Oregon's Agricultural
Progress
Summer 1977

Agricultural Experiment Station
Oregon State University

Comment

Old MacDonald had a corporation

Director John R. Davis

Last year, an initiative petition was circulated throughout Oregon for the purpose of placing on the November ballot a constitutional amendment to restrict corporate agriculture in Oregon. Insufficient signatures were obtained, however, and the measure did not appear on the ballot. This year, Senate Joint Resolution 51 was introduced into the Oregon Senate for the purpose of placing on the ballot a constitutional amendment permitting statutes enacted by the Oregon Legislature to restrict corporate agriculture in Oregon. That resolution never was acted upon by the Legislature during the session.

Two major factors appear to be the basis for these efforts to control corporate farming. One is the keen interest in developing individual family farms in the newly developed irrigated area of the Columbia Plateau, near Boardman, before these lands are pre-empted by other interests. The second factor is a more general one based upon a feeling that corporate agriculture generally is bad and is controlled by out-of-state interests that compete unfairly with small farmers. It is the second factor to which this article is addressed.

To examine corporation farming in Oregon, the Agricultural Experiment Station supported a study, recently completed by the Department of Agricultural and Resource Economics at Oregon State University. A report of this study, "Corporate Farming in Oregon: A Descriptive Analysis," recently was published as OSU Circular of Information 622. This study, combined with data from the 1974 Census of Agriculture, sheds considerable light on issues surrounding corporate agriculture. Some of the highlights:

The number of all commercial farms (farms with sales of $2,500 or more) in Oregon increased slightly from 1969 to 1974. The number of corporate farms in Oregon now comprises 3.6 percent of all commercial farms.

Corporate farms generally are larger in size than commercial farms—about double the average of commercial farms. They have higher investments and higher gross farm incomes.

Most of Oregon's farming corporations (87.3 percent) are family farms. Most farming corporations were incorporated for estate transfer reasons (to keep the farm in the family), or to gain limited liability or improved access to purchase goods or to obtain loans.

More of Oregon's corporate farms (90 percent) depend upon farming as the principal occupation in contrast to other commercial farms (67 percent).

Thirty-eight percent of the farming corporations failed to make a profit in 1975. More family farming corporations made a profit than the other types of corporate farms.

Oregon's farming corporations most often are involved in cattle, wheat and field crop production, and are more likely to be involved in irrigated cropland than other commercial farmers.

Ninety-two percent of corporate farms in Oregon are charted in Oregon; 93 percent are headquartered in Oregon. Farming corporations purchase from 83 to 98 percent of all categories of goods and services from local firms.

These findings and other conclusions of the study indicate farm corporations are hardly a threat to the small family farm or the local business—on the contrary, most farm corporations are indeed the family farms we hope to preserve, and they contribute to the local economy and community. The commodities produced by most farm corporations require major capital investment and economy of scale if farm prices are to be minimized.

Obviously the unfavorable impression many persons hold of the corporate farm is not a true version. We should, therefore, be concerned that uninformed public action could possibly damage the very institution we wish to preserve—the individual family farm. Those who wish to start farming on new lands certainly deserve an opportunity for developing individual enterprise, but we should look more thoughtfully at those families using corporate laws to maintain their individual enterprise, too.

Good decision making on this matter will be important to Oregon, but all of us need to be well-informed. We need to speak out loud and clear. If there are impending problems, let's not solve them with overkill.

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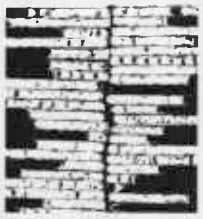

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to wheatgrass on eastern Oregon ranges will be an important job for ranchers who want their cattle to benefit from the forages.

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Vol. 24, No. 1, Oregon's Agriculturel Progress, e querterly reseerch report is published by the Oregon Agriculturel Experiment Stetion, John R. Devis, Director, end sent free to Oregon residents. Address requests to Editor, AdS 416 R, Oregon Stete University, Corvellis, OR 97331, or see your County Extension Agent. Written materiel mey be reprinted provided no endorsement of a commerciel product is steted or implied. Pleese credit Oregon'e Agriculturel Progress end Oregon Stete University. To simplify technicel terminology, trede nemes of products or equipment sometimes will be used. No endorsement of product names is intended nor is criticism implied of products not mentioned.

Alfalfa aid: The little bee that could

Leaf cutter bee braves a knock on the head to pollinate alfalfa bloom. X-rays (opposite) show scientists whether bees or parasites are hibernating in the protective medium.

Good things—like success—can come in small packages.

The leaf cutter bee, for example.

Domesticating this wild bee has paid off handsomely for growers of alfalfa seed.

For years, the national average yield from alfalfa seed acreage was about 180 pounds per acre, mostly because the honey bee would not pollinate alfalfa unless it was the only flower available. The alfalfa bloom has a tripping mechanism on it that knocks the honey bee on the head when it tries to gather pollen. Once knocked, the honey bee usually will not try again.

In 1959, William Stephen, Oregon State University entomologist, noticed the small wild leaf cutter bees in the Snake River Valley seemed to like to pollinate alfalfa. His next step was to try to domesticate them.

His success has raised the per acre yield of some alfalfa seed growers to almost a ton. The economic importance of the large increase has sparked continued Agricultural Experiment Station research on the leaf cutter bee now that other problems have cropped up.

It was a relatively easy task to domesticate the bee, which is black and about half the size of a honey bee. It was naturally gregarious and would nest where there was a hole. Scientists merely drilled holes in pieces of wood and the bees congregated.

It is thought the bee came from the European and Asian land mass, and probably was introduced from crates shipped during World War I. At first, there seemed to be few difficulties. Since the leaf cutter bee was not a native, it was not greatly susceptible to native parasites and diseases.

However, in the last 15 years, parasites, carpet beetles and other stored product pests have begun to take toll. Chalk brood, a fungus disease, is a more recent problem and has caused a 40 to 60 percent mortality of leaf cutter bees in some cases.

Experiment Station research with leaf cutter bee diseases and parasites is linked to better management of the bees.

Stephen said, "Winter cold storage of the bees is recommended. We store the bees at 2 to 4 degrees Centigrade (35 to 39 degrees Fahrenheit) and then come summer we can synchronize the bee hatch with the exact time of bloom in the alfalfa field."

Some parasites hatch early and are easier to control if the bee is still in hibernation.

In the past, domiciles of about 4,000 female bees would be placed in or near an alfalfa seed field and the bees would pollinate as much as they could. But during the bloom period, alfalfa is very susceptible to flower-damaging pests. Growers sometimes have to spray pesticides as often as every two weeks. This caused problems because the pesticides also could kill the bees. During the spraying they would have to be relocated.

"Now, we try to concentrate bees in a field to overcome the pesticide problem and time the seed harvest a little better," said Stephen. "If instead of 4,000 bees we bring in 200,000 in large domiciles, we can pollinate an alfalfa field in less than two weeks. The idea is to pollinate quickly and get out."

This process also saves on pesticide usage because as soon as the bloom is pollinated, the need for pest control drops off as quickly as the flower. Also, since the entire field is uniformly and quickly pollinated, the grower can time the harvest better. If the date of pollination is early enough harvest can begin before any late summer rain storms cause damage.

"In our current research we are looking for a nesting material that will promote growth of bees but not parasites or fungus diseases," said Stephen. "We have tried soda straws, wood and some styrofoam, but now we're looking for a medium from which the cells of the bee can be easily removed during the off-season."

An industry valued at about $10 million has built up around the domesticated leaf cutter bee including bee sales and construction of housing mediums. Colonies of bees have been sent to Canada and 14 other countries including Russia where they are supposedly native.

There are commercial bee outlets, where growers can purchase leaf cutter bee cells to be hatched near their alfalfa seed field. In the past, the price has been about a half a cent per cell, but now that the disease and parasites are taking their toll, the price has risen to about a cent and a half per cell.

"Our future research is centering around improved emergence traps for the parasites, new nesting media and general bee management," said Stephen. "I know there is not a grower around who wants to lose the leaf cutter bee and drop back down to 180 pounds per acre again."

Few can view Wu's world

Arthur S. H. Wu, animal scientist at Oregon State University, works in a world few persons ever see.

With the help of an electron microscope, he probes the secrets of animal cell structures, trying to learn more about animal nutrition and reproduction.

At first, Wu's research was confined mainly to animal fertility. Sperm research conducted with James Oldfield, animal science department head, and agricultural chemists Philip Whanger and Paul Weswig showed for the first time a relationship between the amount of selenium in a male animal's diet and the quality of sperm it produced.

"By looking at the tail sections of rat sperm magnified 3,000 times, we could observe a breakdown in the structure when selenium was deficient in the diets," Wu said.

Researchers elsewhere then fed the animals radioactive selenium. Using tracing devices, they found selenium accumulated in the same structural area in the sperm. OSU scientists deduced selenium may play an important role in the protection of certain cell structures.

Selenium has been an important subject of research at OSU for a number of years because many soils in Oregon contain only minute traces of the mineral. The threat of a selenium-deficient diet probably is less serious to humans because they consume a wider diversity of foods grown in other areas. However, the deficiency of selenium in Oregon soils is an important consideration to livestock producers in the state.

Microscopic studies of male reproductive cells led Wu to similar studies with female animal reproduction tracts. Under the electron microscope, which can magnify an object 1-2 million times, Wu observed oviduct tissues from female horses, swine, cattle and sheep.

"We found changes in the oviducts during various phases of the reproductive cycles and tried to relate these changes to fertility and sterility," Wu said.

The OSU researcher used two types of electron microscopes for his research, a transmission microscope and a scanning microscope.

The transmission microscope allows researchers to observe the interior cell structure. Materials observed must be

Arthur S. H. Wu (above) working at the electron microscope. Cervical tissue of a ewe is magnified 3,000 times (right) and on the back cover, a portion of uterine tissue of a ewe resembles a coastal landscape.

cut into very thin slices one quarter-millionth of an inch in thickness. Thin slices are not used when a scanning microscope is used, but with this microscope, tissues can be prepared so researchers can examine the surface structure of the cell.

"We started by looking at sperm which are single cells made up of a head and a two-section tail," Wu said. "The top part of the tail, called the mid piece, sometimes is referred to as the powerhouse. This section feeds the sperm cell and is important for sperm motility. We wanted to find out more about that section."

Using chemicals, Wu removed the outer membrane of the sperm cells and observed the interior fiber-like structures. The "fibers" then were cut into sections and further observation revealed three interior ring-shaped patterns. The center ring appeared as two small dots and the two outside rings each appeared as nine small dots.

But that was only the beginning of the excitement for Wu.

Next he examined the cilia, small hair-like projections on the oviduct cells in female reproductive tracts.

"We found the internal structure of the cilia had a 9-2 formation similar to the internal structure of the 9-9-2 sperm tail," Wu said.

Breakdowns in those structures may be related to dietary deficiencies, researchers believe, and may influence reproductive ability.

Wu's research, although fascinating, still may seem difficult to understand. But the results of his research are easily seen in improved animal reproduction.

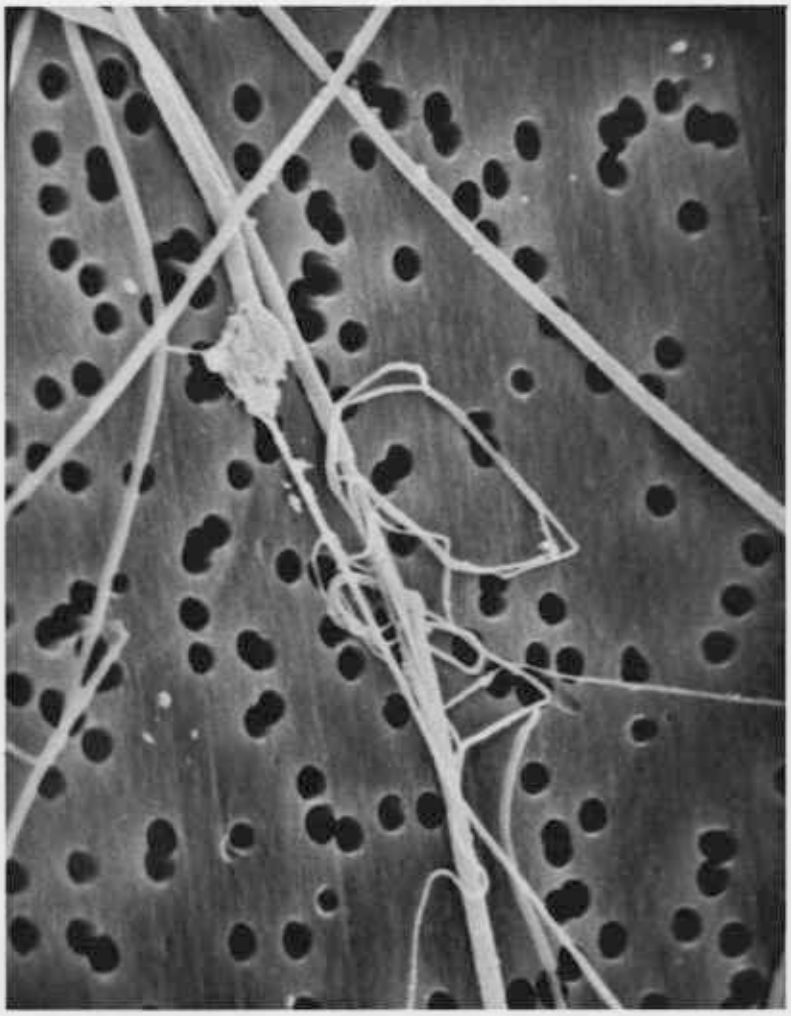
"The electron microscope, in Wu's hands, has been a powerful tool in tracking down causes of infertility in farm animals," said animal science department head James Oldfield.

Recently Wu's research has extended into other areas, besides fertility. He helped identify the cause of a problem of mink by providing insights into an undesirable condition in fur called "singe."

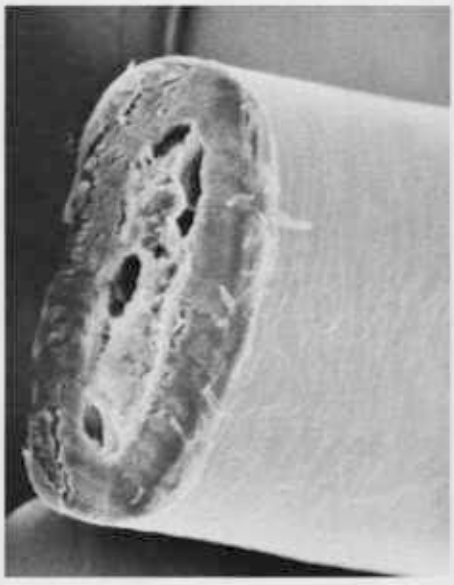
"Under the scanning microscope, we found hairs affected by the 'singe' condition were not oval shaped like healthy hairs but had an angular cross section," Wu said. "This caused them to reflect light abnormally, giving the 'singe' appearance."

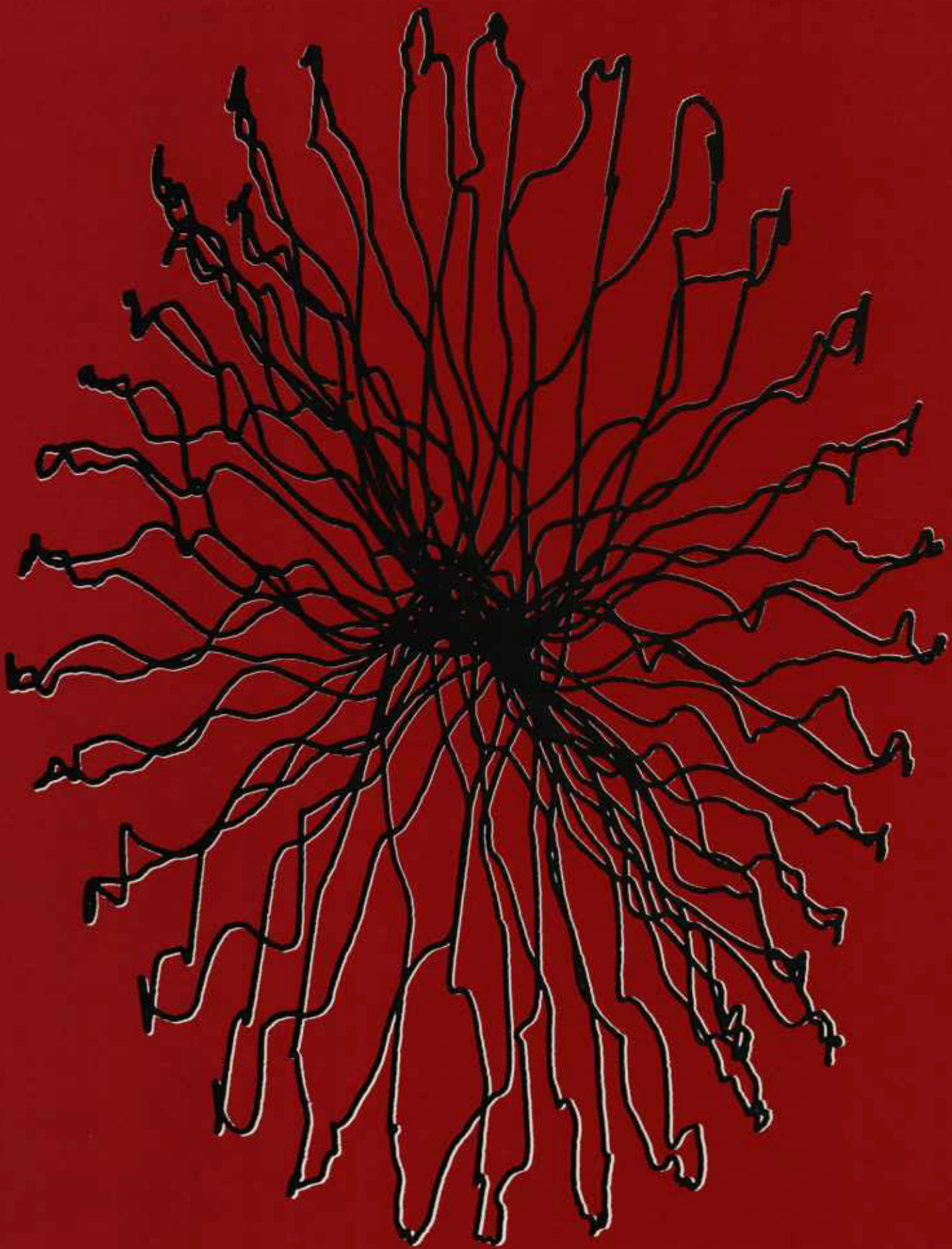
Reasons for the abnormal fur structure are not known yet, but researchers are investigating the problem.

And with Wu's help, they have a new insight into the situation.



Damaged rat sperm (above) shows symptoms of selenium deficiency. Other tests conducted by Wu include examining normal, oval-shaped mink hair (below) and comparing it with damaged mink hair (right) which takes on a more angular shape.





Researchers advise:

Shake 'em-- don't break 'em

Mechanical tree fruit harvesters have been around for 30 years but a three-year cooperative study just completed at Oregon State University has helped fine tune mechanical cherry harvesting into an art.

In seasons preceding the 1973 cherry harvest, Oregon's Royal Ann brining cherries (used for maraschino cherries) were suffering as much as 30 percent damage at the clamps of mechanical harvesters in the Willamette Valley. More than 50 percent of the cherries grown in the Willamette Valley are mechanically harvested, so damage has resulted in substantial economic loss.

Cherry brining industry officials approached the Agricultural Experiment Station for help in solving the expensive problem. A cooperative research team was formed at OSU consisting of Robert Cain from the Department of Food Science and Technology, Dale Kirk and Dean Booster from the Department of Agricultural Engineering, Daryl Richardson and Robert Stebbins from the Department of Horticulture and Lee Jensen from the Electrical Engineering Department.

Industry officials felt cherry damage possibly was due to shaking the tree too long with mechanical harvesters. The big question they asked: was this problem something that could be corrected?

Since the Experiment Station does not have sufficient size and variability in cherry orchards of its own, the team had to work closely with commercial orchardists. Stebbins, an Extension specialist, helped poll all owners and operators of mechanical harvesters to ask their help. The response was 94 percent affirmative. Twenty orchards were chosen for the greatest possible variability of climate, tree size and other factors.

The horticulturists began looking at maturity, fruit load on trees, pruning, tree size and other cultural factors in orchards.

The engineers began looking at the clamp used to shake the trees. They considered duration of shake, pattern of shake and pressure of the clamp, among other things.

Before beginning their study in Oregon orchards, the team spent some time testing their equipment in California where cherry harvest begins a month earlier than Oregon.

Richardson concentrated on a theory that fruit maturity was a key factor.

"If the fruit was too immature or over-mature at harvest time, even the slightest amount of shaking caused a high percentage of damage," said Richardson. "The stems were lost and the soft fruit was pulverized by hitting limbs on the way down off the tree."

Richardson was able to predict the amount of stems left on the fruit by measuring the force required to remove the fruit from the tree. Cherries with stems are worth about four to five cents per pound more than cherries without stems.

"We were trying to reach a compromise," said Richardson. "The bigger and more mature the cherry gets, the more apt it is to lose its stem during the vigorous shaking by the harvester.

Cherries tumble off a ramp and into a waiting jar held by Robert Cain. After brining, the cherries were analyzed for damage from harvesting. Patterns of shaking cherry trees (opposite) gave researchers clues to fruit damage.

We needed to find the optimum point at which the cherry was the largest and we could get the most stems."

By measuring the size of the cherry fruits each day and measuring the force needed to remove the fruit from the tree, Richardson created an equation relating size increase to pull force. When this relationship reached a certain point, it was time to harvest.

"With a pull force gauge," said Richardson, "the growers are able to measure their own individual trees and decide just the proper time to harvest for maximum stems and minimum damage."

To determine the pattern of shaking movement, Kirk and Booster attached two accelerometers to the tree trunk next to the harvester clamp. One measured north-south motion and the other measured east-west motion. Jensen recorded accelerometer readings on magnetic tape that could be returned to the laboratory for analysis.

"By analyzing the movement of the tree and comparing it to the percentage of damaged fruit, we could tell which movement was the most efficient," said Kirk. "We found most of the operators were using eccentric wheel weights counter rotating at slightly different speeds in the shaker arm to create an orbiting shake pattern of the tree. A few were using a straight back and forth shaking pattern.

"It seemed you could get the cherries off with a straight back and forth motion but you had to shake it longer," said Kirk. "The more you have to shake the tree the higher percentage of damage to the fruit.

"To reduce the number of shaking cycles required to break the cherry stem loose from the branch, we suggested the use of heavier weights on larger diameter counter rotating wheels in the shaker head. That allowed the operator to run the machine at a slower speed and still obtain stronger forces to remove the fruit in fewer cycles. This reduced the opportunities for the fruit to be damaged by striking other fruit or its own limb."

As soon as fruit is shaken from the tree it is dumped into a brine solution of calcium salts and sulfur dioxide in the field. This solution kills pathogens, bleaches cherries yellow and makes them crisp.

Cain, one of the original instigators of the project, took the brining cherries back to the laboratory for tests.

After setting accelerometers on the tree trunks (above) researchers used electronic equipment to monitor the tree movement (left). Force required to pull cherries from stems also was recorded (below).

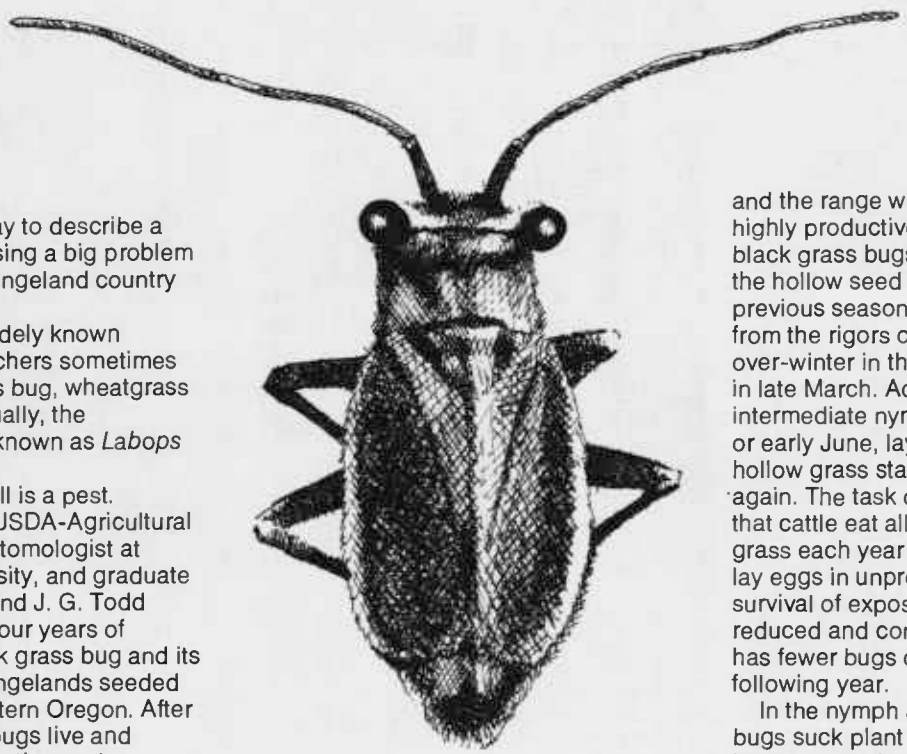
"I removed the rain damaged fruit to more easily analyze the mechanical damage," said Cain. "We found more mechanical damage in the stemless fruit.

"In the last couple of years, though, the damaged fruit percentage has been dropping drastically," said Cain. "The growers knew their choices and knew the consequences. They could get higher yield but less stems and more damage, or they could pull their fruit off a little early and get less damage and more stems. Above all, they learned some finesse in operating the harvesters. They found out with a few minor changes, you didn't have to hang on those trees so long."

The three-year study is now complete and results are very encouraging. Since the beginning of the project the incidence of mechanical damage has dropped from as high as 30 percent to the current average of between four and five percent.

"We can attribute part of the drop in damage to many things like weather and other environmental factors," said Kirk, "but we think the equipment changes and operating practices brought about by this project were a major factor also."

Putting the stops on Labops



A pest.

That is the best way to describe a small black bug causing a big problem for ranchers in the rangeland country of eastern Oregon.

The bug has no widely known common name. Ranchers sometimes call it the black grass bug, wheatgrass bug or Labops. Officially, the quarter-inch pest is known as *Labops hesperius Uhler.*

By any name, it still is a pest.

James A. Kamm, USDA-Agricultural Research Service entomologist at Oregon State University, and graduate students J. R. Fuxa and J. G. Todd recently completed four years of research on the black grass bug and its importance to the rangelands seeded to wheatgrass in eastern Oregon. After finding out how the bugs live and affect herbage production and surveying management options for rangeland affected by the insects, Kamm and his students concluded that there are several ways to increase the amount of herbage harvested by cattle and reduce that harvested by the bugs.

"The bugs were on the range long before the cattle and they graze the range just as cattle do. It is the ranchers' task to see that cattle beat the bugs to the available forage. The individual rancher must decide how to take advantage of the information from this study since the practice used will depend on the type of range on the ranch," Kamm said.

Black grass bugs live in areas from the timberline to the very dry areas where sagebrush has been removed and the range was reseeded to a highly productive wheatgrass. Female black grass bugs lay their eggs in the hollow seed stalks produced in previous seasons to protect the eggs from the rigors of winter. Eggs over-winter in the seed stalks and hatch in late March. Adults emerge from the intermediate nymph stage in late May or early June, lay their eggs in the hollow grass stalks and the cycle begins again. The task of the rancher is to see that cattle eat all the seed stalks of grass each year to force the bugs to lay eggs in unprotected places. The survival of exposed eggs is drastically reduced and consequently, the rancher has fewer bugs on the range the following year.

In the nymph and adult stages, the bugs suck plant juices from grass leaves, reducing both the quality and quantity of forage for cattle. During a spring grazing trial near Seneca and Vail, cattle were used to graze the wheatgrass so it was never more than several inches high. In the year following heavy spring grazing the same pastures had from 56 to 68 percent fewer bugs. An even greater reduction of bugs resulted by taking a hay crop on Seneca pastures where the terrain permitted the use of

machinery. "Either way," Kamm said, "more grass is available for the cows the following year."

The most important thing for ranchers to bear in mind, Kamm stressed, is keeping old plant growth to a minimum.

"It is very undesirable to allow old plant growth to accumulate because the cows won't eat it, the vigor of the stand is reduced and it provides winter protection and habitat that favors an increase in the bug population," Kamm said.

Virtually anything ranchers do to increase the productivity of the wheatgrass for cows will do the same thing for the bugs. For example, nitrogen fertilization of wheatgrass pastures increases yields significantly. Unfortunately, the bugs take advantage of the better grass to increase in number.

The economically viable options for reducing the impact of the bug are limited compared to other crops.

"Rangeland is an important and valuable resource but does not have a high cash value on a per acre basis," Kamm said. "In most cases, it just isn't practical to use high cost insecticides.

"We came across an earlier study by Forrest A. Sneva, ARS range management researcher at the Eastern Oregon Agricultural Research Center at Squaw Butte. He had shown yearling heifers grazed on paraquat-cured grasses gained significantly more weight than those grazing naturally cured grasses."

Since the paraquat stops the translocation processes of the plant, Kamm and Fuxa reasoned, it should starve a significant number of bugs. Indeed, paraquat did reduce the density of bugs 98 percent by prematurely curing the grass. In addition, the surviving population laid 76 percent fewer eggs which reduced the population the following year.

Paraquat has not been approved for chemical curing of grasses, and if it were approved, ranchers would need to approach its use for black grass bug control cautiously. Sneva found paraquat increased the quality but slightly decreased the yield of the grasses.

"When control of bugs is a consideration, paraquat must be applied about 10 days earlier than when it is applied only to cure grass crops. Still lower yields would result," Kamm said. "But in years of drought, like this one promises to be, an early application of paraquat would provide an opportunity to significantly reduce bug populations without reducing crop yields because the grasses stop growing sooner when moisture is limited."

A final alternative—field burning—was tried by one frustrated rancher, Kamm said, and the treatment was effective. But the ARS scientist said political and environmental considerations surrounding field burning in Oregon probably would make that option impossible.

The ultimate answer? Insect resistant grasses for new seedings on the range.

For now, Kamm said, there are none.

Areas sprayed with insecticide (top) appear like patchwork on a wheatgrass range. Damage caused by black grass bugs (above) is demonstrated in the left portion of this photograph, while healthy grass is on the right.

work in Progress

Make room for higher yields

Oregon vegetable growers could increase their crops as much as 30 per cent by using high density planting techniques, an Oregon State University researcher says.

Harry Mack, OSU horticulture professor, said factors limiting use of high density planting techniques are the cost of buying new equipment, learning the new techniques and adopting new methods for handling the raw product in the processing plants.

"Many of our present row spacings have been dictated by traditional cultivation, seeding and harvesting equipment rather than by spacing that increases biological efficiency to obtain maximum yield while reducing the cost per unit," Mack said.

He said OSU Experiment Station tests showed green beans yielded 15 to 30 per cent more when planted in five by five inch squares rather than in 30 or 36-inch rows.

"Plants with equidistant spacing utilized sunlight, water and soil nutrients more efficiently," Mack said. "They responded by producing higher yields and more concentrated maturity."

New harvesters are available for use in high density fields. For maximum versatility, one bean harvester even can be attached to a farm tractor. Mack said features farmers should consider when purchasing such machines include picking capacity, speed in acres per hour, picking efficiency (percentage of crop picked), whether machines pick the crop "clean" (how much trash is harvested with the crop) and serviceability of the machine.

"There were concerns earlier about damage to bean pods by high density harvesters but with recent improvements and proper operation these can be kept to an acceptable minimum," Mack said.

Beets (right) lend themselves to high density planting techniques.

In 1974, about 2,000 of Oregon's approximate 40,000 acres of bush beans were planted using high density techniques. Since then, overproduction and marketing concerns have limited grower shift to high density planting techniques.

"A carryover of beans caused by an oversupply from previous years has caused a cut-back in acreage in the last two years," Mack said. "With the problem of previous overproduction, not many growers are concerned with high density planting. But if they can increase yields in the long run, they will realize economic gain."

He said the water shortage predicted for this summer could help create more interest in high density planting.

"The drought will likely keep the total number of acres planted down because of water shortage. This could alleviate the oversupply problem and bring about greater need for increased productivity in the future," Mack said.

High density planting methods could be used with corn, beets, carrots, broccoli and other vegetables in addition to bush beans, Mack said.

But economics will determine whether high density will be readily adopted by growers in the future.

Guesses erode with soil study

Knowing in advance what is likely to happen is a gambler's dream, but not many farmers care to gamble with irrigation.

Agricultural Experiment Station and Soil Conservation Service research on Oregon soils will help take some of the guessing and gambling out of irrigation.

Charles Ullery, Oregon State University soil scientist, now is completing a study characterizing the water relations of soils located in the Willamete Valley, the irrigated valleys of southern Oregon and Hood River County.

A similar study was completed in 1972 on the soils located in central and northeastern Oregon.

The research is designed to determine how rapidly the water will enter the soil under sprinkler irrigation and how much water the soil will store for plants to utilize.

"This information will be invaluable to engineers who design irrigation systems and to farmers who manage those systems," said Ullery.

"When this project is completed," said Ullery, "almost all the irrigated agricultural soil in the state will have been characterized except for the soils located around Ontario.

"Oregon is unique in this statewide approach to water management. Very few other states have such an extensive soil characterization plan. This is a definite management asset to help farmers with water management."

Pigeons flock to sunshine

Apparently pigeons, like people, react to their surroundings—and the weather.

A three-year study of band-tailed pigeons showed that cloudy and wet weather had adverse effects on the number of pigeons visiting three mineral sites in western Oregon. Michael Passmore and Robert Jarvis, wildlife scientists, said pigeons were hunted during the hunting season at two of the sites (Long Tom and Nashville) and hunting was prohibited at the third site (Finley Refuge).

A bird in the hand will help researchers learn more about birds in the bush.

Pigeons associated with the Finley site had approximately twice the amount of production as did pigeons at the two sites where hunting occurred. Most pigeons at the Finley site, and probably the Nashville site, were involved in multiple nestings. At the Long Tom site, the majority of the birds nested only once a season.

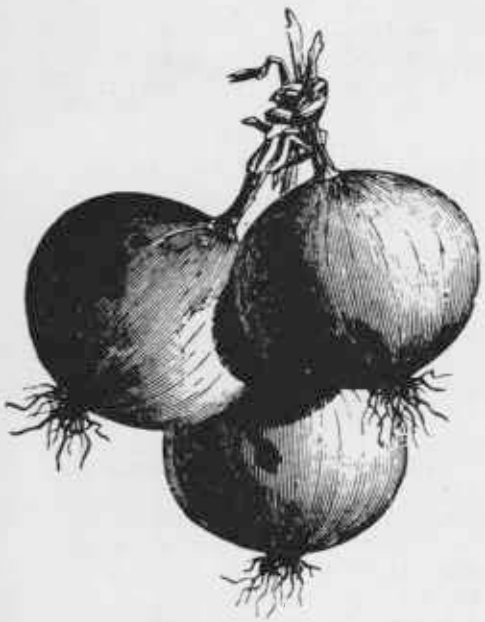
Purpose of the study, said Passmore, was to determine seasonal patterns of mineral site use, productivity of pigeons associated with mineral sites, fidelity of pigeons to the sites and the number of pigeons using the sites. Wing tags, counts and other observations were used.

Estimates indicated that between 1,800 and 2,500 pigeons were associated with the three sites in 1976. Males and females frequented the sites during different periods of the day and males stayed longer during the season. Most intensive use of the mineral sites was during late August when many of the immature birds were fledged.

work in Progress

Nature's way may be best for onion drying

Chemicals used to dry onions may not be the best answer to storage rot problems, but farmers faced with rainy curing seasons one day may want to consider their use to stop other damage, say Oregon State University horticulturists.



D. G. Richardson, C. Bubl and N. S. Mansour studied the effects of several top dessicants—drying chemicals—on curing and subsequent storage quality of Danvers Yellow Globe onions.

Farmers cure onions after half the tops have fallen. Onions are lifted from the soil, laid in rows and allowed to sun dry. They are turned periodically during the 10 to 14-day curing period. Rain during the drying period can increase storage rot and inadequate curing can result in crop loss to diseases such as neck rot.

"When onions go into storage in a wet condition, the percentage of storage rot rises dramatically," Richardson said.

The Agricultural Experiment Station researchers treated onions, before pulling them up, with chemicals such as paraquat, ethephon, endothal and others.

"Moisture loss in the neck tissues was most affected by early ethephon treatments," Richardson said. "Paraquat also was effective in promoting moisture loss."

But while the chemicals did promote drying in the top and neck regions of the onions, researchers did not find the treatments necessarily resulted in lower incidences of storage rot.

"At this point, results suggest chemicals probably are not the best way for farmers to aid in the curing process. However, a few of these chemicals may be useful if rainy weather conditions are expected during curing," Richardson said.

Oregon farmers will not be able to experiment with these chemicals on their own fields because none of the chemicals have been cleared for this purpose.

High-rise snags for the birds

Tree-top living is for the birds—if the tree is right.

The use of snags (standing dead trees) by birds was investigated in the Douglas-fir region of western Oregon during part of 1975 and 1976 by Bill Mannan, wildlife scientist.

"In general, hole-nesting birds foraged on and nested in Douglas-fir snags averaging more than 24 inches in dbh (diameter at breast height) and more than 45 feet tall," said Mannan, a member of the Oregon Cooperative Wildlife Unit at OSU.

"These snags usually had broken tops, few or no branches, decayed sapwood and hardwood and less than 100 percent bark cover."

Snags like these were found primarily in forests more than 70 years old so use of snags by hole-nesting birds was concentrated in 100 and 200-year-old forests. From a census of birds in a representative area, Mannan concluded that the density and species diversity of hole-nesting birds increased significantly as the forest matured.

The management of Douglas-fir forests for maximum timber production does not allow for the production or retension of large snags.

Said Mannan:

"Eliminating large snags from forest systems could drastically reduce populations of many species of hole-nesting birds."

Let your imagination go and try to figure out what this photograph depicts. A piece of moonrock? The coast from 20 miles up? For the answer, see page six.

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