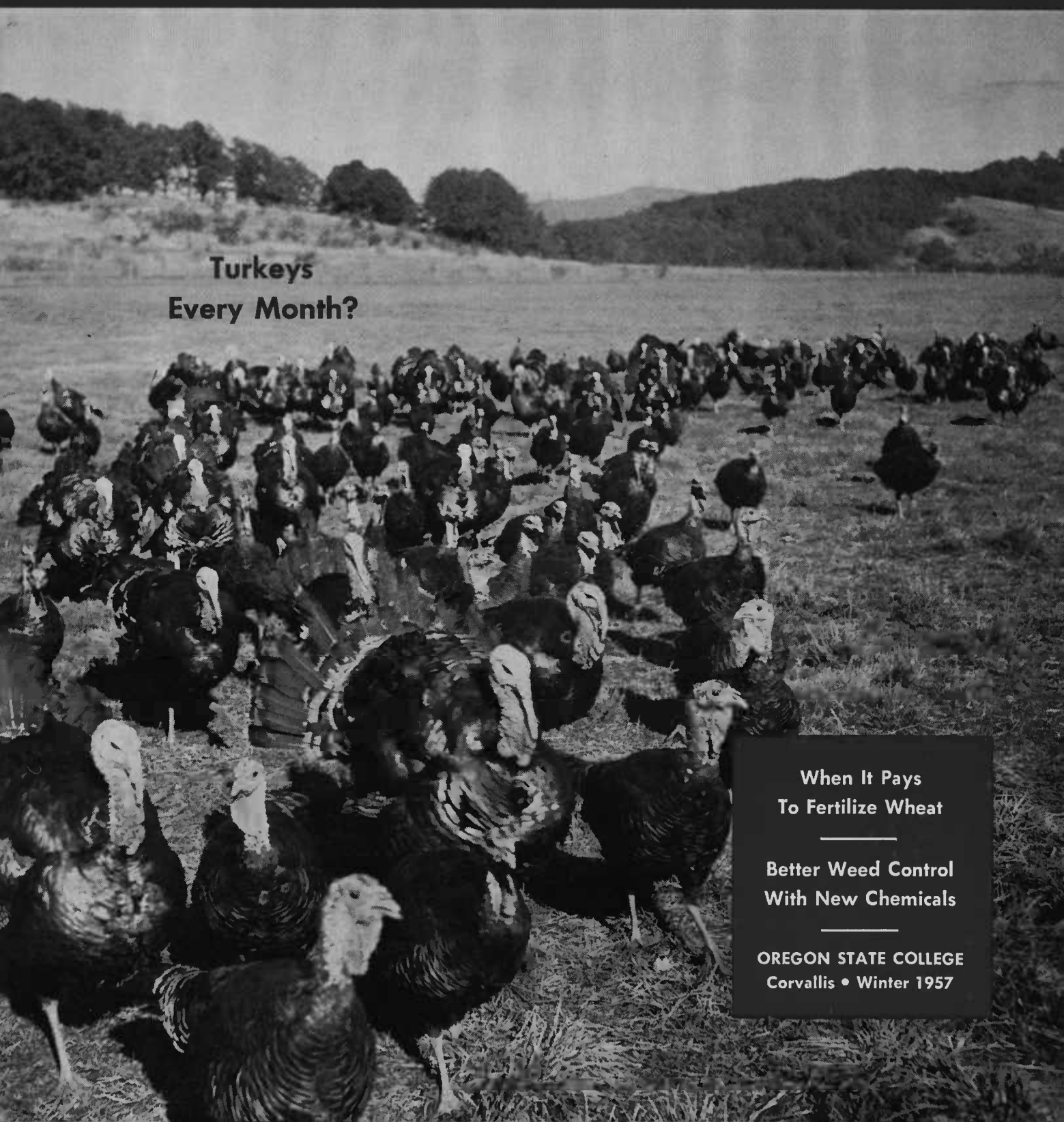
Oregon's Agricultural PROGRESS



Turkeys
Every Month?

When It Pays
To Fertilize Wheat

Better Weed Control
With New Chemicals

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Oregon's Agricultural
PROGRESS

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COVER STORY: By managing December-hatched poults differently, OSC poultryman J. A. Harper can get economical summer egg production from turkey hens. This may help Oregon turkey growers give consumers what they want—turkeys every month. Story, page 8.

(Photo: Bill Reasons)

FARM PRODUCTION seems likely to continue large in 1957 and industrial production may be the greatest ever. That goes for Oregon as well as the nation.

New equipment and new plants will be producing in 1957. Investments in new plants and equipment in 1956 were the greatest in the history of this country. They came on top of previous construction that has pushed industrial production to new highs—more than 2½ times the prewar average.

These plants will offer more and better products to eager consumers who have been willing to spend at record rates, not only out of current earnings but out of borrowings against future earnings.

The net result of all this seems likely to be continued upward pressure on wage rates and consumer prices in the months ahead.

About the only thing restraining rising prices, besides the large supply of goods and services, is the tighter money policy of the Federal Reserve Banks. This policy leads to higher interest rates and less liberal loans, thus tending to limit ability to buy and reduce upward pressure on prices—part of the effort to hold inflation.

If soft spots in the economy, like lumber, should spread enough to threaten a general downturn in business, the Federal Reserve policy probably would be relaxed. Meanwhile, income from Oregon's forest industries may lag behind the high levels of the last few years.

Farm income

But farm income appears to have hit a firm bottom for the time being. Current figures indicate that receipts from sales of farm products increased a little in 1956 after declining for four years in a row. This appears to be true for Oregon as well as the nation.

Chances for holding these farm income gains in 1957 are fairly good. Another small increase in income could come in the year ahead if spending by consumers, business, and government continues to grow and if farmers take advantage of the opportunity to earn Soil Bank payments.

Soil bank

But farmers aren't as keen about the Soil Bank as they would have been a year ago. Prices have improved since

Save extra gilts this spring . . . cattle prices likely above a year ago . . . consider increasing plantings of good fruit, perhaps nut trees.

Farm Outlook

By Agricultural Economist M. D. Thomas

then, partly due to fewer hogs, but also due to government action that brought higher supports and larger export subsidies on several crops. Farmers are more optimistic about the future and less willing to lay land aside now. Soil Bank payments won't get as much land out of production as they would have a year ago. Payments in many places just aren't high enough to get the participation needed.

Farm surpluses

Now, the nation's farm surplus problem seems likely to land squarely in the laps of Midwest corn growers. For several years we have been producing more corn than we have been able to dispose of. Stocks, already at record levels, are expected to increase again in 1957.

Meanwhile, the combination of marketing quotas on wheat and cotton and expanded exports have eased the difficulties these commodities faced earlier. Stocks of dairy products and many other items previously in trouble are already down from past peaks, and wheat and cotton carryovers are expected to shrink a bit this year. In 1956, corn was the only basic crop produced in excess of expected disappearance.

A plan that would have discouraged Midwest plantings of corn, soybeans, and other soil-depleting crops was favored by some 62 per cent of the commercial corn growers voting in December, but this was not enough to put the program in effect. For 1957, corn growers have the choice of:

¶ Sharply reduced allotments and supports averaging $1.36 a bushel, or

¶ All-out production and no price support.

Past experience and current prospects suggest that many will choose the latter—all-out production. This seems especially likely in 1957 since the support is 14 cents under last year and the lowest in a long time. Also, hog prices are likely to compare favorably with corn prices this spring. This will encourage corn-planting and pig-raising. This, in turn, suggests that pork prices may be on the skids again in 1958. To a lesser extent the same could be true for cattle prices, too.

Of course, there is always the chance that weather or Congress will postpone the day of reckoning for corn growers awhile longer, but it's becoming clearer that the surplus problem is just as much a corn problem as it is a wheat problem, a cotton problem, or some other commodity problem.

Feed Grain

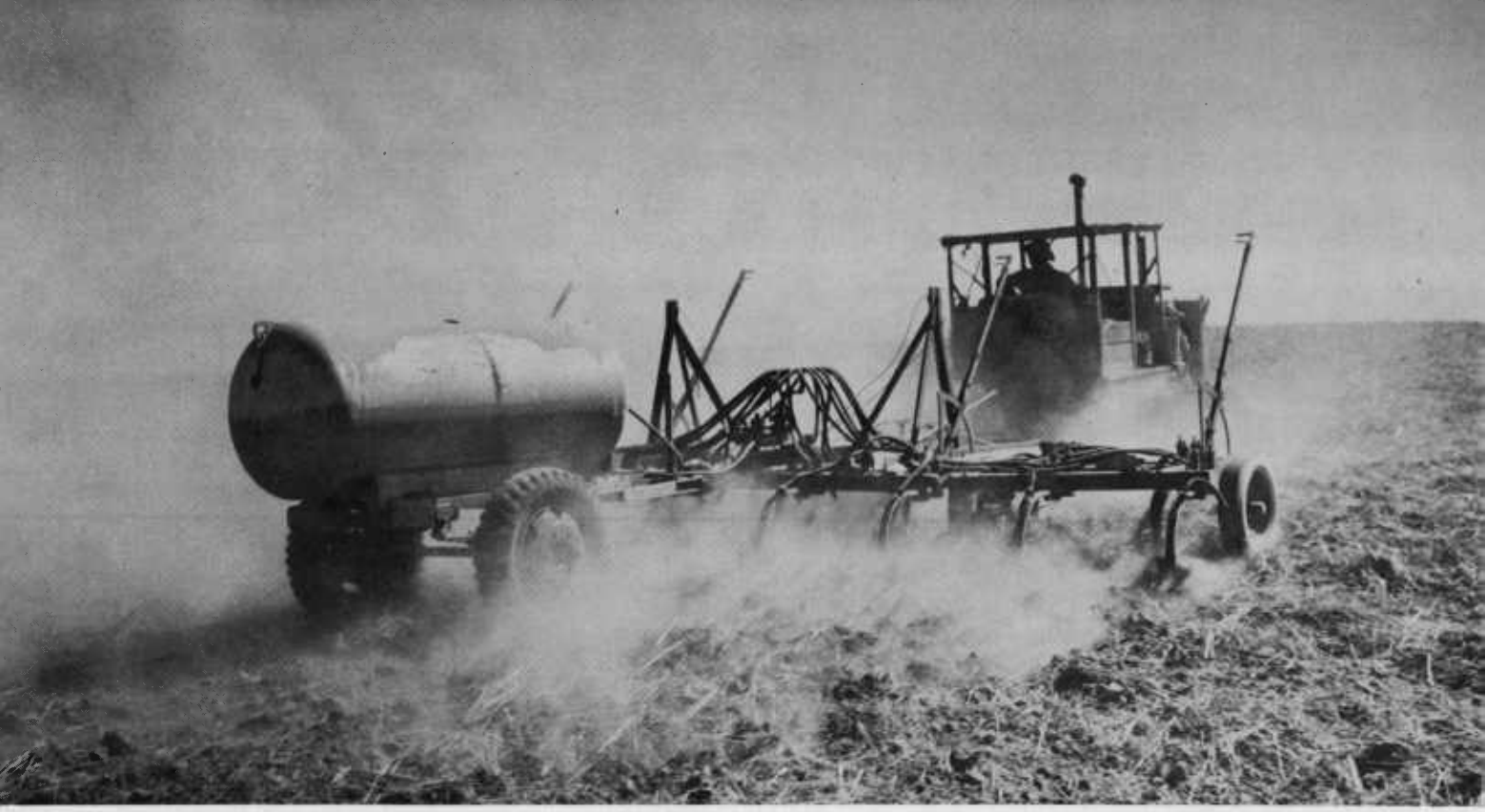
Barley and oats prices are not likely to advance much, if any, in the next few months. They already reflect higher supports on 1956 crops. The large supply of corn plus uncertainty over 1957 supports for barley and oats are against further increases. Exports are lagging behind a year ago and domestic use for feed is barely holding its own with last season's record use.

Wheat

Large shipments of Northwest wheat under the new export program have boosted prices and are rapidly reducing supplies here. Several "mothball" ships have been emptied. Government wheat is being used to make up the difference between domestic prices and export prices. That difference in December was around 82 cents a bushel of soft white wheat. A year earlier it was 66 cents a bushel.

(Continued, page 16)

1957 HOG PRICES will be good, but not like 1954's although $20 hogs are in the picture. Pacific Coast hog prices usually are highest in the nation—with 10 per cent of the people but only 1 per cent of the hogs. It's a time to save gilts, aim spring barrows for mid-September markets.



USE OF elemental nitrogen jumped in Oregon from 1,077 tons in 1939 to 25,640 tons in 1953. An OSC agricultural economist's analysis for determining which rate will return the most, epplies most directly to farms with similar soil, climate of the Pendleton station, where trials were held.

When It Pays to Fertilize Wheat

Wise use of fertilizers is a part of today's efficient farming. An OSC agricultural economist has taken some of the guesswork from deciding which nitrogen rate pays most in a wheat-fallow system.

RISING COSTS and lower prices have put priority on efficient farming. Many farmers think twice before spending for fertilizers, chemicals, and other cash costs that may or may not increase yields the coming year.

Farmers have known for a long time that nitrogen will increase yields. Use of elemental nitrogen jumped from 1,077 tons in 1939 to 25,640 tons in 1953.

Research results at the Pendleton branch experiment station have shown how much nitrogen can increase wheat yields. But when it comes to deciding *which* rate will return the most, there is still considerable guesswork.

Some economic analysis of nitrogen effects on 10-year wheat-fallow yields at the Pendleton station will remove some of the guesswork, if rainfall, soil, and climate at your farm are similar to that of the Pendleton station. Analysis was worked out by OSC agricultural economist W. G. Brown.

Let's consider current wheat prices of $2 per bushel, subtracting 25 cents per bushel for harvesting costs. Let's also assume nitrogen costs at 12 cents a pound, including application.

Now look at the "average" line in Figure 2. Ninety pounds of nitrogen would increase yields about 13 bushels per acre; 60 pounds of nitrogen, about 11 bushels. Which rate would "pay" or return the most?

Figure 1 shows the answer—the 60-pound rate. The curve shows profits left after nitrogen costs are subtracted from the value of increased wheat yields.

Figure 3 indicates the gross return from each dollar spent for nitrogen. Note how the return decreases for each increased amount of nitrogen added. Brown says this is important for those short on cash, or for tenants.

Low rates may pay more

With tenants who pay all fertilizer costs but receive only two-thirds of the benefit, lower nitrogen rates will "pay" more than higher rates. It also indicates how certain tenancy arrange-

ments lead to inefficiency, since in most cases the 60-pound rate would return the most.

The economist also says you can figure which nitrogen rate will return the most if nitrogen or wheat prices change. All you do is divide nitrogen cost per pound by wheat price per bushel minus harvesting costs. This gives you a ratio you can use.

Below are listed the ratios pegged to the 10-year yield average for various nitrogen rates at the Pendleton station:

Nitrogen Rate	Ratio
lbs./acre	
20	.15
30	.12
40	.093
50	.077
60	.065
70	.056
80	.049
90	.043

With these ratios, you can predict which nitrogen rate will return the most. For example, let's say wheat prices increase to $2.40 a bushel, harvesting costs remain the same—25 cents per bushel, and nitrogen costs $0.12/$2.15=.05, or the 80-pound $0.12/$2.15 = .05, or the 80 pound-rate. (80 pounds is .049, the nearest to .05). Again, available cash and type of tenancy agreement are important.

Limitations listed

Brown points out two important limitations to widespread use of these figures:

¶They are based on a 10-year yield average. Note in figure 2 how yield responses vary. Will next year be a "good" one like 1946? Or a "poor" one like 1949? Good judgment and some guessing will be needed. The economist says about 40 per cent of the yield variation is due to nitrogen. Sixty per cent is due to unexplained causes, perhaps available moisture and climate.

¶Average yields at the Pendleton station may be much different from those at your farm. Rainfall at the Pendleton station averaged 16.7 inches over this 10-year period. Soils are Walla Walla silt loam. Results apply most directly to farms with similar soil, rainfall, and climate.

Figure 1. Increased Profits From Fertilizing Wheat

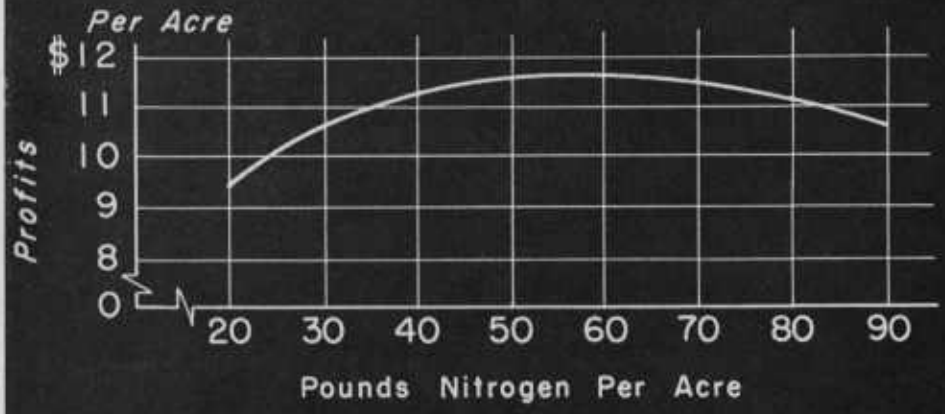


Figure 2. Average Winter Wheat Yields

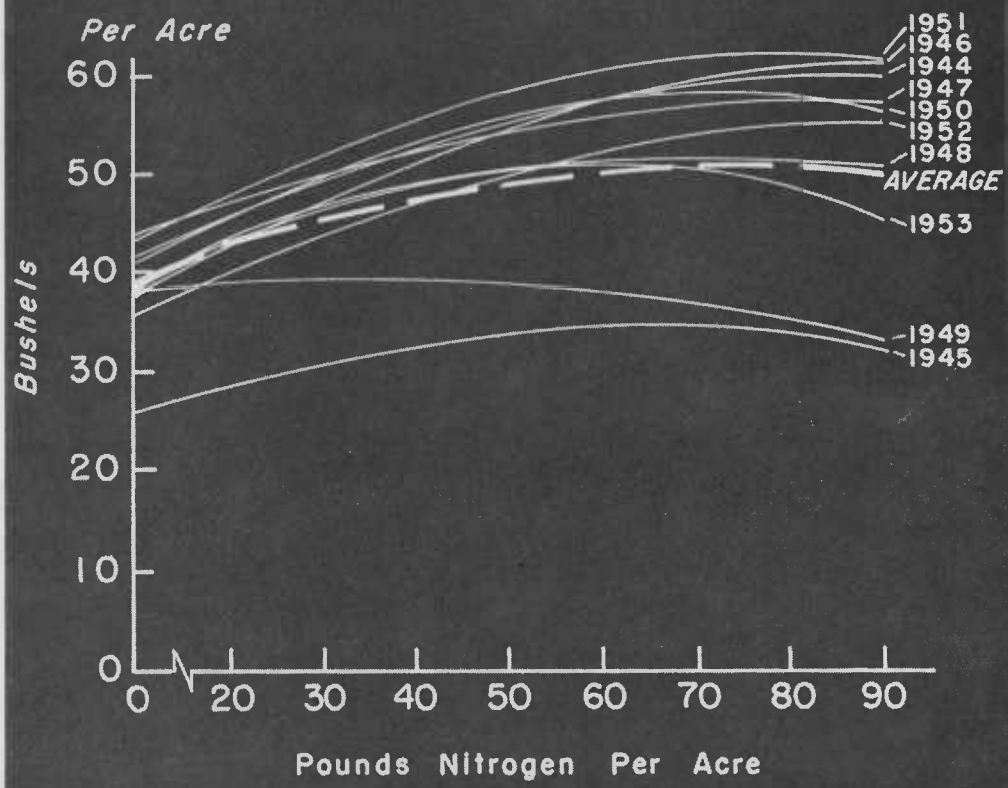
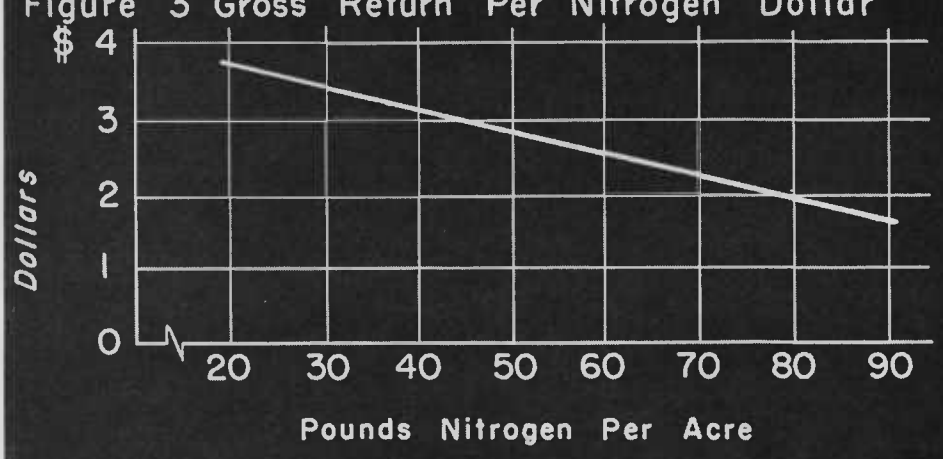


Figure 3 Gross Return Per Nitrogen Dollar



MULCHES FAILED to increase cabbage yields. Clarkson found that mulches increased yields most on warm season vegetables, such as tomatoes, beans.

PLASTIC MULCHES increase tomato yields. Yield from mulched plot, right; unmulched plot, left. Mulch material was black polyethylene, 4 mil. thick.

Plastic Mulches for Vegetables?

Two years' research with different thicknesses and colors show some will increase marketable yields of certain crops. But profits may be too slim for immediate use.

BLACK POLYETHYLENE (plastic) mulch increased marketable yields of tomatoes, pole beans, and cantaloupes, but did not boost cabbage yields.

That's the two-year report from OSC horticulturist Vernon Clarkson. Plastic mulches not only increased marketable yields of tomatoes and cantaloupes, but decreased the amount of rotted, cracked, or unmarketable fruit. Mulched pole beans germinated 3 to 5 days earlier, but this did not result in earlier picking. Graded weight of mulched and unmulched beans was the same per cent for sieve sizes.

1955-56 results for tomatoes, pole beans, and cantaloupes are charted. Various thicknesses of plastic were used in some cases. In tomatoes, for example, both the 2 mil. and 4 mil. thicknesses were tested (1 mil. is 1/1,000 of an inch).

On all crops, 4-foot-wide plastic was centered over rows.

For tomatoes, plants were spaced 4 feet apart within the row, with rows 6 feet apart.

For pole beans, hills were spaced 18 inches apart, with three plants per hill. Rows were 5 feet apart.

For cantaloupe, hills were spaced 6 feet apart within the row, with rows 8 feet apart.

For cabbages, plants were spaced 3 feet apart within the row, with rows 6 feet apart.

When transplants were used, a small hole was cut in the center of the plastic. With beans, a corn planter was used to punch holes and seed in the same operation.

Plots fertilized same

The same fertilizer amounts were applied to each treatment, although they differed by crop. Irrigations were keyed to supply needs of unmulched plots.

Need for hand labor and current mulch costs may mean polyethylene mulch is practical only on high value crops. Clarkson estimates the plastic costs about $250 per acre. The material has been used by building contractors, and is available from many building supply houses or hardware stores.

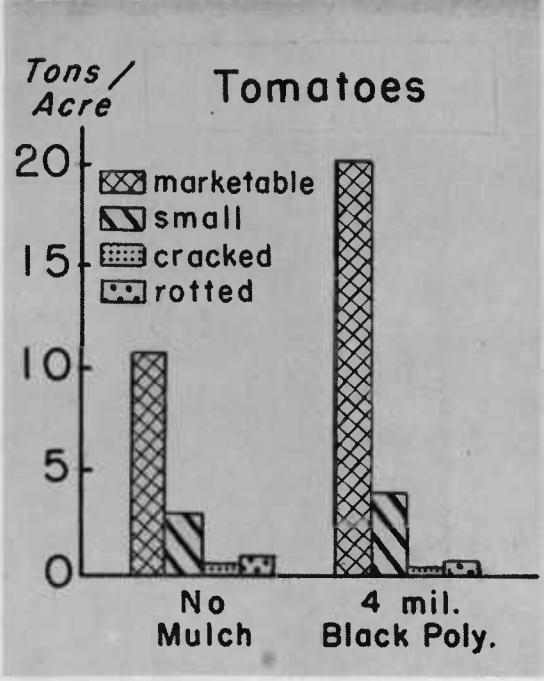
Costs compared

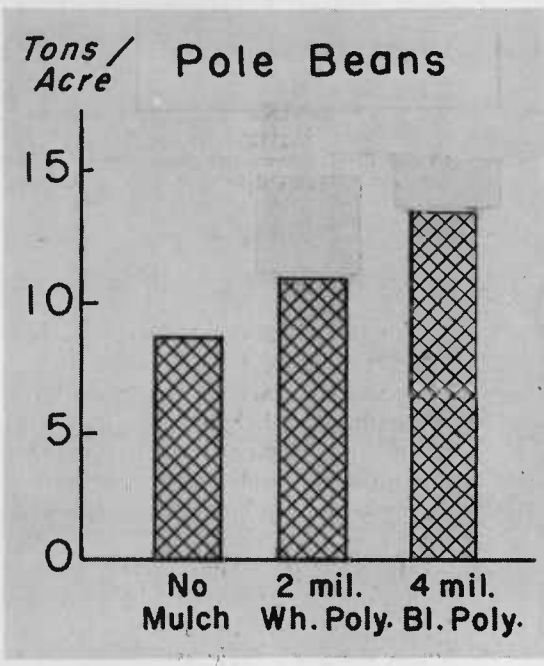
In comparing costs with pole beans, Clarkson figures his increased net profit from 4 mil. black plastic was $38.35 per acre. He assumed the entire cost of plastic the first year, although if handled carefully the material will last 3 to 4 years. Costs included picking the extra tonnage.

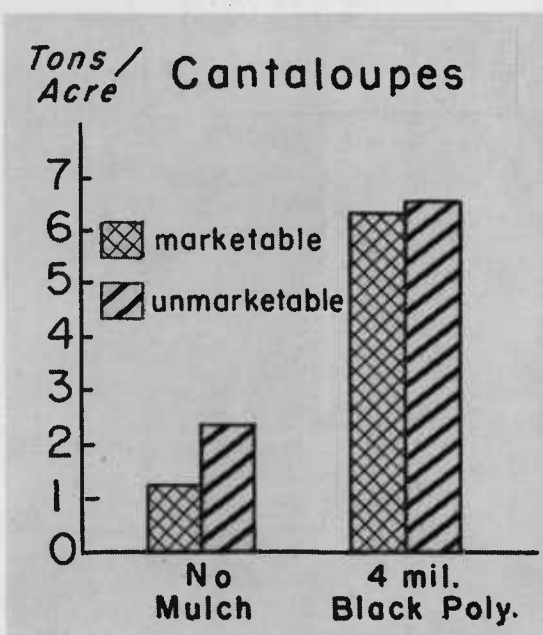
Plastic mulches may not be practical for crops seeded mechanically, such as pole beans. But the horticulturist thinks special planting attachments could be developed to overcome this disadvantage.

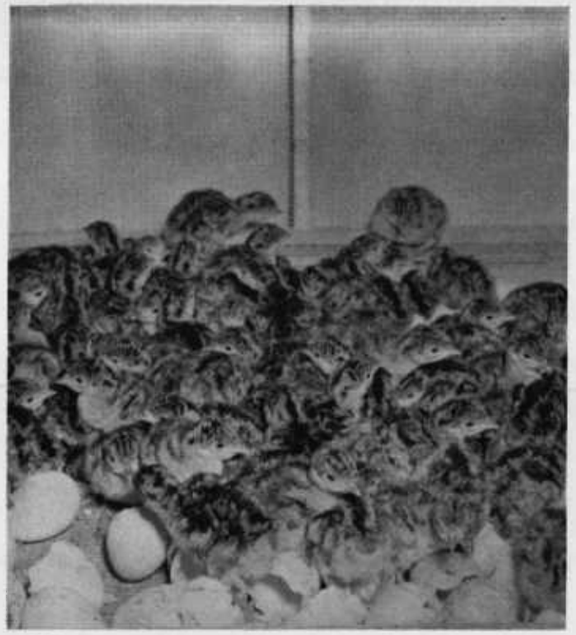
Research plans call for testing plastic mulches with reduced irrigation rates. Lower irrigation costs may widen profits, making the material more practical to use. Plastics will be tested more on other crops, too. Preliminary trials indicated the material may increase marketable yields of vegetables such as bush beans, lima beans, peppers, and egg plant. The material also is being tested on strawberries and blueberries.

HORTICULTURIST Vern Clarkson examines a bush bean plant that had been covered last summer with black plastic. Unmulched plant, right. Testing of mulches on beans, peppers, berries planned.









50 PER CENT summer egg production came from December-hatched birds, with only 9 hours light in August. Undarkened hens layed 25 per cent.

TURKEYS EVERY MONTH?

By darkening pens, an OSC poultryman reports he has managed turkeys for high summer egg laying.

TURKEY PRODUCTION every month—this may be possible soon.

Consumer demand for fresh birds other than on holidays not only will mean more efficient use of equipment for growers, feed dealers, hatcheries, and processors, but a boost to producers in mild climates—like Oregon—who could grow turkeys year 'round.

Turkey production in the past has been geared largely to peaks in consumer demand—Thanksgiving, Christmas, and New Year's. This pattern neatly fits the normal turkey breeding cycle.

But poultryman J. A. Harper says it will take awhile before turkey breeding flock owners can catch up with "off-season" demand. Reasons: breeders have not selected for year 'round egg production like they have for chickens.

Without a year 'round egg supply, hatcheries cannot set eggs for the off-season poult demand.

But Harper says his research can improve seasonal turkey egg laying.

In 1952, he confirmed that natural day length affects egg laying for turkeys. From December 21 to June 21, increasing light stimulates turkey hens to lay more; after June 21 when natural light decreases, hens will lay less. Around June 21, they go into a non-laying "rest," sometimes molting.

Commercial turkey breeders take advantage of this by delivering eggs for January to May hatching. Birds reach market maturity for the holiday demand and breeding hens retained are ready to lay when stimulated by increasing daylight.

Birds hatched in December

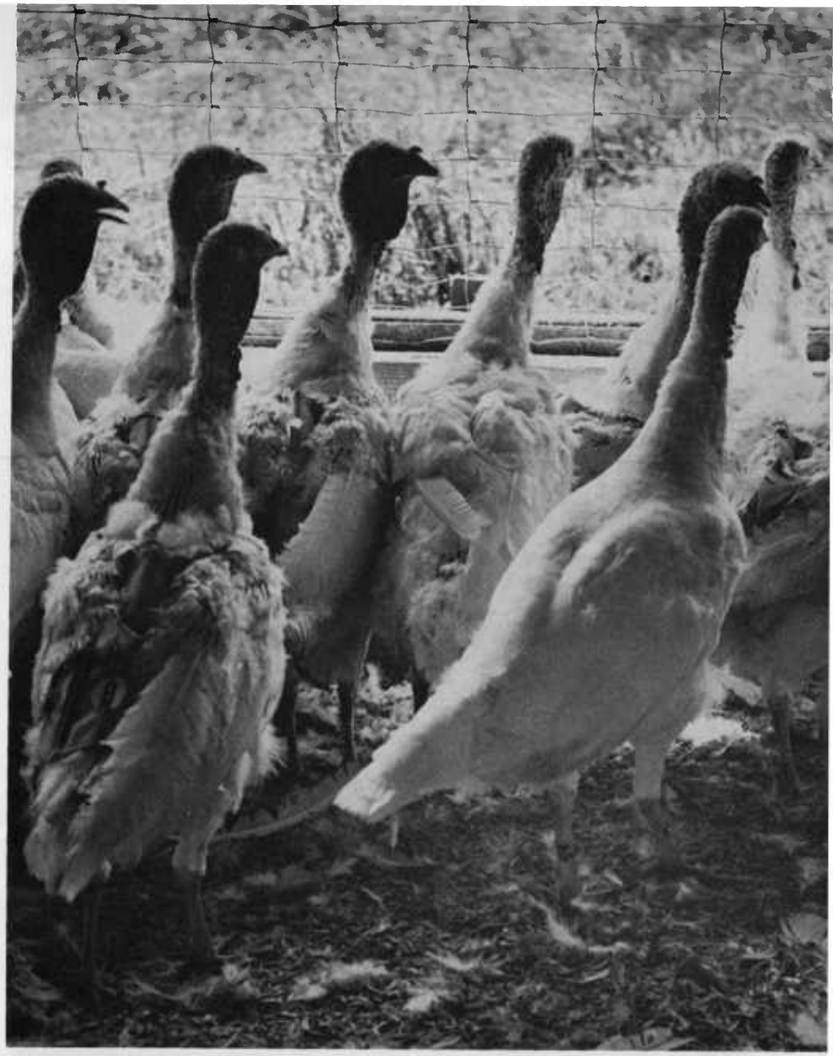
Harper tried to reverse the process by hatching birds in December, then managing them for high egg production during the summer months when normal egg production decreases.

His management scheme was simple: he just gave the birds an artificial "winter rest." He permitted some birds only 9 hours of light a day by confining them to pens completely darkened. Groups of test birds received the "rest" treatment (beginning August 1) for 1, 2, or 3 weeks. A fourth group remained on natural light and did not get a "rest." Beginning August 8, the natural light group received enough artificial light for a 17-hour light day. After the three treated groups had completed their "rest" they went on a 17-hour day too. Eggs were collected from September 1 to November 20. All birds were young Beltsville Whites 23 weeks of age at the start of the experiment.

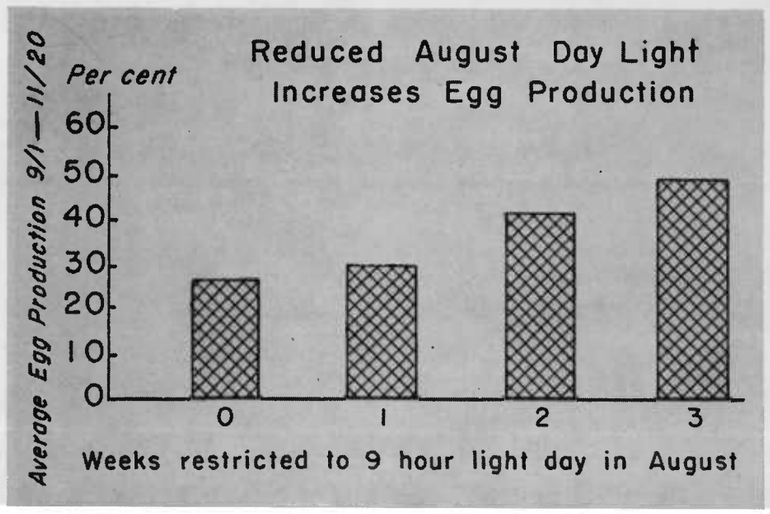
Results are graphed. The management switch worked best on the hens confined for 3 weeks to a 9-hour light period. These hens laid about 50 per cent compared to 25 per cent for untreated hens.

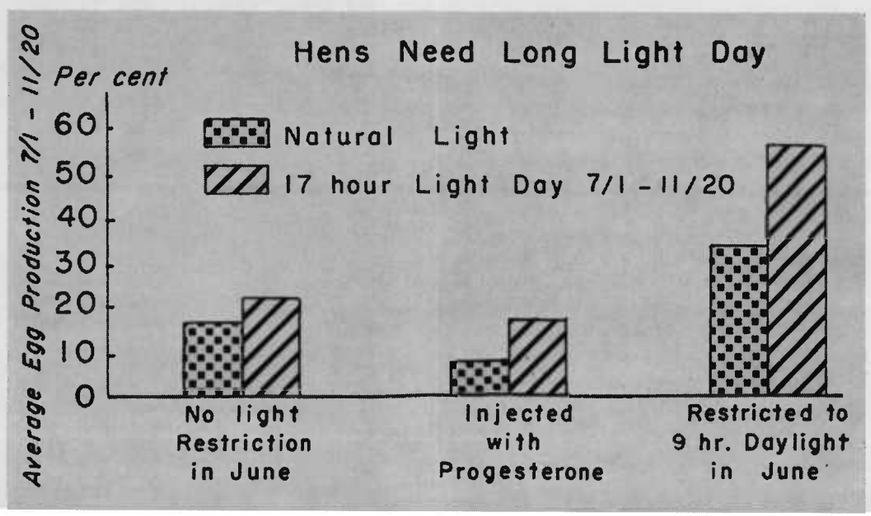
In another experiment (beginning June 1), Harper tested the effects of a "rest" treatment and progesterone injections with hens later maintained under natural summer and fall daylight, compared to a 17-hour daily light exposure. Progesterone is a hormone secreted by the ovary and is involved in the reproductive cycle.

Results are shown in the graph.



FORCE MOLTING of yearling hens failed to increase summer egg production. Darkening pens in June helped some, but egg production was 20 per cent—not enough for economical production.





Turkey hens hatched in December, given a "rest" of 4 weeks and then maintained on a 17-hour day length, produced eggs at a rate of 50 per cent, more than double that for hens not given this treatment. They show also that natural light in the fall months is not enough to maintain satisfactory egg production. Progesterone injections decreased egg production.

Yearling hens tested

Harper also tested his management scheme on yearling hens completing 6 months of lay to June 1. It didn't work. Force molting through starvation and progesterone injections did not increase later egg production either.

Production for yearling hens given the artificial "winter rest" in June was the best, but still averaged only 20 per cent—not high enough for economical production.

To get eggs from young turkeys in the summer and fall months, Harper suggests confining of December-hatched turkeys to dark pens for 4 weeks in June. After the "rest," maintain hens on a light day of at least 17 hours.

Additional work on obtaining eggs in off-season is planned. Other levels of progesterone will be tested.

Although farmers haven't won their war with weeds, OSC agronomists and horticulturists predict you will get . . .

Better Weed Control With New Chemicals

2,4-D B handled broadleaf weeds in Ladino clover trial above. Treated plot at right center; untreated, left center. Broadleafs convert chemical to 2,4-D, which kills plant. Most legumes don't do this.

KARMEX DW controlled most weeds in this Merion bluegrass stand near Corvallis. Two pounds per acre were applied in the fall. Treated rows are shown left of center, unreated rows are at right.

OREGON FARMERS are on the threshold of controlling their weed problem—with chemicals.

New chemicals under test at OSC give promise of many crops almost completely weed-free. And more promising weapons need only approval of the Food and Drug Administration before entering the farmers' arsenal of selective weed killers.

These chemicals, developed by industry, first are plot-tested by OSC horticulturist Roland Laning, and agronomists Bill Furtick, Dave Chilcote, and D. G. Swan. Those that look promising are yield-tested with crops at various branch experiment stations to make sure they kill weeds, yet are safe for crops in Oregon's many soils and climates. A recent amendment to the Federal Food and Drug Law also requires a determination of chemical residue on the crop for public health protection.

Many of these newly tested and approved chemicals are, or will be, available soon. Here's what the researchers say they will do:

Amino triazole kills Canada thistle, horsetail rush, cattail, and poison oak. The chemical kills by blocking the chlorophyll-manufacturing process of the plant. Plants die slowly, sometimes living enough to produce some new, whitish growth the next year. Then the plant soon dies. Amino triazole severely injures most crop plants, and must be used where no crop is planted. It does not stay long in the soil, so you can plant crops a few weeks after spraying.

Karmex DW acts through the soil to kill most weeds just after they germinate. In OSC tests, the chemical has killed weeds in grass seed crops such as Merion bluegrass, Alta fescue, red fescue, and bentgrass, when sprayed on established stands in the fall. The material has controlled practically all types of seedling grasses and broadleaf weeds germinating in the fall without harming existing grass seed crops. Karmex DW has been highly effective in killing cheatgrass, annual foxtail barley, and Canada bluegrass in established alfalfa stands. 1955 trials at the Pendleton branch station showed that 2½ pounds of Karmex DW controlled 96 per cent of the cheatgrass, all the foxtail barley, and 86 per cent of the Canada bluegrass. Yields of clean al-

UNTREATED corn plot shows weed competition. Single treatment of Simazin controlled weeds better than other chemicals tested, even increased yields.

SIMAZIN controlled all weeds in this corn trial. Material was applied as a preemergence, at 2 pounds per acre. Chemical may be available by 1958.

falfa hay in these plots were the same as plots with both alfalfa and weeds.

Karmex DW also has controlled common annual weeds in peppermint when applied to the soil just before weeds or peppermint come up in the spring.

Because this chemical kills or injures most seedlings, it is not recommended for most annual crops. Preliminary tests at Corvallis, however, have shown that it controls both grasses and broadleafs in winter wheat and barley when applied at planting time. *This is not yet recommended for farmer use.*

Karmex DW has controlled most annual weeds in raspberries, blackberries, and gooseberries. Applications have been made in late fall, winter, and in early spring before new shoots emerge.

Dalapon kills grassy weeds and cattails. Although it injures many crops, it promises to control various grasses without injuring legumes like alfalfa and birdsfoot trefoil, if sprayed during legume dormancy. The material kills all types of annual grasses such as cheatgrass, ryegrass, and foxtail barley when sprayed while grass is young.

Its ability to kill young cheatgrass led to widespread testing during the fallow year on eastern Oregon wheat land—in combination with 2,4-D—to replace rod weeding. Tests indicate that cheatgrass quickly resists Dalapon after it starts spring growth. Timing thus is important.

Dalapon's ability to kill perennial grasses such as quackgrass and German mesquite makes it a promising material for spot treatment. Results show that more than one application is necessary to kill vigorous grassy weeds.

Randox and Vegedex are two new chemicals that control seedling grasses (including watergrass and wild foxtail) in sweet corn, pole beans, and onions. Only Randox is suggested for

New Perennial Weed Control Chemicals

Weed	Chemical	Estimated availability	Amount	Time of application
Canada thistle	Amino triazole	Current	4 lbs. active/acre	After 6" to 8" tall
Horsetail rush	Amino triazole	Current	4 lbs. active/acre	When growing vigorously
Cattail	Amino triazole	Current	5 lbs. active/ 100 gal. water	Before full bloom
	Dalapon	Current	20 lbs./100 gal. water	Before full bloom
Poison oak	Amino triazole	Current	8 lbs. active/ 100 gal. water	Full leaf in spring
Morning glory	Trichlorobenzoic acid	1958	10 to 40 lbs./acre	Bud stage. Use high rate for complete eradication.
Quackgrass	Dalapon	Current	30 lbs./acre	When growing vigorously. Repeat on regrowth.
	Amino triazole	Current	5 to 10 lbs./acre	Same as above.
German mesquite	Dalapon	Current	30 lbs./acre	When growing vigorously. Repeat on regrowth.
	Amino triazole	Current	20 lbs./acre	Same as above.

trial on onions. Trials throughout the state in the past 3 years show neither chemical harms sweet corn or pole beans. Randox is more water soluble, and more effectively controls grasses where there is a limited rainfall or furrow-type irrigation. Vegedex is less water-soluble, will remain in the soil longer, and is best where heavy rain or sprinkler irrigation occur.

Randox or Vegedex added to dinitro amine appears promising as a pre-emergence treatment for sweet corn and pole beans. Further testing will be required.

2,4-D B and MCPB (Butyric acid derivatives of 2,4-D and MCP) selectively kill broadleaf weeds in legumes. Broadleafs convert these materials to regular 2,4-D and MCP, and are killed. Many legumes, including alfalfa and most clovers, are unable to change these compounds to 2,4-D and MCP, and are not injured. These materials have controlled annual weeds such as pigweed, lambsquarter, and mustard in seedling stands of alfalfa, white clovers, red clover, and peas. They also control common pasture weeds, including dock, Canada thistle, bull thistle, and various types of buttercup.

RANDOX and Dinitro Amine controlled weeds in Blue Lake beans. Untreated beans are at right.

Simazin, tested for the first time last year, appears to be tailored for corn. This chemical killed all crops and weeds commonly found in western Oregon except corn. Corn was not injured even at rates several times higher than that required to kill all weeds, including quackgrass. Corn treated with Simazin yielded more than untreated corn, remained weed-free throughout the summer without cultivation.

Trichlorobenzoic acid is a promising control for perennial morning glory. Trials at the Pendleton branch station show that this material killed 99 per cent of all morning glory in a single application. Since this material injures most plants, it was applied the fallow year. A wheat crop made normal growth the following year.

New Selective Weed Control Chemicals

Crop	Chemical	Estimated availability	Rate/acre	Time of application	Weeds controlled
Established alfalfa	Karmex DW	Current	2 to 3 lbs.	October-December	Cheatgrass, annual foxtail, bluegrass and annual broadleafs
	Dalapon	When cleared by Food & Drug	5 lbs.	During dormancy	Grasses
Seedling or established alfalfa, clovers, peas	2,4-D B or MCPB	1958	1 to 1½ lbs.	When weeds are small	Most broadleaf types
Pastures	2,4-D B or MCPB	1958	1 to 4 lbs.	Before weeds bloom	Dock, thistles, buttercups
Merion bluegrass, alta fescue, red fescue, bentgrass	Karmex DW	Current	2 lbs.	October-November	Seedling grasses and broadleafs
Field corn	Simazin	1958	1 to 2 lbs.	Pre-emergence	All weeds
Onions	Randox	1957	6 lbs.	Pre-emergence	Watergrass, foxtail, and other grasses. Some broadleafs
Sweet corn, field corn, pole beans	Vegedex Randox	1957	4 lbs.	Pre-emergence. Vegedex better on light soils and under heavy rainfall or sprinkler irrigation	Annual weeds
Peppermint	Karmex DW	Current	2 to 3 lbs.	Pre-emergence	Seedling grasses, broadleafs
Raspberries, blackberries, gooseberries	Karmex DW	Current	2 to 3 lbs.	Fall, winter, spring, before new canes emerge	Annual weed seedlings

Carryover Nitrogen Can Up Wheat Yields

That's what a team of OSC-USDA soil scientists found when they revisited in 1956 several fertilizer plots that had been set out in 1953-54. They conclude that if nitrogen is not used in the first season, much will remain for use by the next wheat crop.

HOW MUCH will nitrogen increase wheat yields 2 years after it has been applied?

OSC-USDA soil scientists A. S. Hunter and C. J. Gerard, and Sherman branch station superintendent W. E. Hall, have found nitrogen will continue to increase yields in many cases. This is based on 1956 plot harvests of 10 nitrogen trials set out in 1953-1954. Trials were on winter wheat-fallow farms in Umatilla, Morrow, Sherman, and Wasco Counties.

Average 1956 yield figures for nitrogen applied in fall, 1953, were: no nitrogen, 30 bushels per acre; 20 pounds nitrogen (N), 21 bushels; 40 pounds N, 33 bushels; 60 pounds N, 33 bushels; 80 pounds N, 35 bushels.

1954 nitrogen use important

Hunter, Gerard, and Hall found most of this carryover increase in Umatilla and Morrow Counties. No increase showed up in Sherman and Wasco Counties. They think the reason lies in the crop's nitrogen use in 1954. According to their data, good 1954 yield increases were obtained from fall-applied nitrogen in these counties, while nitrogen failed to increase yields in Umatilla and Morrow Counties. They conclude that if nitrogen is not used the first season, much remains in the soil for the next wheat crop.

Carryover effects of spring-applied nitrogen were greater: no nitrogen, 30 bushels; 20 pounds N, 32 bushels; 40 pounds N, 36 bushels; 60 pounds N, 36 bushels; 80 pounds N, 40 bushels.

In 1954, spring-applied nitrogen plots yielded lower than fall-applied plots, explaining why greater yield increases were noted in 1956. Also, fall-applied nitrogen was subject to three winters of leaching, while spring-applied plots had only two winters of leaching.

The Weather Bureau reports average precipitation for 8 stations in the area from fall 1953 to 1956 harvest was 36 inches—2 inches above normal. From spring 1953 to 1956 harvest, average precipitation was about 29 inches—7 inches less than that on nitrogen which was applied in fall of 1953.

10 sites harvested

The researchers base their figures from harvests of 10 farms where the carryover effects of nitrogen were visible. Twenty-five of the forty 1954 experimental locations scattered throughout the Columbia Basin were revisited in 1956. Carryover effects were observed on 17 sites. Time permitted harvesting only 10.

Not all farms showed carryover effects and data were obtained only from those that did.

ONE OF FORTY fertilizer trials scattered throughout the Columbia Basin in 1954, where carryover effects of nitrogen were recorded in 1956. Of the 25 sites revisited in 1956, 17 showed such effects.

Research Briefs

Horticulturist Gets Biennial to Flower First Year • When Foxes Prey Most on Poultry

Chemical Causes First-Year Flowering of Biennial

An OSC horticulturist reports he has induced first year flowering of foxgloves—a biennial—with gibberellic acid.

Gibberellic acid was first isolated by Japanese researchers in 1939. It is produced by a soil-borne fungus *Gibberella fujikuroi,* which causes a disease of rice seedlings in the Far East. One of the first symptoms is an elongation of the shoot. Diseased plants are much taller than healthy ones.

A biennial's flower stalk elongates, after winter chilling, before it flowers.

The horticulturist, L. T. Blaney, reasoned that if gibberellic acid caused stem lengthening, it might encourage biennials to flower without the required long winter chilling.

He began treatment August 29 on plants seeded May 26. One group was not treated. Another received 60 milligrams of pure acid over the next 30 days, at a rate of 2 micrograms daily. A third group received 300 micrograms—10 micrograms a day.

The photo below snapped December 31 shows the results.

GIBBERELLIC ACID—induced flowering of foxgloves is checked by OSC horticulturist L. T. Blaney. If chemical can cause first year flowering of many biennials, plant breeding research can be speeded.

Although Blaney has treated other biennials—cabbage and canterbury bell—only foxglove has flowered to date. Flower stems of the other two are elongating, showing they are responding to gibberellic acid.

The horticulturist says it's too early to tell if gibberellic acid will induce annual flowering in many biennials. If it does, the material opens many new roads to the plant breeder. Breeding work for improved biennials, such as cabbage, carrots, beets, and other vegetables, may be speeded up.

Although gibberellic acid may bypass many biennials' chilling requirements, horticulturists may need to provide proper daylengths. This may be done by artificially shortening or lengthening the day by shading or lighting, combined with proper greenhouse temperature adjustments.

Foxes Prey on Poultry Most in Spring

FOXES PREY on poultry and game birds more at denning time—in the spring—but depend more on fruit, grasses, and insects for food in summer and fall.

That's the report from Maxwell Wilcomb and A. E. Einarsen, of the Oregon Cooperative Wildlife Research Unit at Oregon State College.

From examining digestive tracts, dens, and scats (feces) of both gray and red foxes in the Willamette Valley, they found that small birds (including pheasants), poultry, rabbits, and rodents were the main items of a fox's diet in March, April, and May. In June, July, and August, rabbits and rodents still were eaten, but fruits, grasses, and insects also appeared as food favorites.

The researchers report red foxes were heavier eaters of rodents; gray foxes consumed more fruit.

Rats Fed Irradiated Meat Remain Healthy

RATS FED for 2 years with irradiation-preserved beef organs appear as healthy as rats fed a similar but non-irradiated ration, according to OSC agricultural chemists E. C. Bubl and J. S. Butts.

Beef organ ration was made up of kidney, heart, brain, and tripe that was ground, mixed, and sealed in cans. Half the cans were subjected to high intensity gamma irradiation, the other half were frozen—for preservation.

Before feeding, the same amounts of vitamins, proteins, salts, and potato starch were added to both groups. Rats fed were of a single strain with litter mates on irradiation-treated and untreated rations.

During the experiment, rats on the treated diet weighed, grew, and produced as many pups as those on the non-irradiated diet. Four generations were tested.

But the chemists are not saying that irradiation-preserved meat can be considered suitable for human food. Although rats are one of the best animals for such experiments (their nutritional requirements, digestive system, and growth rate is similar to humans), more testing is necessary.

Bubl and Butts have indicated that such experiments on human test-subjects are underway at the Fitzsimmons Army Hospital, Denver. No adverse effects have shown up yet.

Chances Good for Blue Lake Pods on Bush Plant

BLUE LAKE pods on a bush bean?

There's at least a chance for it, predicts OSC horticulturist W. A. Frazier.

Six years of backcrossing bush x Blue Lake hybrids with Blue Lakes has given the plant breeder cause to think he may be approaching Blue Lake pod quality in a bush bean.

He even may be able to transfer all the Blue Lake genes except tall growth habit so the bush hybrid will thrive best in Oregon's favorable climate. The most difficult job is eliminating a weak, sprawly growth habit.

The horticulturist has been unable to get Blue Lake pods on a true bush bean. His backcrosses result in pole, intermediate, and bush growth habit, with excellent Blue Lake pods appearing only on pole and intermediate types.

It is these intermediate hybrids that are the keys to future success or failure, especially if Frazier is unable to transfer the upright bush growth habit to his sprawly intermediate hybrids.

If mechanical harvesters can handle sprawly intermediates, the plant breeder's task is greatly simplified; if they can't, his job is much more difficult.

Yields of Frazier's promising Blue Lake bush hybrids are about the same as other bush beans—3 to 6 tons per acre. Well-grown Blue Lake pole beans vary from 8 to 12 tons per acre.

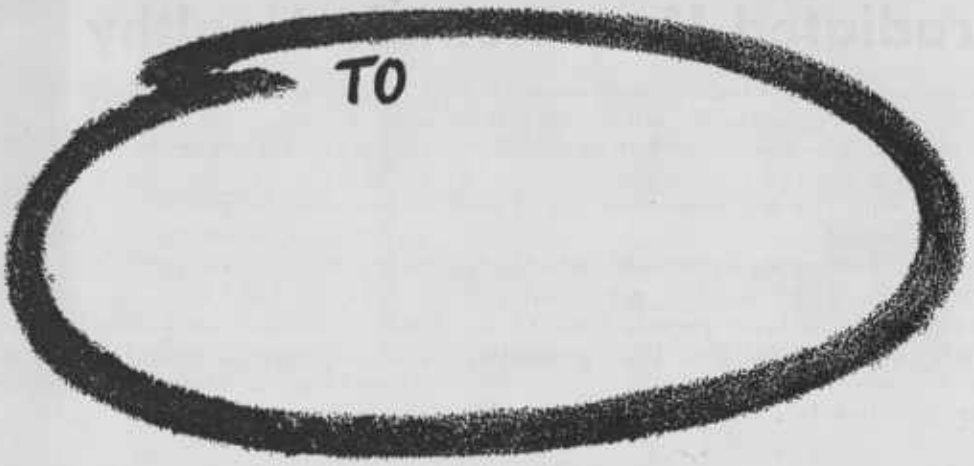
New harvester successful?

Widespread commercial use of a Blue Lake bush bean in Oregon may depend on how successful new mechanical bush bean harvesters will prove in Oregon. Tests in the Midwest and East indicate they can cut picking costs in half. Coupled to that would be savings in wire, string, poles, and in driving poles and stringing—although this is now being done mechanically on many farms.

Even if a mechanical bush bean harvester works, there is question if it can economically replace all pole bean operations—especially on small acreages. Possible high rental or high initial cost may mean bean growers on a few acres can still clear more from Blue Lake pole beans. Development of a mechanical pole bean picker also could discourage use of a Blue Lake bush bean.

HORTICULTURIST W. A. Frazier checks Blue Lake bean pods from pole bean parent he is using in his backcrosses with promising bush bean hybrids.

FRAZIER examines sprawly growth habit of promising hybrid. He has been able to get excellent pods only on pole and "intermediate" plants.



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Farm Outlook . . .

(Continued from page 3)

Plantings of winter wheat for harvest in 1957, compared to a year earlier, are 7 per cent smaller in Oregon and 17 per cent smaller in the nation. Most of the cuts were made to participate in the Soil Bank.

Hay

Oregon has a little more hay than last winter but probably little to spare. After-harvest figures indicate that our supply is only 66,000 tons greater than a year ago. If we add all this extra hay to our reserves, they will still be smaller than they usually are at the end of a normal hay-feeding season. A few bad storms or a late spring could make hay plenty dear again. Shipments to drought areas are digging into hay supplies in states to the south and east, and to some extent here in Oregon.

Cattle

Marketings are likely to continue large during the next few months, but prices may show some improvement. Advances in January and February, if any, probably will be followed by lower prices in April and May when sales from feedlots are likely the heaviest. Yet, prices are likely to be above a year ago most of the time this winter and spring.

For the country as a whole the number of calves raised in 1956 was about the same as the number of cattle slaughtered. This balance is expected to continue into 1957.

Hogs

The outlook for hog prices in 1957 is fairly good. Don't count on anything like 1954 prices, but $20 hogs are definitely back in the picture. And remember, Pacific Coast hog prices are usually the highest in the nation. The Coast has about 10 per cent of the people and raises only 1 per cent of the pigs.

Nationally, the fall pig crop was 4 per cent smaller than a year earlier. Spring farrowings are expected to be 2 per cent smaller than last spring and 10 per cent less than in the spring of 1955. These decreases account for much of the expected price improvement.

For 1957, plan to save extra gilts from your spring pigs. Sell them next fall or winter as bred gilts. Aim your spring barrows for market before mid-September. Sell weaner pigs this fall and next spring if it looks like the Midwest is coming back strongly by that time.

If you plan to stay with hogs over the long pull, get into the lean meaty type.

Sheep

Odds are that lamb and wool prices this spring will equal or slightly better last spring's. No general increase in sheep numbers has occurred yet, despite better returns of the past two years.

As usual, it should pay to clean up old crop lambs by the first of April and move as many early spring lambs as possible by the middle of June. Creep-feeding usually pays. This year looks like no exception.

Poultry

Oregon poultrymen who stay with the business in 1957 shouldn't be sorry. Egg prices won't equal last year's during the next few months, but the second half should be fairly good for eggs as well as broilers and turkeys. Of course, poultry operations are becoming more and more like a factory. Using considerable capital and equipment, they simply convert feed and labor into eggs and meat. As poultry production becomes more specialized and intensified, it offers less opportunity as a part-time or side-line enterprise.

Fruit

Apple and pear prices are likely to stay above a year ago during the rest of the season, and should be in a relatively favorable position much of the time for the next several years. Plantings have not kept up with population increases. Much the same is likely to be true for sweet cherries, and perhaps for filberts and walnuts. This looks like the time to maintain or increase good plantings.

But an old Oregon favorite, strawberries, seems likely to be in for some tougher going for awhile. Stocks of frozen berries have built up sharply. The next few years will show who is willing to produce and process strawberries for the least money.