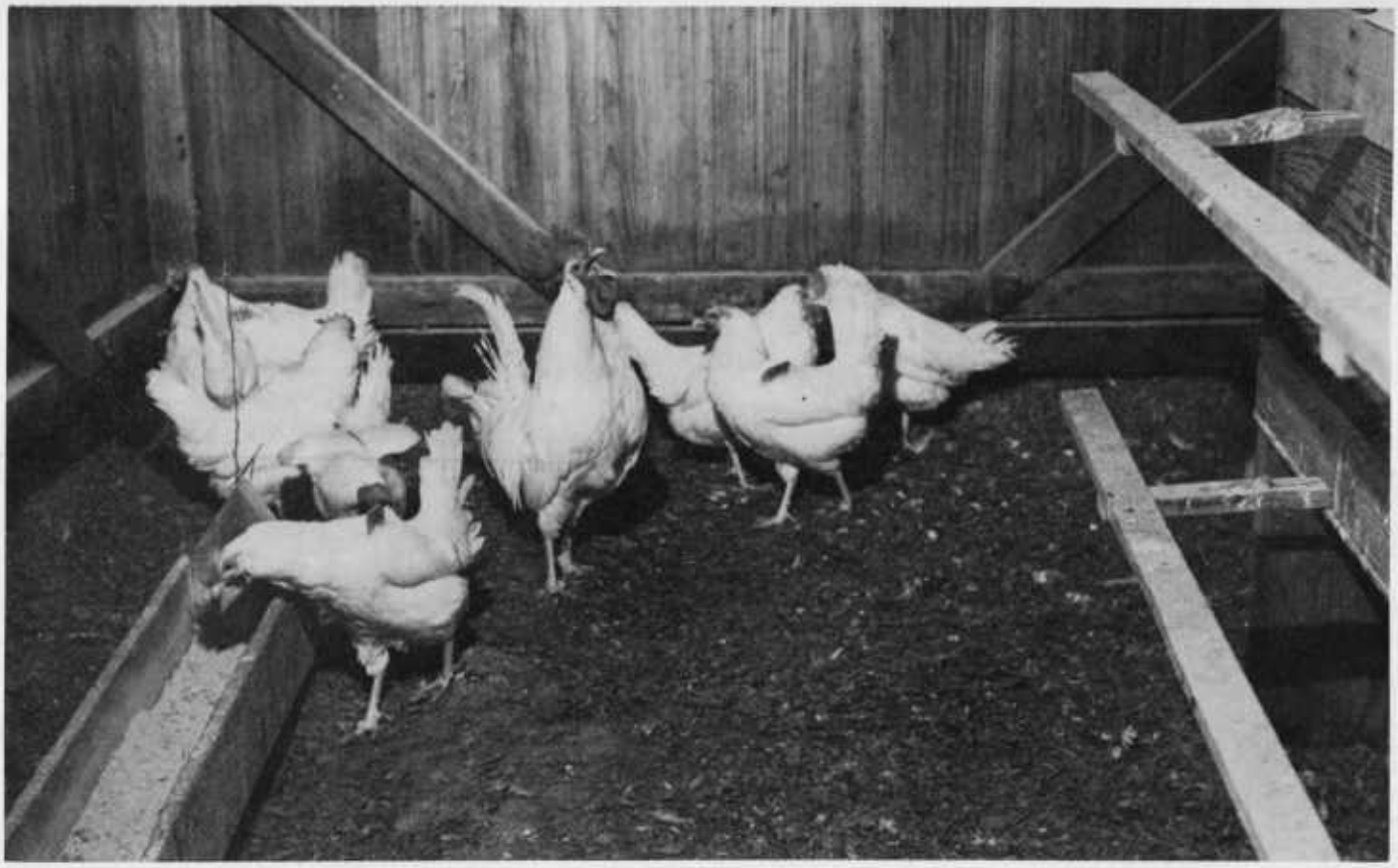
When the July 1 figures for cattle on feed are available, they are likely to show an even greater decrease than the April figures did. The number in feedlots on April 1 in the main cattle feeding states was 8 per cent below the same time last year. The number going to Corn Belt feeders during April and May was 20 per cent smaller and marketings out of feedlots have continued heavy during the past 3 months.

Meanwhile, the supply of grass-fat cattle may be larger than last fall. Range conditions are better, especially here in Oregon. This can take a lot of steers and heifers out of the feeder class and put them into the slaughter class, especially if the range feed is supplemented with oilseed meal and salt.

Stocker and feeder cattle prices this fall shouldn't take the slump they did last year. Prices in October and November are not likely to be much lower than they were last fall, and could be

(*Continued, page 16*)

the first cutting was none too good in many parts of the State, hay prospects are better than last year. Hay is one of two items Oregon farmers have been selling at above-average prices this year. Further increases unlikely.

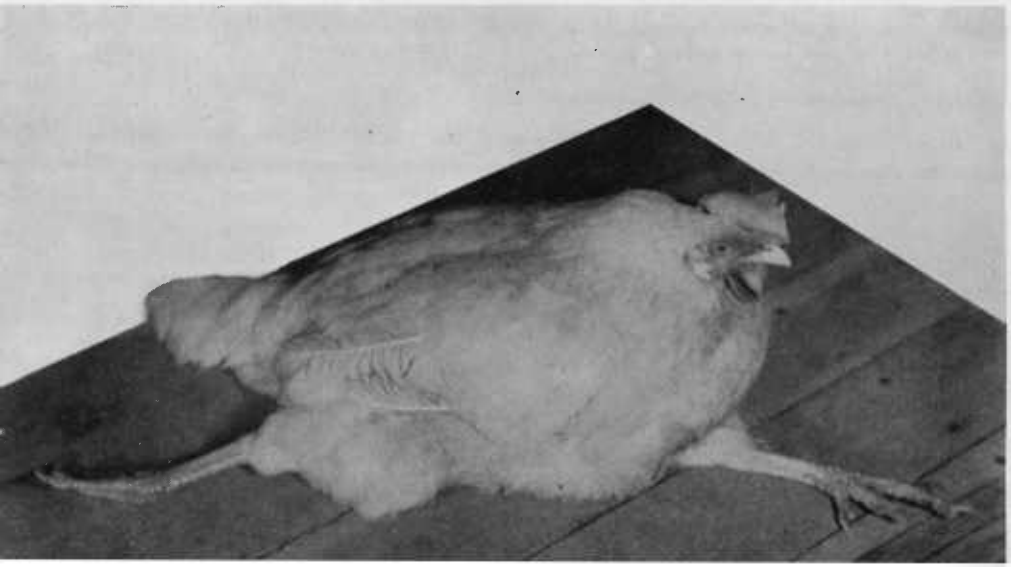


ONE of the 200 White Leghorn families used in selecting disease-resistant birds is shown above. To encourage growth of disease organisms, pens aren't scrubbed and disinfected. Death in experimental flock has dropped from a high of 50 per cent to 13 per cent—through 6 years' genetic selection.

More Life for Heavy Layers

Through genetic selection, an OSC poultry researcher is trying to make his best layers resistant to disease. And he is making some remarkable progress.

LEUCOSIS still is the main cause of death among test strains, although over-all mortality has dropped.



DEAD HENS don't lay eggs. Live ones don't always either. An OSC poultryman is trying to make sure his best layers stay alive—through genetic selection.

In fact, the researcher, Paul Bernier, isn't trying to maintain an especially healthy henhouse for his genetic work. He looks the other way when workmen fail to scrub the house regularly. No foot bath is available for making feet germ-free before entering. Bernier is hoping Mother Nature makes it tough on his birds—so he can find which ones survive, yet keep laying.

And Mother Nature has cooperated. In the past 7 years, Bernier has selected healthy families within the Station's experimental White Leghorn line which maintain high egg production, yet have the genetic vigor to survive disease.

There are some 200 families in his 1200-bird experimental flock.

In 1949, about half his layers were dying from disease. Through selection, only 13 in a hundred from his "best" families died in 1954. These year-by-year mortality figures are shown in the chart.

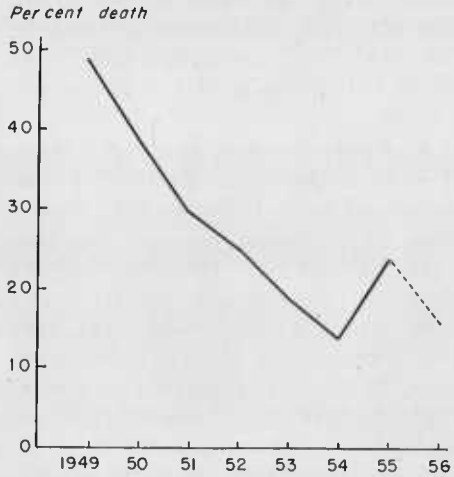
Egg production up

At the same time, egg production has been climbing. Production in his unculled flock has risen from 113 eggs in 1949 to 200 last year. Figures are based on a 10-month laying year and on a henhouse basis.

Bernier now thinks he has perhaps reached a ceiling of survival under his experimental conditions. Crossing some of his high-laying, disease-resistant families is next in order. Bringing in "new" blood is another possibility. Now, not enough birds die in some families for Bernier to know for sure he's selecting a resistant parent! Note in the chart that mortality rose in 1955. Early mortality figures for 1956 look like they will probably settle to around 15 per cent.

Only 3 per cent of the pullets from one sire group, for example, died last year. In another group, only 7 per cent. In another, 8 per cent. Yet in others, 27 per cent. It shows chickens can be selected for disease resistance like plant breeders select for it in a variety.

Death Losses Drop



POULTRY GENETICIST Paul Bernier examines hen in experimental survival flock. Besides finding disease resistance among some strains, egg production also has risen—from 113 eggs in 1949 to 200 in 1956.

Bernier also found his selections for disease resistance didn't pass on resistance equally to all diseases. Veterinarians with the OSC Poultry Disease Laboratory, who diagnosed diseased birds from Bernier's experimental flock, reported the same number of cases of leucosis year after year. Other diseases such as nephritis and reproductive disorders accounted for much of the variation. (See table below.)

At no time was there an epidemic. All losses were distributed throughout the year, although leucosis occurred more after birds were at least a year old. Reproductive disorders occurred most often at the end of the laying year.

The poultry researcher estimates that poor livability among Oregon egg-laying flocks alone costs $3 million annually.

Leucosis Main Cause of Death

Disease	1951	1952	1953	1954	1955
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Leucosis	30	17	42	60	37
Cannibalism	15	34	2	5	21
Reproductive disorders	8	5	3	0	11
Nephritis	5	9	17	7	3
Peritonitis	2	7	3	1	3
Coccidiosis	3	2	7	1	1
Miscellaneous	21	13	15	13	9
Undetermined	16	13	11	13	15
Total	100	100	100	100	100

Alfalfa can be one of the best forages for deep, well-drained, well-limed, and fertilized hill soils. Early silage cutting is key with . . .

Alfalfa for Willamette Valley Hill Soils

SOIL SCIENTIST Tom Jackson checks first-year alfalfa plots where (left) 60 pounds phosphorus was applied, (center) no phosphorus, (right) 120 pounds. Lime, potash, boron also added to all plots.

GOOD QUALITY forage is needed in western Oregon. Research at the Red Soils experimental area in Clackamas County, and cooperative farmer trials, show that alfalfa is one of the few legumes that will produce high amounts of top quality forage on Willamette Valley hill soils* in the summer without irrigation.

Superintendent J. T. McDermid, OSC soils scientist Tom Jackson, and OSC-USDA agronomist H. H. Rampton, list 9 essentials for raising top-quality, high-yielding alfalfa on hill soils:

1. Soil must be deep. Four feet to bedrock or to the heavier clay layer is a minimum.

2. Soil must be well drained. Ridges and rolling slopes are best. Keep alfalfa out of draws and swales.

3. Add lime. Acid soils have been the primary reason for alfalfa failures in the past, Jackson believes. Liming is more critical on hill than on valley soils. Reason: most hill soils increase in acidity with depth. The reverse is true with valley soils. Use a soil test as a basis for figuring lime needs. Be sure to apply the full requirement. A 5-ton per acre lime application will not be unusual. ACP payments will cover about half the cost of this first application.

4. Apply lime at the right time. This means before seeding so lime can be mixed in soil. Summer is a good time, if you plan to seed the next spring. Rough-plow (not over 6 inches deep) in the fall and plant a cover crop (oats, winter wheat, rye, common ryegrass) to prevent winter erosion. Liming early permits neutralizing of soil acids before alfalfa is planted. Also, summer is the best season for many lime distributors. Wet spring weather makes truck spreading uncertain.

5. Fertilize. Take a soil test to find your soil's need for phosphorus, potash, and boron. Also, yearly spring applications of sulfur (gypsum) will be needed. Apply all fertilizers before seeding. Fall-apply annual applications of fertilizers on established stands.

6. Seed the right variety. DuPuit, Talent, and Narragansett look best in trials at the Red Soils station. DuPuit and Talent put on more early

* All soils above the main valley floor.

spring growth than other varieties tested. Vernal, Lahontan, Grimm, and Rhizoma are good possibilities. Lahontan is resistant to the spotted alfalfa aphid, leaf and stem nematode, and wilt, but these have not been a problem on western Oregon hill soils. Rhizoma has special value if you pasture the alfalfa.

7. Seed a grass. It protects alfalfa crowns during pasturing, controls erosion, reduces bloat hazard, makes better silage, and helps control weedy annual grasses. Orchard grass has shown up best in trials. Timothy is worth considering. Tualatin oatgrass is well adapted, but the small bulb may present a weed problem in crops that follow. Alta fescue is a heavy competitor, may crowd out the alfalfa.

8. Inoculate alfalfa seed. Most hill soils will be growing alfalfa for the first time. Good inoculation is essential. Don't let inoculated seed dry out before seeding. Inoculate even if the field has grown alfalfa before.

9. Plant in a fine, well-packed seedbed. It's difficult to pack hill soils too firm for alfalfa seeding. Spring seeding is recommended. If irrigated, planting by August 15 will insure fall establishment.

Possible yields

McDermid reports yields up to 5 tons per acre at Red Soils, but average yields of 3 to 4 tons over 5 to 6 years can be expected. Jackson emphasizes, however, that yields this high won't be a sure thing without proper liming and fertilizing, or if alfalfa is seeded on shallow, poorly drained soils. If your soil is deep (more than 6 feet) you can expect about the same yields as from valley-floor soils.

USING FIRST CUTTING for silage will delay hay cutting until July. June rains have ruined hay crops 3 or 4 years out of 5, but will provide enough moisture for another cutting. Strip grazing possible.

FOR SPRING cutting, farmers with silos will make the best use of alfalfa stands in western Oregon.

Possible uses

Silage. Livestock farmers with silos will make the best use. A silage cutting can be taken between May 20 and June 1.

Hay. Silage will delay the second cutting until July. June rains have ruined hay crops 3 or 4 years out of 5 on the average, according to Jackson. But they provide enough moisture for a second cutting in July. June hay losses have been one reason for decreased alfalfa plantings in past years.

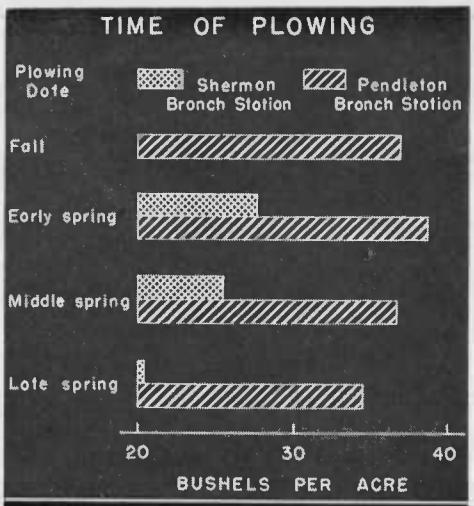
Second cutting also can be used as silage, or as green chop. Daily ration (strip grazing) is another possibility. Alfalfa can't be grazed continually like grass-clover mixtures.

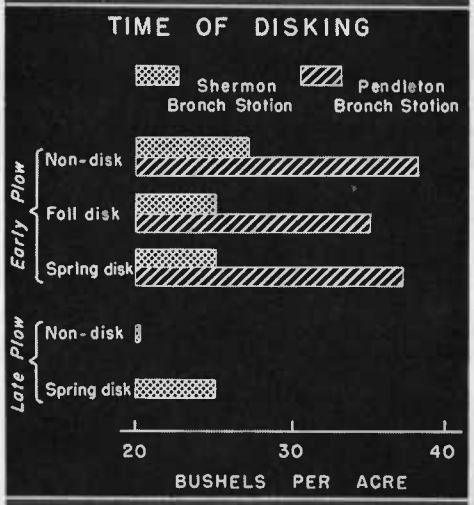
Alfalfa in soil improvement. Alfalfa-grass mixtures maintain or improve soil tilth, fix nitrogen, but are heavy users of calcium, phosphorus, and potash. An adequate fertilizer and liming program is essential.

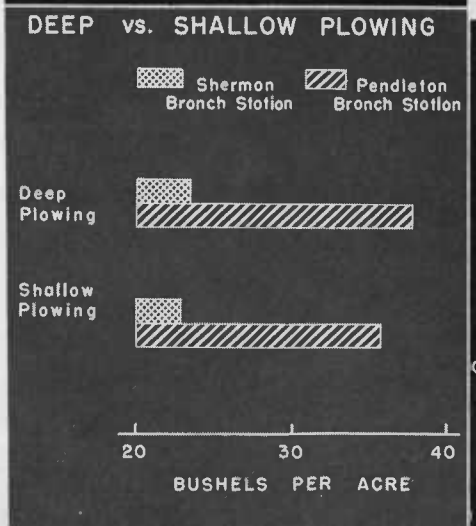
Jackson estimates alfalfa plantings have increased about tenfold in the Willamette Valley this spring. But he predicts many stands will be disappointing. Inadequate liming, improper fertilizing, and seeding on shallow, poorly drained soils will be the main reasons.

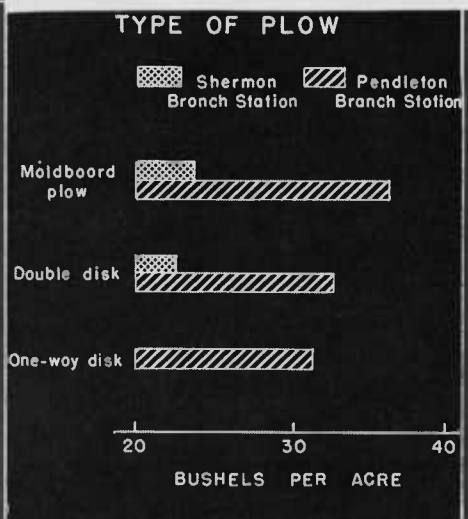
Best Tillage for High Wheat Yields

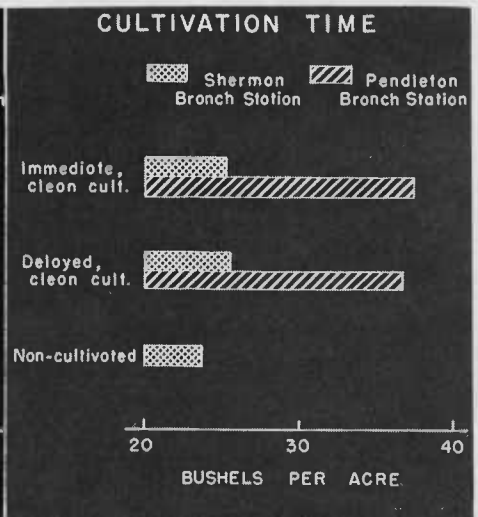
In 1954, longtime tillage experiments at the Sherman and Pendleton branch stations were terminated. Here is a summary of findings.











FORTY YEARS of tillage experiments (1914-1954) conducted at the Sherman and Pendleton branch stations have pointed the way for plowing practices that will maintain high wheat yields on dry summer fallow land.

Bill Hall and Merrill Oveson, superintendents of the Sherman and Pendleton stations, report that results of various combinations of plowing date, depth, method, and method of summer fallow cultivation indicate which pays off best in yields.

Early plowing means high yields. April-plowed plots at Sherman yielded 2 bushels per acre higher than May plowing, and 8 bushels higher than plowing in June. At Pendleton, early spring plowing meant 2 bushels more than April 15 plowing, and 4 bushels higher than May 15 plowing. Early spring plowing was 2 bushels higher than fall plowing. (See chart.)

Results with fall and spring disking at both branch stations indicate its greatest value is on land plowed in late spring. Fall disking reduced the yield at Pendleton by 3 bushels; by 1 bushel at Moro. Spring disking on early-plowed land meant a 2-bushel drop at Pendleton and at Sherman. But spring-disked land plowed in June at Sherman yielded 5 bushels higher than June-plowed land not disked. (See chart.)

Extra money spent for deep plowing probably won't return enough in yield income—especially in the lower rainfall area. Deep plowing has been more beneficial at Pendleton than at Sherman. Plots plowed 9 inches deep at Pendleton yielded 2 bushels more than plots plowed 5 inches deep. This increase, however, occurred in the early part of the experiment. In the past 5 years, this difference narrowed to less than a bushel for deep-plowed plots.

Sherman yields consistent

At Sherman, yields have been more consistent over the 40-year period. Plots plowed 10 inches deep averaged only half a bushel more than plots plowed 5 inches deep. (See chart.)

Summer fallow prepared with disk plows (for soil conservation) did not give wheat yields equal to moldboard plowed-land. (See chart.) Later experiments indicate nitrogen added to trashy summer fallow will overcome this decrease.

Many farmers work fallow immediately after plowing. Experiments show there is no increased yield from this practice. (See chart.)

POTATO-FED lot put on cheapest gains—14 cents per pound, compared to 20 to 22 cents for corn-fed lots. Each animal ate 78 pounds of potatoes daily.

EVEN THOUGH potatoes put on cheap gains, a protein supplement added to the ration increased average daily gains. Protein was fed to above lot.

Potato-Fed Cattle Put on Cheap Gains

A protein supplement added to a potato ration increased daily gain more than a third of a pound, and only increased cost a half cent per pound.

CATTLE FED POTATOES as the main item in a fattening ration with a protein supplement gained just as fast as, and cheaper than, those fed ground ear corn and chopped alfalfa.

Results from a 125-day feeding trial at the Malheur Branch Station show that steers fed potatoes and straw gained 1.6 pounds per day. When 2 pounds per head of a 32 per cent protein cube was fed in addition, gains averaged almost 2 pounds. In comparison, steers fed corn and alfalfa averaged 2 pounds daily gain. Costs favored potatoes—14 to 16 cents per pound gain, compared with 20 to 22 cents for corn and alfalfa.

Station superintendent E. N. Hoffman and OSC animal husbandman J. E. Oldfield report that protein supplement added to the potato-straw ration also improved carcass grade. Carcass grade in supplemented lots was higher than corn-fed lots—1 commercial, 13 good, 9 choice for potato-fed lots compared to 17 good, 1 choice for corn. Potato-fed lots without a protein supplement graded 7 good, 1 choice.

Animals went on feed November 25, were taken off March 23. Potatoes were fed whole and free choice. Straw also was fed free choice. Small amounts of alfalfa-grass hay were fed the first 10 days until steers were eating potatoes regularly. Rotting after thawing meant discarding some potatoes as unfit feed.

Researchers report the front legs of many potato-fed animals swelled and stiffened, making animals lame. This condition didn't greatly affect feed intake or gains.

Costs were figured from Ontario prices—potatoes, $5 a ton; straw, $15 a ton; protein supplement, $88 a ton; ground ear corn, $42 a ton; and alfalfa hay, $25 a ton.

Potato Feeding Results

	Potatoes, straw group	Potatoes, straw, protein* group	Alfalfa, corn group	Alfalfa, corn group
Average daily gain (lbs.)	1.61	1.98	2.03	1.98
Average daily feed/head (lbs.)				
Potatoes	78.5	73.2	.....	.....
Straw	3.5	2.3	.....	.....
Protein supplement	.....	1.9	.....	.....
Alfalfa hay	.....	.....	13.6	8.7
Ground ear corn	.....	.....	10.9	15.2
Feed cost/lb. gain (cents)	14	14½	20	22

* Stilbestrol and urea were added separately to the protein supplement in two additional lots, and produced gains equivalent to the potatoes, straw, protein group. Protein supplement was made up of 640 lbs. 41 per cent cottonseed oil meal, 260 lbs. wheat mill run, 60 lbs. cane molasses, 20 lbs. ground limestone, 10 lbs. iodized salt, and 10 lbs. dicalcium phosphate.

Fatten Steers With Byproduct Roughages

Peavine silage, wheat chaff, and wheat straw make excellent roughages for cattle, when fed in the right combination.

FASTEST GAINING steers were fed peavines, alfalfa, and beet pulp. When added to peavine silage, beet pulp in the

PEAVINE SILAGE is cheap, satisfactory cattle feed.

BYPRODUCT ROUGHAGES from wheat and peas raised in the Columbia Basin are a cheap and satisfactory product for wintering weaner calves, or for fattening yearlings.

That's the conclusion from a feeding trial comparing several types of roughages in cattle rations at Milton last winter. Animal husbandman D. C. England was in charge of the experiments, cooperating with County Extension Agents and local ranchers.

Most of the byproduct roughages for fattening steers not only put on as much gain, but put on cheaper gains, than when alfalfa was added. All lots of animals graded about the same when slaughtered (10 choice, 34 good, 4 commercial—distributed about evenly among all lots).

Roughages tested in combination with various concentrate mixes were peavine silage, wheat chaff*, wheat straw, and alfalfa.

Five lots of steers were fed from December 15 to April 5—112 days. Six lots of calves were fed during the same period. Roughages were fed free choice; concentrates for steers averaged 9 pounds per day. Concentrate level varied for calves.

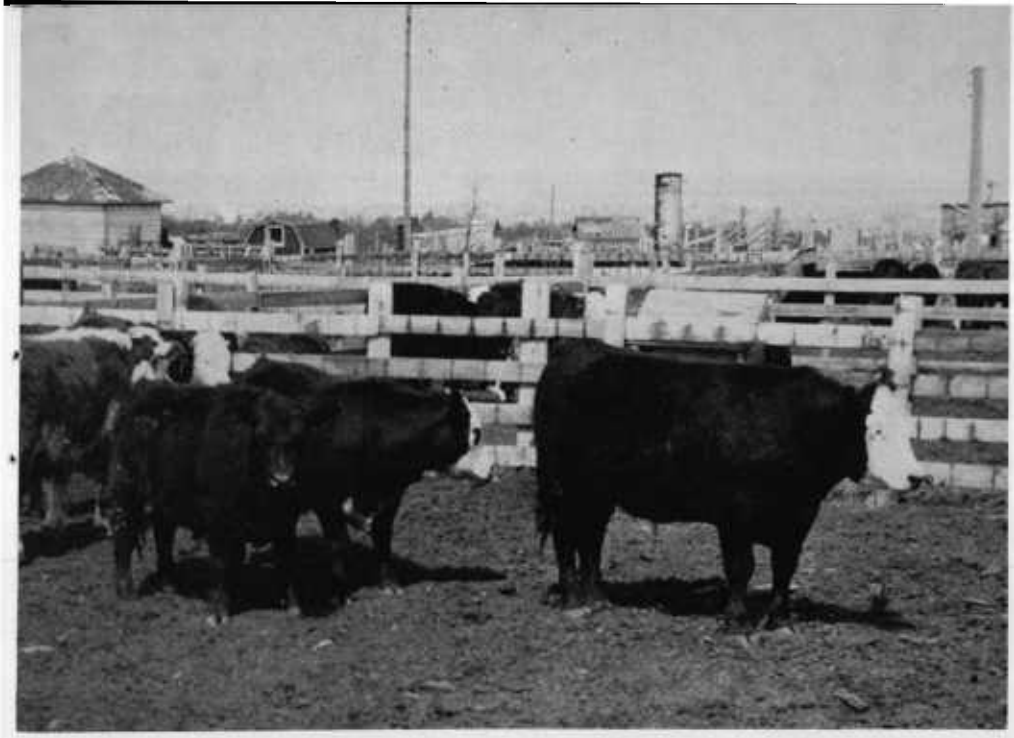
Results are in the table.

* Contained about 5 pounds of grain in every 100 pounds of chaff.

Steer Fattening Results

	Peavine group	Peavine, alfalfa group	Peavine, beet pulp group	Peavine, alfalfa, beet pulp group	Peavine, chaff group
Average daily gain (lbs.)	2.34	2.34	2.46	2.68	2.26
Average daily feed/head (lbs.)					
Peavine silage	36	32	37	35	32
Alfalfa hay	....	3	....	3	....
Wheat chaff	....	....	....	....	2.5
Concentrate*	9	9	....	....	9
Concentrate and beet pulp	....	....	9	9	....
Feed cost/lb. of gain (cents)	17.4	18.6	16.8	17.8	17.9

* Ground barley, 800 lbs.; cottonseed meal, 200 lbs.; millfeed, 400 lbs.; molasses, 110 lbs.; also, 10 mg. stilbestrol was fed each animal per day. In second concentrate tested, 600 lbs. of beet pulp replaced half the barley and half the millfeed.



concentrate and alfalfa put on faster gains than beet pulp and alfalfa fed separately. This group gained 2.68 pounds per day, and gain cost 17.8 cents per pound. Each animal in group was fed 35 pounds of silage daily.

For fattening cattle, England concludes:

¶ Peavine silage fed in combination with a concentrate containing beet pulp is an excellent roughage for fattening. Adding alfalfa hay or wheat chaff did not increase daily gains or lower cost of gain at current prices.

¶ Adding alfalfa hay increased costs of gain compared to peavine silage. This was when alfalfa was fed in combination with peavines, with and without beet pulp.

¶ Replacing half the barley and millfeed with dried beet pulp increased daily gain and lowered cost of this gain.

¶ In combination with peavine silage, beet pulp in the concentrate and alfalfa increased gains faster than when each was fed separately with peavine.

¶ A slight yellowing showed up in carcasses of some animals that had eaten from 32 to 37 pounds of peavine silage a day. Graders, however, said this slight yellowing didn't affect grade.

For wintering calves, England concludes:

¶ Wheat straw or wheat chaff is satisfactory as the only roughage if at least 2 pounds of an 18 per cent protein concentrate (such as the one fed in the trial) is fed per day.

¶ Adding 6 pounds of peavine silage* or 2 pounds of alfalfa hay to a daily ration of 2 pounds of an 18 per cent protein concentrate and free choice straw increased average gains from 1/5 pound to 1/2 pound a day.

¶ Free choice wheat chaff fed with 2 pounds of an 18 per cent protein concentrate produced faster and cheaper daily gains than 2 pounds of alfalfa hay and free choice straw fed with the same amount of concentrate.

¶ Calves fed peavine silage or alfalfa hay and a minimum of 5 pounds of straw per day with no concentrate remained thrifty and strong, producing frame. Calves fed only peavine silage and straw lost about 21 pounds, while those fed alfalfa and straw almost maintained their weight. Calves did not eat three times the amount of peavines as those in alfalfa-roughage lots, thus did not get similar feeding value.

¶ Lighter calves in all lots (averaging 425 pounds) wintered as satisfactorily as heavier calves (averaging 500 pounds).

¶ The advantage of various rations for wintering calves depends partly on gains later on pasture or in feedlot. Further trials in this area are under way.

* Three pounds of peavine silage about equals the feeding value of one pound of alfalfa hay. Calves with straw in their ration ate from 5 to 8 pounds of straw daily; those with wheat chaff, 11 pounds daily.

Calf Wintering Results

	Peavine, concentrate group	Alfalfa, straw, concentrate group	Straw, concentrate group	Chaff, concentrate group	Peavine, straw group	Alfalfa, straw group
Average daily gain (lbs.)	.49	.53	.15	.74	—.19	0
Average daily feed/head (lbs.)						
Peavine silage	6	....	....	....	10	....
Alfalfa hay	....	2	....	....	....	4.5
Wheat chaff	....	....	....	12	....	....
Wheat straw	7	7.5	8	....	5	6
Concentrate*	2	2	2	2	....	....
Molasses-urea mix	0.5	0.5	0.5	0.5	0.5	0.5
Total feed cost/head/day (cents)	15	16	14	17	9	12
Feed cost/lb. of gain (cents)	33	33	93	23	No gain	No gain

* Alfalfa meal 200 lbs.; millfeed, 400 lbs.; ground barley, 260 lbs.; cottonseed meal, 100 lbs.; steamed bonemeal, 20 lbs.; salt, 10 lbs.; urea, 10 lbs.

RESEARCH PLOT above was clear-cut, slash fall-burned, and seeded with orchard grass, Tualatin oatgrass, and burnet. Oak sprouts also were controlled. Ewes gained most from this plot compared to others. They averaged more than 40 pounds per acre, grazed 6 weeks. Some fall grazing provided.

Sheep Grazing and Forestry Can Mix

Sheep don't graze Douglas fir seedlings on marginal hill lands bordering the Willamette Valley if they and pastures are handled properly. Fir seedlings maintained excellent growth on all experimental plots.

CLEAR-CUTTING scrub oak from marginal hill lands increases sheep forage, land is easily seeded to better grasses and legumes, and sheep don't seriously graze Douglas fir seedlings.

These are some of the findings of OSC range researchers F. C. Hall, D. W. Hedrick, and forester R. F. Keniston. They are finding that sheep grazing and forestry can be managed at the same time on oak-covered foothills bordering the Willamette Valley.

Two years of grazing sheep on hill pastures "treated" by managing scrub oak areas differently show that sheep gain the most when oak is cleared, burned, the area seeded to grasses and legumes, and oak regrowth is controlled.

Sheep also will not seriously browse Douglas fir seedlings if there is enough forage available.

The researchers treated four 2-acre scrub oak plots by:

¶ Leaving one plot undisturbed. Oak covered 60 to 80 per cent of the area; produced little forage. Native forage was about half native vetch and half brome grass and parsley-leaved lovage (a carrot-like herb).

¶ Thinning another plot to half its original oak cover.

¶ Clear-cutting a third plot.

¶ Clear-cutting another plot, fall-burning the slash, and seeding orchard grass, Tualatin oatgrass, and burnet in the ashes. Oak sprouts were not controlled.

¶ Young Douglas fir was planted in the undisturbed, thinned, and cleared oak plots.

Pounds gained by yearling ewes per acre were the measure of forage yields. Sheep were pastured in the spring, taken off when annual native growth was slightly more than half grazed, insuring natural seeding in some plots. The grazing season was longer on plots with half and with no oak.

CLEARED but not seeded plot. Note oak sprouts in foreground. Sheep averaged about 40 pounds of gain per acre, but grazing time was cut to 4 weeks. Native forage was about half weeds, half grass.

THINNED OAK PLOT produced only 25 pounds of ewe per acre. Forage was available 2 to 3 weeks.

For results, the workers report:

¶ 15 pounds of gain per acre on the undisturbed oak plot. Forage was available only 1 to 2 weeks.

¶ 25 pounds per acre on the thinned oak plots. Animals grazed 2 to 3 weeks.

¶ 40 pounds on the clear-cut oak plot. Plot was grazed 4 weeks.

¶ 40 pounds on the clear-cut and seeded plot. Animals grazed 6 weeks. Grazing season began 2 weeks earlier than in the native areas, and sheep put on weight earlier. Also, permanent pasture provided some light use in the fall. Spring use totaled 6 weeks.

¶ Oak sprouts must be controlled on clear-cut areas. Researchers found sprouts had grown 6 to 7 feet tall in 4 years, were beginning to shade, thus reduce, forage. Sprouting was not much of a problem on thinned plots.

¶ Douglas fir seedlings maintained excellent growth in all plots, providing sheep were turned in about the time native vetch was in early bloom. Deer damaged seedlings more than did sheep.

UNDISTURBED OAK PLOT produced 15 pounds of ewe per acre. Sheep grazed only 1 to 2 weeks.

BULLDOZING oak trees when they are dormant takes only half the time of spring tree clearing. Picture below shows portion of new site in which researchers will test only sheep management practices.

Research Briefs

Promising New Fiber Crop • Two Rust Resistant Mint Hybrids Look Good • Fertilize Through Irrigation Pipe

Evaporation Pans: New Tool for Better Irrigation?

EVAPORATION PANS may be the coming method for predicting when and how much to irrigate, if research by OSC agricultural engineers Cliff Jenson, Paul Riley, and soil scientist Dan Evans continues to pay off.

They've found that the amount of water evaporating from special pans over a 3-day period is closely associated with how much water a crop uses. This information, combined with knowing a soil's moisture-holding capacity, and knowing how much water a crop needs, will give farmers a simple, accurate method for determining when and how much to apply.

Different pans tested

The researchers tested different sized and shaped pans in an irrigated sweet corn field and in a Ladino clover-grass pasture. These crops were 3 miles apart. They found when and how much water each crop needed differed greatly. Evaporation from pans 3 miles apart varied considerably from day to day, but averaged fairly close when measured every 3 days.

Type of pan had little effect. Those tested varied from 55-gallon drums set in the ground to galvanized iron pans 22 inches square and 1 inch deep. Pans were screened to keep birds from drinking water.

Most important, the researchers should be able to predict how much water a crop uses just by measuring how much water is evaporated from a pan. To develop these figures, evaporation loss was compared to the amount of water plants drew from the soil.

Water needs vary

But one big obstacle still blocks widespread use: the rate plants draw water from the soil varies with stage of plant growth. For example, corn needs more water at tasseling than at any other growth period. It may be possible to peg this relationship between water needs and evaporation losses to a plant's stage of growth. Considerable progress has been made with sweet corn, but there are many irrigated crops for which much work must be done.

The time may come, the workers predict, when deciding how much and when to irrigate will be mostly an arithmetic problem. Weather stations, for example, may report evaporation losses from strategically located pans. With pencil and paper, a farmer will recompute to figure water losses from the field he is irrigating.

TYPES OF evaporation pans tested shown above. They vary from 55-gallon drums set in ground to galvanized-iron pans 1 inch deep. Agricultural engineers found that all pans gave about same results.

Two Rust Resistant Hybrids Superior to Mitcham Mint

TWO RUST RESISTANT peppermint hybrids appear superior to the standard Mitcham in herb and oil yields in tests by C. E. Horner, OSC plant pathologist.

These hybrids are part of 27 that have been field tested since 1954. Crosses were originally made by U. S. Department of Agriculture plant pathologists at Beltsville, Maryland.

Before 1954, Horner "screened" all test hybrids by inoculating with rust spores and growing them in the greenhouse. Twenty-seven looked promising and were set out in 1954 field tests.

Again, all plots were heavily inoculated with rust.

Hybrids mature earlier

The two promising hybrids matured about 10 days earlier than Mitcham, yielded twice to three times as much on a green-weight basis. Oil yields more than tripled. Oil percentage (dry weight basis) for the hybrids was one-fifth greater than Mitcham.

Flavor and oil-quality tests have yet to be completed, but Horner is hoping some of the test hybrids will mean better peppermint varieties for Oregon.

Only superior varieties released

The researcher thinks two more years of testing are needed before new varieties will be released. They must be superior in oil yielding ability and disease resistance, and equal in flavor qualities.

Oil buyers and users are cooperating with the experiment station in flavor evaluations.

PHORMIUM thrives in Coos and Curry Counties, and probably will grow well in other coastal areas. Cordage quality from Oregon-grown Phormium is excellent. Parchment bags are used in breeding work.

Fiber Crop Adapted to Oregon Coast

OREGON'S COAST looks like a good place to grow a fiber crop from which rope and cordage can be made.

Six years of trials by OSC-USDA agronomist Don Fishler show that Phormium, a native of New Zealand, will thrive in Coos and Curry Counties, and probably will grow well in other coast counties.

It grows either from seed or from vegetative suckers. It's adapted to a wide range of soil types, provided there is enough moisture. Phormium tolerates high water, even withstands temporary flooding.

Fiber yields range from 6 to 18 per cent dry fiber—compared to 3 per cent from other major hard fiber plants. In some cases, trial yields have exceeded 1 ton of fiber per acre a year. Three to four years are required before first harvest.

The plant also tolerates CMU, a weed killer Fishler used in establishing his trials.

Rope quality excellent

Phormium fiber from experimental plots spun well on equipment used for rope manufacturing at the Boston Naval Shipyards. Cordage quality was excellent.

The agronomist reports fiber yields vary considerably among different plants, and he is selecting for superior yielding plants that will produce a stronger and more durable fiber. Planting date, propagation, weed control, and fertilizer studies also are under way.

Processing machinery for separating fiber from leaf tissue is used in New Zealand. Fishler says this machinery, however, is inefficient.

And he adds that more research is needed before he can recommend commercial plantings. More must be known about markets and production costs. Also, efficient harvesting and processing machines should be developed.

But Fishler is optimistic about the future of Phormium in Oregon. With the U. S. importing all 300 million pounds of natural hard fiber it uses annually, Oregon-grown Phormium should find a place—in peace or war.

Apply Fertilizer Evenly Through Irrigation Pipe

HOW CAN YOU insure uniform fertilizer spreading when you're applying it through irrigation pipe?

Answer: dilute so it takes about one-half hour to apply.

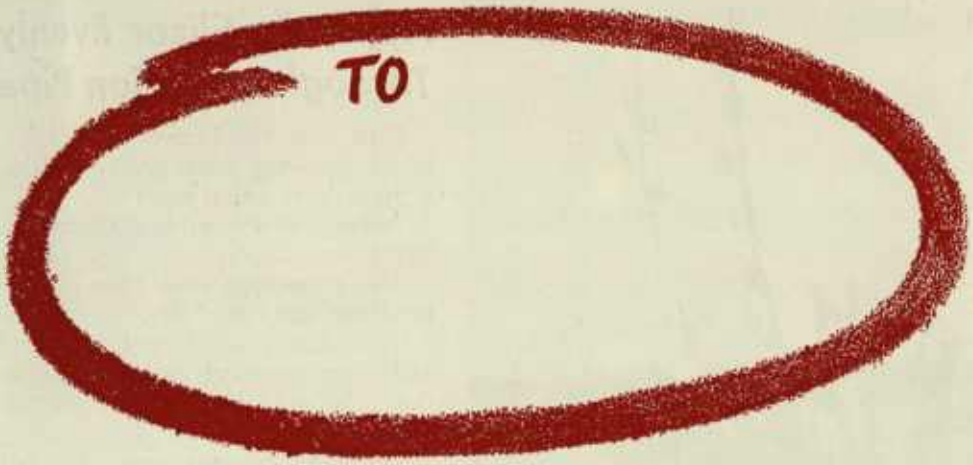
That's the suggestion from agricultural engineer Paul Riley.

Tests last year showed that wind and other items cut uniform distribution drastically if you apply the material in less than a half hour. Timing fertilizer applications more than that didn't increase uniformity much either, he found. Time of day had no effect.

Water soluble fertilizer was applied from the suction side of the pump, and the amount regulated by a valve. A single lateral system was used for the test.

This year, Riley is testing the best method for applying oil-soluble insecticides through irrigation pipe. He also is testing fertilizer applications from the pump's discharge side, as well as applications through multilateral irrigation systems.

SINGLE LATERAL used in fertilizer application tests. Gauge in foreground measures water pressure.



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Farm Outlook . . .

(Continued from page 3)

a little higher—if the nation produces another large grain crop and fat cattle prices hold as strong during the next 3 months as now seems probable.

Sheep

Oregon's spring lamb market broke as usual about the middle of June after opening in May at prices somewhat above a year earlier. Prices during the next 3 months probably will work down some more but are not likely to go below the same time last year.

The wool market opened a little under last spring but has held fairly steady since. The odds seem to be against a rise in prices. Mill use is up, but so are imports; and the Commodity Credit Corporation still has three-fourths of its surplus stocks. Remember, the more you get for your wool, the larger your government payment will be.

Grains & seeds

Wheat supports seem likely to average only 8 cents a bushel under last year. That is much less than the maximum drop permitted under present legislation.

The 1956 Farm Act boosted supports on barley and oats. They will now be around $2.50 a ton higher than a year ago instead of $1.25 lower.

Grain storage appears adequate in the Northwest and market prices seem likely to hold close to support levels less storage costs.

Seed markets are getting a new shot of life. Poor crops in this country and abroad, along with the Soil Bank, are combining to bring new strength into the picture.

Hay

Oregon hay prices are holding high but the quality of first cuttings was none too good in many parts of the State. Showers and cool weather made hay-making difficult in June. This, in turn, emphasized the value of field choppers and silos as forage-savers.

Hay prospects and pasture conditions over the State are much improved over last year. This is especially true in the high country of central and southeastern Oregon where last year's cold, dry spring left livestock raisers critically short of feed. This year's crop may be good enough to help them start building up badly depleted reserves.

Odds are against the kind of increases we have seen in hay prices during the past two winters. Hay sellers may be tempted to hold too long while hay users will want to play it safe and buy a fair share of their needs early. This will keep hay prices up at harvest time.

Poultry

The spring hatch of laying chicks slowed enough in April and May to keep poultrymen out of serious trouble this fall. Stocks of fresh and frozen eggs are under a year ago. Egg-feed price ratios about like last fall seem likely.

Markets seem likely to be flooded with turkeys this fall. This seems quite certain unless an unusual portion of the heavy breeds are sold as fryers. Hatchings of "heavies" through May were up 28 per cent over last year, and settings for June showed a similar increase.

FOR THE PAST month or two, potatoes have been bringing Oregon farmers better than average prices, compared to the past 10 years. Prices are up 20 per cent. Outlook favors good prices this summer.