

Plotting the Future
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Ag Outlook

"I think there's a very bright future for those of us who are close to the soil" - United States Congressman Sid Morrison, 1983 Washington State Horticultural Association annual meeting in Wenatchee.

Moving in Mattawa
Pages 5, 8, 9



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War on Weeds

In 1950, \$1,500 could have taken care of all the Russian and diffuse knapweed in Okanogan County.

Today, it would take 10 million dollars just for the initial application.

Okanogan County Weed Board Supervisor Jan Stiverson related these estimates to a group of Douglas County cattlemen in December.

They are only a few of those who have become increasingly concerned about the spread of noxious weeds in Eastern Washington--weeds that are seriously affecting landowners from the fruit grower to the wheat farmer.

Washington are Canada thistle (about 1.6 million acres), diffuse and spotted knapweed (about 1.1 million acres) and yellow starthistle (about 170,000 acres).

"Weeds result in major losses to the agriculture community and thus directly or indirectly affect everyone in the state," Penhallegon said.

"Agriculturists invest over 13 million dollars in herbicides each year for weed control (in the state)."

Don't Wait

Stiverson told the Douglas County

enact a weed control board.

Cheap Insurance

Financing is accomplished either from the county general fund or through a tax levied against the land, such as seven cents per acre in Okanogan County.

Okanogan County enacted its weed board six years ago, hiring Stiverson three years later.

In other counties, such as Kittitas, the fear of more taxes and the fear of the power of another government agency, has suppressed efforts to enact weed boards.

Kittitas County has five weed districts, but they have been "pretty much nonfunctional during the past few years," according to Kittitas Extension Agent Doug Warnock.

The agent said that in 1982, the county commissioners appointed a weed control board after some interest was shown among landowners.



Chelan County Extension Agent Timothy Smith talked to orchardists about weed problems at the Washington State Horticultural Association meeting in Wenatchee.

Spreading from neighbor to neighbor and county to county, weeds such as the knapweeds and Canada thistle are consuming valuable acres and reducing agricultural profits.

Some of the counties, such as Okanogan and Grant, have very active weed boards which are confronting the problem. Others, such as Douglas and Kittitas, are slowly making stirrings in that direction. And still others, like Chelan and Benton, will not likely have active countywide weed boards in the near future.

The purpose of weed boards, as defined by state law, is to help control noxious weeds on agricultural lands.

Spreading from neighbor to neighbor and county to county, weeds such as the knapweeds and Canada thistle are consuming valuable acres and reducing agricultural profits.

According to a 1982 pilot weed survey program for the State of Washington by Ross H. Penhallegon, Washington State University, "the crop loss of the state weed problem is tremendous. With the current loss at 65.6 million dollars, increased control or education is needed."

Pennhallegon's study, based on what estimates were available, found that the three worst weeds in Eastern

cattlemen that she was "so pleased to come to Douglas County and not see diffuse knapweed or its close relative, spotted knapweed.

"If you see any of these weeds," she warned, "I can more than guarantee that if you don't take care of it, it will take care of you.

"If you've got it on your road system, get rid of it now. It will kill any other surrounding vegetation."

Stiverson is convinced that the formation of an active weed board gives the clout needed to make weed control programs successful. "The weed board has been the big difference in Okanogan County," she said.

The state passed a noxious weed control law in 1969, creating weed control boards in each county which may be activated by county commissioners.

Although county commissioners can start the action, usually it is done through a petition signed by 100 or more landowners of one acre or more in the county. After a hearing, the commissioners decide whether or not to



Okanogan County Weed Supervisor Jan Stiverson stressed the importance of weed control before a group of Douglas County cattlemen.

The county even set up taxation and sent out notices in an attempt to come up with a \$70,000 budget, which included the hiring of a full-time supervisor and a part-time secretary.

"But there was enough unfavorable response that the whole thing just bogged down," Warnock said.

Will Gerlitz, Benton County Extension Agent, said that some parts of his county and neighboring Franklin County are included in a weed district which has an assessment of about 40 cents per acre and a part-time supervisor.

But, Gerlitz doubts that the program would go countywide unless "a serious weed problem comes and we get some state aid.

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Weeds take their toll on agricultural profits

"Once they find out about an assessment," he said about the landowners, "they are not so eager."

Douglas County Extension Agent Jim Kropf also noted that "the tax assessment is definitely a limitation in the formation of weed boards."

"It costs people money," he said. "No matter how little per acre, it's still a tax."

There is also a loss of freedom, he pointed out. "If you have weeds, you are forced to control them."

What the individual needs to do is determine if it will pay. For example, Kropf noted that a lot of Douglas County wheat farmers have put a lot of money into Rye control during the last few years.

"Some even pay several thousand dollars a year to have people come in and hand pull the Rye in a field," he said. "They are looking for some protection."

Another example by Kropf of the expense of weed control is the treatment of Canada thistle, the most prevalent weed in Washington. It costs \$80 per acre to treat with a certain chemical.

"With weed programs, you can look at it as a cheap insurance policy if you don't have the weeds now, but your neighbor does," he said.

And, he added, the formation of a weed board does allow the county to take advantage of state and federal funds.

Bruce Davis, Adams County Extension Agent, noted that although weed control is essential, protection for the landowner is also needed. Adams County does not have an active weed board.

"For example," Davis said, "if a

rancher had half of his 10,000 acres of pasture infested with knapweed, enforcement would break the guy.

"You kind of have to watch out for the individual. There are a number of ways to handle it, such as cost-share programs or buffer strips."

In Okanogan County, landowners take advantage of cost sharing.

"The money you pay in Okanogan County (seven cents per acre) you get back through cost sharing," Stiverson said. The county and state each pay a third of the chemical costs and the landowner absorbs the rest.

I don't think landowners should be responsible for all the cost," she said. "They are getting tired of being janitors."

Vehicles are the number one spreader of noxious weeds, prompting Okanogan landowners this past year to close roads and post no trespassing signs because of noxious weed problems.

Organizations are also supporting the war on weeds. For example, the Okanogan Cattlemen's Association spent \$200,000 on herbicides this past year.

Stiverson believes that through such efforts, progress is being made in Okanogan County.

"The idea isn't to force someone to control their weeds. It's to have people control their own problems; to let them know there is help available."

"I think we are getting places," she said. "We are educating the people and making leaps and bounds in weed control."

In Lincoln County, the Wheat Growers Association is also becoming increasingly concerned with weeds. Recently, they passed a resolution supporting the formation of an active weed board.

"We have a weed problem," said Tom Platt, livestock extension agent in Lincoln and Adams counties. "You name it, we've got 'em. It is a priority of our county commissioners."

Platt said that Lincoln County does not have an effective weed organization, partially because there are no enforcement policies, and partially because there is no assessment.

Since 1958, the county has hired a part-time weed supervisor, Brownie Graham, of Harrington, who will retire in January. But the program hasn't had enough funds to make the needed impact.

Spreading

It's not just getting worse in a few counties, however.

Dr. Ben Roche, state extension range management specialist at Washington State University, said "diffuse knapweed is moving in the manner that cheatgrass did at the turn of the century."

He believes that it is critical that data be collected on the location and the relative seriousness of the initial invasion of knapweed in order to seriously combat it. He is attempting to collect the information with help from extension agents and county weed boards and supervisors.

Penhallegon also agrees that there is a need for a statewide weed survey.

"Weed specialists, agricultural weed agencies, industrial producers, state

Central Counties Weed Infestations

COUNTY	TOTAL ACREAGE	INFESTED ACREAGE	PERCENT INFESTED
Adams	1,212,160	781,255	64.5
Benton	1,102,080	NA	NA
Chelan	1,867,520	3,403	0.2
Douglas	1,717,840	38,000	3.2
Franklin	801,920	46,500	5.8
Grant	1,712,000	412,302	24.
Kittitas	1,482,880	250,000	16.9
Lincoln	1,475,840	723,125	50.
Okanogan	3,392,640	343,102	10.1
Yakima	2,731,520	114,799	4.2

From the 1982 Pilot Weed Survey Program for the State of Washington by Ross H. Penhallegon, Washington State University.

legislators and general public need to be made aware of the magnitude of this state's weed problem," he said.

"Weed control is moving," Roche said, "but not as the rate it should be."

"We are talking about the socio-economic impact," he said, adding that in British Columbia, knapweed is such a problem that they are afraid they will even lose their cattle industry.

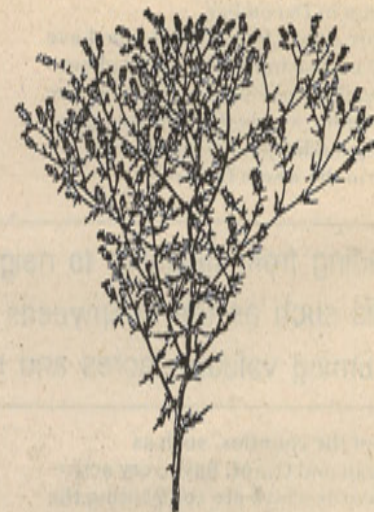
"A lot of absentee landowners are the ones not controlling the weeds," he said. "A lot here in the semi-urban areas let the weeds go because they don't want to put out the money, are lazy, or don't realize it's a problem to others."

Orchard Weeds

Kropf said that is is not just ranchers and farmers who are worrying. Orchardists also have problems, especially in young orchards.

"Weeds get caught in sprinkler heads, don't allow them to run, and break up the water flow," Kropf said.

"Weeds are also a good harbor for rattlesnakes. People prefer not to pick where the weeds are." Weeds also provide a cover for rodents, which chew on the trees and inhibit growth, he added.



Diffuse Knapweed

Although neighboring Douglas County, there is enough difference between Chelan and Douglas that County Extension Agent Tim Smith does not foresee Chelan County forming a weed board soon.

"There is quite a bit of difference in the agriculture," Smith said. "Much of Chelan County is timber and orchards, compared to the large part of wheat and range in Douglas County."

"Weed boards seem to operate best when talking about wide open agricultural land. In Chelan County, at least 80 percent in federal land, especially the Forest Service, which does not come under weed boards."

"We are faced with the reality that we do not have the kinds of groups that are interested in the forming of a weed board."



Canada Thistle

Top 10 Counties for Weed Loss

From the data collected by the weed supervisors and county agents, the following information shows 10 counties with the greatest crop losses in the state.

COUNTY	LOSS
1. Whitman	\$14,000,000
2. Adams	12,277,000
3. Garfield	7,765,600
4. Columbia	4,200,000
5. Grant	4,003,900
6. Yakima	3,795,000
7. Lincoln	3,615,600
8. Klickitat	1,937,200
9. Clallam	1,925,000
10. Kittitas	1,750,000
	\$55,269,300

The yearly monetary loss for crops in the top 10 counties was \$55,269,300. The total statewide yearly monetary loss attributable to weeds was \$65,625,105. The average loss per county was \$1,682,695. The losses ranged from \$1,600 to \$14,000,000 per county.

The information is from the 1982 Pilot Weed Survey Program for the State of Washington by Ross H. Penhallegon, Washington State University.

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Hort Highlight

"The best way to market the fruit is to put out the best quality we can"--Richard Olsen, first

vice-president of the Washington State Horticultural Association at its 1983 annual meeting.

Barnestorming

It is not uncommon while driving throughout Eastern Washington to come across a rural community struggling for survival. Often, these communities were the booming towns of the turn of the century when, as old-timers relate, hopes were high, dreams were big and excitement was rampant.

These same agricultural communities have quieted down a great deal since that time. Some have even rolled up their sidewalks and rejoined the dust of the fields. The land has been claimed, tilled and planted. Farms have grown larger and families smaller. Schools have closed or consolidated.

But in Mattawa, the turn of the century feeling is being reborn. Fifteen years ago, it was strictly an area of large boulders, sagebrush, rattlesnakes and jackrabbits as described by Grant County Extension Agent Ray Hunter. Hundreds--thousands--of acres have been planted to fruit trees, transforming the desert into a continually growing oasis. Most of this has happened in the last five years.

And the turn of the century excitement is there! As Gordon Lowell, who has managed Beverly Orchards since its first trees were planted five years ago, said, "This is going to be a boom area for awhile--a growing area." He is not the only newcomer to the area who feels that way. "It's incredible, the ground that's been planted," said Jim Talbot, who has managed the Priest Rapids Orchard for three years. "I think it's been dramatic. It's gone from a booming construction town when the dams (Priest Rapids and Wanapum) were built to just about a ghost town. And now it's being built back up."

Business is also picking up in the small community, where many backyards still consist of sagebrush. Muffett & Sons, a plastic pipe company, just opened a new store there to serve its growing number of customers. And this February, the people will vote on a bond issue for the construction of a high school.

Elsewhere in Eastern Washington, quieter changes are being made in agriculture, including the work on the wheat ranch of Peter Goldmark in Okanogan County. Peter often flies because he is so far in the backcountry. Motorists can reach his ranch by traveling over miles of bumpy, primitive roads. However, what is being done there could affect wheat farmers throughout the Northwest. The now popular Sprague variety of wheat was once tested there before it was released. New varieties are still being tested there, as are growth regulators to attack the problem of lodging and a chemical which would hopefully defeat Barley Yellow Dwarf, a serious disease of white wheat.

We hope that you will read this issue with thoughts of the future of agriculture--a future that is not just decided in Washington, D.C. The individual farmers and orchardists and their contributions are still the backbone and the lifeblood of the agricultural industry--and the rest of the country.

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Weldon Barnes'

Machine & Welders Shop

Editor's Note: Weldon Barnes, co-owner of Barnes Welding & Machine, has 45 years experience working with metal.

If you have questions about welding or working with any kind of metal or machine, send them to:

MACHINE & WELDERS SHOP
c/o Barnes Welding & Machine
Box 614
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Interviewed by Charles Herring

Summary of Part I:

You use arc welding on the heavy jobs. The key to it is cutting out a good "V" for penetration, keeping the right amount of heat, and a steady arc.

Why is it so important to match the welding rod to the metal that is being repaired?

A typical mild steel that you'd find around the ranch, like on a combine or trailer tongue, would be 65,000 to 70,000 tensil strength. So, a welding rod like 7018 can be used because it has about the same tensil strength. You could use a welding rod with 110,000 to 120,000 tensil strength, but there would be no point because the weld could be stronger than the parent metal. But if you use a welding rod with 70,000 tensil strength on metal that has the tensil strength of 110,000, your weld won't hold. The weld may break the first time you put stress on it. If your weld breaks, then there is more lost time in the field and more labor welding the metal again.

Can you use welding rod with 120,000 tensil strength on a metal that is 70,000 tensil strength? And, if so, why not just make a super strong weld each time?

You can use a welding rod of 120,000 on 70,000 metal, but the 120,000 welding rod costs 10 to 12 times as much as the 70,000, so it's a waste of money. It's better to use the right welding rod for the job.

How can the average guy determine the tensil strength of the metal he needs to weld?

Well, this opens a big can of worms. It's hard to say. Most of the time a rancher or orchardist wants to get the implement fixed and back in the field quickly. There's no time to research the tensil strength or even to drive to town to buy the right welding rod. If he did have time to find out, he'd have to talk with the sales rep or the manufacturer. It isn't that easy to find out.

If it's important to use the right welding rod, but hard to find out the tensil strength of the parent metal, what can the average guy do to prevent repeating repair welding?

You can tell generally about the tensil strength of metal, whether it's mild (carbon) steel or hard (alloy) steel like 4140, by the kind of spark it gives off when you put a grinder to it. The mild steel will give off an orange or red type spark, and the alloy steel will give off a white spark. The spark from a high alloy steel will expand when it mixes with air and look like a bursting star.

Some of the sparks might look half an inch across. With mild steel, the sparks will just fall to the ground without flaring. You can also feel the grinder working harder to cut the hard steel--mild steel cuts like butter with the grinder.

The average orchard or ranch shop should stock a lot of welding rod with 70,000 tensil strength, and a little welding rod with the 120,000 tensil strength because most equipment on the farm and orchard is made from mild steel. However, since not all of it is mild steel, a person should stock welding rod with at least two different tensil strengths.

What else would you do if you had to weld, for example, a rock picker tooth made from a high alloy of steel?

I'd preheat about two inches on either side of the weld. Heat it until the metal around the weld gets light blue or smoking a little.

Why do you have to preheat the metal?

When you run a bead through the V, the bead fills the gap, but as it cools, it contracts. When the welding rod material contracts, it pulls away from the parent metal. If the parent metal is heated, the parent and the welding rod can cool at about the same time and this relieves the stress on the weld.

Now another thing you should do to help relieve the pressure on the weld is to run a bead into the V, then stop and tap the weld with a welding pick. This is called preening. This fights the contraction of the metal by pushing the contracting metal back out so it fills the V.

Some welders are in too big of a hurry to do this. Instead, they want to fill up the V and get back to work. As they hurry along, they get the metal too hot and this weakens the metal. This is especially bad with high alloy metals because the heat weakens them more than mild steel. You should never get a high alloy metal more than a dull red.



Weldon Barnes

Growing up learning to do it right

We've talked with many people about welding lately, and many of them wonder how you have come to know so much about the different welding rods and steel strengths. How did you get all your information?

I've been welding for a long time. My dad was about 17 at the turn of the century. He was always thinking about machinery and he even tried to develop a thrashing machine. I guess his mechanical mind rubbed off on me. And, you know, he made us think we should be able to fix about anything and do it right.

Before World War II, you could weld a crack and a crack would appear in the weld after using the implement again. After the war, many advances took place and welding rods were improved. Also, there was more variety in the tensil strength of steel and welding rods. Back in the late Forties, a salesman came to our shop and gave us a demonstration on the uses of many different types of welding rods. We bought 21 different types of rods--different strengths and for different metals. Then we started experimenting with using the right welding rod for the right job. We spent about \$400 on the rods, enough to buy about half a car in those days, but it was all worth it. We learned how to make repairs that would last and got away from using a lot of reinforcing bar around the breaks we fixed.



A rock picker tooth before the crack was repaired.

Hort Highlight

Quality is improving everywhere and we need to be aware of it--Joe Brownlow, Washington Apple Commission manager, 1983 Washington State Horticultural Association annual meeting.

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Breaking the ground at Mattawa

Priest Rapids Orchard was the first

When the first fruit tree was planted at Priest Rapids Orchard near Mattawa about 15 years ago, there were those who were skeptical.

"It was strictly an area of nothing but large boulders, rocks, sagebrush, jackrabbits and rattlesnakes," said Ray Hunter, Grant County extension agent.

"It was considered very marginal at the time because of the sandy area and there was no fruit in the area. But I think the horticulturists were convinced."

Today, more than 10,000 acres of sagebrush have been replaced by fruit trees. Most have been planted within the past five years.

And with the completion of the Columbia Basin Reclamation Project, another 14,000 or more acres will soon be available to irrigation.

"I kind of like to think this place was planted down here and people watched it," said Priest Rapids Orchard Manager Jim Talbot.

Some have watched it with interest as the early fruit gets a jump on the market.

Others have watched it with concern. "Some were afraid it would glut the market," Hunter said.

And interest continues to grow, the extension agent said. Investors from as far away as Alaska have contacted his office about the potential of growing apples or wine grapes in the area.

At Priest Rapids Orchard, apples, cherries and peaches were originally planted. The peaches are no longer there.

The orchard now consists of 50 acres of cherries and 100 acres of apples, including 90 of Red Delicious and 10 of Golden Delicious.

One of the biggest advantages to growing trees in the desert climate is the weather.

"We have beautiful cherry weather," said Talbot, who has been resident manager of the orchard for three years after earning a degree in horticulture from Washington State University.

"We have a tremendous jump on the market."

The jump of three days to a week allows the Mattawa orchardists to get a premium price, especially with cherries. Apples have been picked as early as Aug. 20.

"The early market is where you make the money," Talbot said. "people have planted an awful lot of cherries here."

The early market advantage and the availability of cheap land will not last forever, however.

"I don't foresee enjoying the early market forever," Talbot said, noting that they are beginning to get some competition from the Benton City area.

The Mattawa fruit does ripen before that grown in Chelan, Wenatchee and Okanogan, however.

"This year, there was a real premium for early apples," Talbot said. "It's significant."

Even the already established Priest Rapids Orchard is expanding with boulders stacked on the edges being moved for fruit trees.

In 1983, Talbot supervised the planting of an additional three acres and plans to plant two more acres next spring.

The land is extremely rocky and boulders were previously removed by hand to the edges. Now, a bulldozer is used.

Even the addition of five acres makes a difference, Talbot said. With three trees producing a bin, or about 100 apples, and 185 trees planted per acre, "it adds up really fast," he said.

"It's a pretty cheap way to expand."

The Mattawa region does post some disadvantages.

"The heat is one problem here," Talbot said. "It can get really hot here. The apples can get sunburned and we don't have the cool nights for good color."

Talbot said, however, that the color was "really good this year" and "one thing with early markets, color is not that important."

"Often, we will pick fancies on purpose instead of waiting for a week for extra fancies because you get a better price. It's complicated. You just don't put apples on a tree and pick them."

Another disadvantage of growing apples in the Mattawa area is typiness, or the shape of the fruit.

"This basin climate really affects typiness," he said. "It is a little hotter, drier, than the Chelan area, which gets a premium on their apples."

The manager has been experimenting with a chemical called Promalin in hopes of correcting the problem.

The distance to market is also a disadvantage to the Mattawa grower. There are no warehouses in the immediate area, and so the fruit is trucked to Yakima or Wenatchee.

"That makes for a really large trucking bill," Talbot said.

Talbot predicts that growers will eventually get together and construct a shed. Chances for this happening will improve with the aging of the trees.

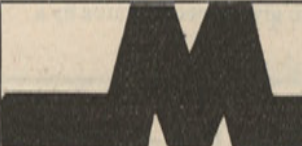
"Acre-wise, I would guess that the average age of the trees here is three or four years," he said. "This area is just starting to grow. Every year will see more fruit."

continued on page 11



Winds proved their strength in the Mattawa area during the past 15 years. Jim Talbot, resident manager of Priest Rapids Orchard, shows where the central leader of this tree was sawn off because winds had gradually bent it to the ground. Below, Talbot shows the plastic string which is now being used to prevent such damage. The string is stapled to the base of one tree and fastened to a high branch in a neighboring tree.



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To help the grower

Wheat research continues in

In the late 1950s and 1960s, scientists tested a new wheat variety in the Okanogan, hoping that they could find an answer to snowmold.

That wheat variety was Sprague, a now popular grain where snowmold is significant in Eastern Washington.

Thirty years later, the tests have not stopped on the Okanogan County ranch now farmed by Peter Goldmark.

This year, possible successors to Sprague, growth regulators and a chemical which would hopefully control Barley Yellow Dwarf were studied in special plots there.

Goldmark, who earned a doctorate in molecular biology from the University of California at Berkeley, works with scientists from Washington State University (WSU) and the United States Department of Agriculture at Pullman.

He is carrying on a tradition started by his father, John Goldmark, who began working with WSU scientists partially because of the northern location of the

"We also have some unique climate here where many diseases flourish," he added.

Finding a successor to Sprague

If Sprague is resistant to snowmold, why find a successor?

Mainly because of straw strength, Goldmark explained. Sprague has weak straw, causing it to lodge, or fall over. When wheat lodges, it is expensive to pick up because of the time involved.

Yield is also reduced because the nutrients going up the straw are interrupted, Goldmark said.

Dr. G. W. Bruehl of WSU has tested possible successors for Sprague during the last four years. Another research plot was seeded this fall.

Problems occur when Sprague is crossed with other varieties, Goldmark said.

"Daughters of the cross must carry the snowmold resistance," he said. And then, he added, there are the milling qualities, test weight and straw strength.

The process is time-consuming--years pass before new varieties are released.

"A variety has to be looked at for a minimum of three years in regional nurseries," Goldmark said.

Other nurseries are located at Lind, Harrington, Pullman, Connell, Horse Heaven Hills and Waterville.

Test plots are usually from one to two acres, which includes all of the cultivars examined.

A few varieties looked promising in the Okanogan nursery this past year.

"Some selections yielded 20 percent better than Sprague this year, so excellent progress is being made," Goldmark said. "These selections all have better straw strength than Sprague. Dr. Bruehl is hoping to release some new varieties in the next couple of years."

"Dr. Bruehl wants to be sure that the new varieties released are an improvement," Goldmark said.

"Growers should have a pretty good idea how they will perform."

"Dr. Bruehl wants to be sure that the new varieties released are an improvement. Growers should have a pretty good idea how they will perform

farm and his involvement with the Washington Association of Wheat Growers.

"Some of the work I do, some of the work they do," Peter Goldmark said, explaining that his scientific training helps him to work with the WSU and USDA scientists.

"We work together on things," he said. "They are hampered by funds a lot. Besides, I have a direct interest in it."

The direct interest is his ranch in Okanogan County where conditions can be ideal for snowmold and other diseases.

In 1973, the first year Sprague was released, the Okanogan ranch had snow cover from Halloween to May 10. Sprague was the only variety in that area which survived that year.



Peter Goldmark kneels beside one of the test plots at his ranch in Okanogan County. On this plot, 13 wheat varieties are being tested in hopes of finding a successor to Sprague.

Will growth regulators help?

This year was the second year at the Goldmark ranch that a chemical is being studied which would hopefully control Barley Yellow Dwarf.

The plots are "really just yield plots to determine the effect of different controls," Goldmark said.

Barley Yellow Dwarf is a viral disease carried and transmitted by aphids and green bugs.

"It has been determined to be one of the most damaging diseases in winter wheat in the West--to such an extent that it has been given special status by a

study group of researchers from all over the Western States," Goldmark said.

Donna Hazelwood, a doctoral candidate from WSU, visits the Goldmark research plots to study how effective a chemical called Disyston is in controlling the disease.

The chemical is applied in the furrow with the seed so that the seedling will pick up the chemical and kill the aphids or green bugs which feed on the plant. The insecticide is effective for 60 days.

In a statewide study, Hazelwood found that the chemicals did not improve 1983 winter wheat yields, but it was moderately effective in keeping seedlings free of aphids until about the first of November.

continue to next page

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Wheat Marketing Workshops

A series of wheat marketing workshops will be held throughout January in Douglas County.

The workshops will begin at 1 p.m. on Jan. 4, 10, 17, 24 and 31, and will last from two to three hours.

The first workshop, an introduction to futures trading and its relation to other marketing methods, will be held at the Mansfield Grange Hall.

The Jan. 4 session will be conducted by Robert Sargent, extension wheat marketing specialist.

On Jan. 10, Central Washington Grain Growers Manager Scotty Watson will lead a session on the role of the country elevator, the merchandiser, the grain broker, the miller and the exporter in the market of wheat.

This session will be held at the

Waterville Grange Hall.

The Jan. 17 session, let by Sargent, will be held at the Mansfield Grange Hall.

The timing of marketing, sources and uses of market information and storage alternatives will be discussed.

The Jan. 24 session on the commodity broker--services and aids in futures trading, will be held at the Waterville Grange Hall.

This session will be conducted by Tony Dirks, president of Marketing Services, Inc.

The last session will be held Jan. 31 at the Mansfield Grange Hall.

A summary of trading, current outlook and relation to other crop enterprises will be led by Sargent.

the Okanogan

The study is not conclusive, however. Goldmark stressed that you "can't use one year for testing--every year is different."

How long will it be before the answer is found?

"That's a good question," Goldmark said. "We don't know."

Winter wheat yields were severely affected by the disease in 1982. The fall disease can affect yields 20 to 50 percent.

Goldmark said that it is important to note that cool, wet summers and lots of irrigation have given the aphids and virus new reservoirs to attack the winter wheat.

The aphids and disease thrive in irrigated corn, which is apparently not hurt by the disease. Therefore, control efforts are not usually made there.

"We see huge populations of aphids in the summer where we haven't seen them before," Goldmark said.

Although Disyston may provide limited protection, Goldmark noted that "the ideal solution is to find winter wheat varieties resistant or tolerant to the disease."

Scientists test chemical to control Barley Yellow Dwarf

New research at the Goldmark ranch, as well as at Mansfield and Harrington, this year was the testing of two growth regulators to reduce lodging. The tests were made by Dr. Allan J. Ciha.

Ciha explained that when nitrogen content is increased in the soil to increase yield, Sprague often ends up flat on the ground.

Goldmark's farm is planted with a mixture of Daws and Sprague wheat.

The two growth regulators used in this study were PP333, which is an experimental compound from ICI America, Co., and CCC (Cycocel), which is from the American Cyanamid Company.

The compounds were applied at the four to five leaf stage at Harrington and Mansfield and when the plants were at the one to two internode elongation stage at Okanogan.

"The only significant increase in grain yield occurred with the high rate of CCC at Okanogan," Ciha said, noting that the results are still "very preliminary" and may be because of the abnormal 1983 growing season.

The potential of PP333 to shorten culm length was observed with the high rate at Okanogan where plant height was reduced about four inches from the control. PP333 also delayed heading three to six days from the control.

While there was no statistical difference in lodging among the treatments, lodging was usually greater in the control plots, Ciha said.

"Our results from a single year did not indicate any consistent yield advantage from the growth regulators," he said.

"Height reductions and delays in heading were observed in a few cases, but the majority of the agronomic characteristics were not influenced with the application of the growth regulators."

Ciha said that in Europe, CCC is commonly used on winter wheat to reduce plant height and lodging, but added that there are several reasons for the differences between Europe and here.

"First, European wheats are generally taller than the wheat grown in the Pacific Northwest and usually do not carry the semi-dwarfing gene, thus their cultivars are gibberellin sensitive," he said.

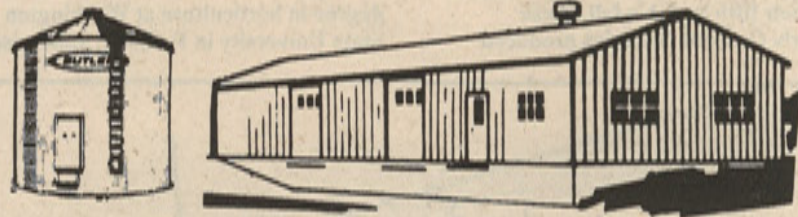
Second, the Europeans will apply nitrogen fertilizer three to four times during the wheat plants' development to stimulate maximum growth and protein content," he continued. "The wetter summers in much of Europe make late application of nitrogen feasible."

"This, plus adequate water supply, allows the plants to reach their maximum height potential which can ultimately lead to increased lodging."

"Finally," he said, "the Europeans generally apply CCC at the tillering stage and then make a second application at the one to two internode elongation stage."

Ciha also said that "while our results from this past year's data indicate little yield response, there may be wheat cultivars grown in the Pacific Northwest which will respond more positively to the growth regulators than the ones examined in this study."

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Hort Highlight

"We have to do everything possible to grow bigger apples" --Joe Brownlow, Washington Apple Commission manager, 1983 Washington State Horticultural Association annual meeting.

In the Mattawa

Granny harvest is "exceptional"

Four years ago, Granny Smith apple trees replaced 16 acres of twisted, desert sagebrush near Mattawa along the Columbia River at Beverly Orchard. In their fifth leaf this fall, these Beverly Orchard Grannies produced

1,250 boxes per acre.

This, said the orchard's manager, Gordon Lowell, is "exceptional." Lowell, who worked on a masters degree in horticulture at Washington State University in Pullman, supervised



Orchardists in Mattawa are trying various methods to prevent wind damage to their fruit trees. Here, Gordon Lowell of Beverly Orchard stands beside a trellis system supporting Granny Smith apple trees.

the Beverly plantings when the ground was first broken four and five years ago.

In 1978, 160 acres of Red Delicious trees were planted, and in 1979, 144 acres of Reds and 16 acres of Grannies were added.

"This area will be ideal for Grannies, especially with the longer growing season," Lowell said.

If the 1983 season is a hint of harvests to come, Lowell's prediction will prove true.

This fall's harvest produced 785 bins of Grannies for the shed, and after pre-sizing was completed, there were less than 10 bins of culls.

"I thought we would have been lucky to get 15 to 20 percent culls," Lowell said. Instead the culls were well under two percent.

He said he hopes "to get a thousand bins of Grannies off the 16 acres this next year, but "a lot depends on the vigor of the trees and how responsive they are to scoring."

Lowell believes that "the biggest problem with Grannies is that orchardists tend to over-prune them.

"Grannies have a lot of blind wood and orchardists have difficulty in overcoming this problem," he said.

The Beverly manager did some preliminary scoring last year that, he says, increased the fruit 40 percent on limbs that were scored.

The best time to score, or cut through the bark to force the new growth of fruit-producing wood, is right after bloom.

Lowell tried scoring in late July and August, but did not get the desired response.

He said that he prefers to leave as much foliage on the tree as possible to protect the green apples, which sunburn easily.

Lowell also does not use chemical thinners. Only hand-thinning is used to single out the clusters and to prevent the apples from rubbing together, which tends to scar the fruit.

He keeps up the trees' vigor by fertilizing with granular ANS, or ammonium sulfate, three times a year at a rate of one-third pound per tree.

Also, each time the trees are irrigated, which is about every six days in this low-rainfall area, the fertilizer Thiosol is injected into the irrigation system.

The Red Delicious are planted on a 12-ft. by 18-ft. spacing, and the Granny Smiths on a 6-ft. by 16-ft. and 8-ft. by 16-ft. spacing.

Because of the rootstock used, more Granny Smith trees are planted per

acre, Lowell said. Also, they characteristically produce higher yields earlier, he said.

The rootstocks used in the Grannies are m26, 7a and m111 with an m9 interstem. The Grannies are pollinated at Beverly Orchard by Law Spur Romes and Red Chief Delicious on an m26.

This fall, the four-year-old Grannies peaked at 72s and 88s, with 14 packs out of each bin being labeled extra-fancies.

An additional 14 bins of Grannies were obtained from fruit that was left on the trees and picked up off the ground, four of which were home-squeezed into cider, and the other 10 sent to Tree Top for processing.

Lowell estimates that from 800 to 900 acres of Grannies are planted in the Mattawa region, a fraction of the estimated 15,000 acres of trees planted, most in the last five years.

Grannies do have an advantage on the market now. This fall, they were selling for \$17 to \$20 a box compared to the \$10 to \$12 a box that Reds brought.

Lowell and his neighboring orchardists are finding the new Columbia Basin development a continuous learning experience as they battle with wind, jackrabbits, transportation and even frost.

Beverly Orchard's apple blossoms were damaged by frost in the springs of 1981 and 1982. No frost-control equipment, such as wind machines, had been installed.

"When the area was first developed, it was said to be a frost-free district," Lowell said. "But because the trees bloom so much earlier here, it's not."

He explained, for example, that the trees were in their pink stage around April 10 this last spring with full bloom on April 18, a week or two ahead of other areas in Eastern Washington.

In 1982, three of the 20 Beverly blocks were frost-controlled and 160 bins of Grannies and 230 bins of Reds were harvested.

The trees are irrigated by wells which originally did not have enough capacity for frost control by sprinklers.

Therefore, the company is now building a pond for water storage which will enable it to control 12 of the 20 blocks with a 12-million gallon capacity this next year. It also plans to dig one more well, which will enable it to frost control all 20 blocks. The watering system is controlled by computers.

continued on page 11

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Scoring increased Granny Smith apple yields about 40 percent this fall at Beverly Orchard in Mattawa.

Muffett & Sons opens Mattawa store

More services, as well as fruit trees, are growing in the Mattawa area.

This December, Muffett & Sons, Inc., a plastic pipe company, opened a store in the area once known more for its sagebrush than its apple trees.

Plans for the new store only began last summer, according to Mike Muffett, vice-president of the six Muffett & Sons stores started by his father, Bill Muffett.

"We've been taking care of that area from other directions," Muffett said.

"We felt we could service the area better by opening a store there."

Muffett & Sons also operates stores in Buena, Grandview, Pasco, Royal City and Gled.

The new store is managed by Bob Chandler, who worked at the Buena

store from March until the opening in Mattawa. Prior to that, he worked 10 years with the Soil Conservation Service at Prosser and Sunnyside and six years as a contractor.

Muffett & Sons sells solid set, drip and rill irrigation systems. It also helps design irrigation systems and will provide installation crews if desired.

"It looks good," Chandler said about the expansion. "It looks really good from having talked to the orchardists."

Muffett is also optimistic. "That whole town and area is going to change so drastically in the next seven or eight years," he said. "Most of this is now only in a growing stage."

"It's going to take a lot of people, and so it will do nothing but grow."



Bob Chandler, manager of the Muffett & Sons, Inc. store in Mattawa.

Washington State Farm and Home Calendar

Coming events you may be interested in attending with the date and place, are as follows (contact person and address or phone number, when known, are shown in parentheses).

Jan. 17--Grower Meeting, Spokane County Ag Center (Bill Moldovan, 509/456-3651).

Jan. 17-19--Spokane Ag Exposition and Pacific Northwest Farm Forum. Ag Expo, Convention Center and Spokane Coliseum; Farm Forum, 18-19, Spokane Opera House and Sheraton Hotel (Gary Schultz, 509/624-1393).

Jan. 18--Farming with Computers Shortcourse, 231 Courthouse, Yakima (J. Arthur Ries, 509/575-4242).

Jan. 20--Private Applicator Pesticide Shortcourse, Franklin County PUD, Pasco (Bill Ford, 509/545-3511).

Jan. 24--Grower Meeting, Spokane County Ag Center (Bill Moldovan, 509/456-3651).

Jan. 24--Community Pesticide Training, Spokane County Ag Center (Vanelle Carrithers, 509/456-3651).

Jan. 24-26--Mid-Columbia Farm Forum and Ag Show, Red Lion Inn, Pasco (Bill Ford, 509/545-3511).

Jan. 31--Grower Meeting, Spokane County Ag Center (Bill Moldovan, 509/456-3651).

Jan. 31--Community Pesticide Training, Spokane County Ag Center (Vanelle Carrithers, 509/456-3651).

Jan. 31--Columbia Basin Mid-Winter Tree Fruit Seminar, 9 a.m.-4 p.m., Ephrata Recreation Center (Ray E. Hunter, 509/754-2011, ext. 410).

Jan. 31-Feb. 2--Northwest Agricultural Show, Multnomah County Exposition Center, Marine Drive West, Portland (Robert Eichman, P.O. Box 25252, Portland, OR 97225).

Feb. 1--Irrigation Water and Energy Seminar, Heritage Center, Toppenish (Jim Griffin, 509/575-4242).

Feb. 6-7--Farming for Profit Conference, Elks, Walla Walla (Howard Willson, 509/525-7930).

Annual conservation districts' meeting

The annual Foster Creek and South Douglas Conservation Districts and Crop Improvement annual meeting will be held in Mansfield on Jan. 11.

The meeting will begin at 9 a.m.

Range management, chemical fallow results from Douglas County, goatgrass identification and control and no-till crop production in Douglas County will be discussed, as well as other subjects.

Ken Morrison, extension agronomist from Washington State University, will discuss wheat varieties, Douglas County variety trials and snowmold plot results.

Keith Pfeiffer, Crop Improvement manager, will discuss state activities his organization is involved in.

Lunch will be provided.

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Grain Growers face paradox in 1984

So far, signs point to a golden harvest in 1984 for the fourth straight year in the Pacific Northwest.

However, gold may not end up in the farmer's pocket.

Farmers throughout the state discussed this paradox Dec. 4-7 at the annual meeting of the Washington Association of Wheat Growers (WAWG) in Spokane.

"The way the situation looks right now, is not all that bright," said the new WAWG president, Dennis Bly, of Harrington. "It looks like there will be a 50 percent carryover of wheat on hand by the time harvest rolls around next year."

The surplus of wheat with already depressed prices and a 1984 Federal Farm Program that has not encouraged farmers to take acres out of production, does not make the near future look promising for the farmer.

Wheat growers saw record yields last harvest, and, as Brent Heinemann, director of WAWG, said, "It looks equally good for 1984."

Farmers at the meeting were "feeling pretty positive as far as productivity," he said, "but not prices. It looks as if they (the prices) will not rise, and may even go down."

Frustration with the Federal Farm Program was also displayed at the meeting, Heinemann said. Therefore, the program has not encouraged participation and the grain prices will not be helped.

FOLEY AMENDMENT

Because of this, WAWG passed a resolution supporting an amendment introduced by United States Congressman Tom Foley to the farm bill.

Bly said that the amendment would improve participation in Eastern Washington and is "very necessary" because of the large carryover of wheat.

The amendment, which passed the house before the session ended for 1983, would improve the acreage reduction and payment-in-kind (PIK) programs, Heinemann said.

The way the farm bill stands now, the farmer under PIK in 1984 would receive 75 percent of what he normally produces, compared to 95 percent in 1983. Heinemann said that they are hoping for a compromise of at least 85 percent.

The amendment would also extend the signup deadline from Feb. 24 into March. Signup begins Jan. 16.

The later signup period would help the farmer whose wheat is still under snow in February and does not know what kind of crop to expect, Heinemann said.

The amendment will be brought before the Senate when the Legislature reconvenes in January, he said.

On the long-term, Bly believes that support prices will have to remain at low levels in order to make the farm programs successful. In 1984, the target price was lowered by 30 cents from 1983.

"I think this will help get us back to being more competitive," he said. "In the past, foreign competitors have undercut our prices."

Nationwide wheat exports have dropped 20 percent, he said.

"The problem is not the value of the wheat," Bly said, "but the value of the dollar."

"In order to compete, we have to get our prices more competitive."

"We realize what has to be done, so let's get on it. Farmers are not eager. They realize there will be pain involved."

OVERSEAS CREDIT

The WAWG also passed a resolution supporting federal overseas custom credit assistance in the hopes of opening more markets.

Heinemann explained that with the faltering world economy, many countries do not have the cash to buy wheat. Argentina and Australia already extend credit to some of these countries.

Not only would the move increase sales of wheat, Heinemann said, but it would give an "overall net advantage to our country."

FARM SWAP

In other business, the WAWG is considering supporting a farm-city swap which would allow nonfarm people to gain a better perception of agriculture, Heinemann said.

Washington farmers participated in such swaps for about 10 harvests until about eight years ago.

Last year, state legislators were hosted by farmers. A farm-media swap is also being considered.

MORE HOME USE

The association also passed a resolution to promote more domestic use of soft white wheat. Few domestic products from the wheat are now available, and 90 percent of the crop is sent overseas.

The WAWG hopes to work with the milling industry to develop the domestic market. The milling industry has indicated that "if we provide the product, they will provide the product," Heinemann said.

The move would help the farmers to not depend so much on the overseas market. "If things turn bad overseas, we're in a tight situation," he said.

National Wheat Growers Convention

The National Wheat Growers Convention will be held Jan. 22-26 at the Denver Hilton Hotel in Denver, Colorado.

Also in Denver prior to the convention will be the National Western Stock Show. The Stock Show will be held from Jan. 11 to Jan. 22.

Hort Highlight

"Your warehouses need to be as picky packing your fancy and extra-fancy as you'd like them to be"--Joe Brownlow, Washington Apple Commission manager, 1983 Washington State Horticultural Association annual meeting.

JOHN WAYNE TRAIL

The wheat growers also passed a resolution supporting the leasing of abandoned Milwaukee Railroad property to adjacent landowners and the dropping of the John Wayne Trail proposal for that land.

The cross-state trail would lead through parts of Kittitas, Adams, Whitman and Spokane counties in Eastern Washington.

Heinemann said that landowners are concerned about vandalism, fires and weed control along the trail.

To fence the trail for protection of hikers and landowners would cost millions of dollars, he said.

"The state treasury at this point does not have the money to develop the trail," he said. "By leasing it, the state would still own it and could develop the trail in the future."

Some of the land in the proposed trail could be farmed, while other parts would be used as range land. The trail in Washington would be 232 miles long and 200 feet or more wide.

WORKERS' RIGHTS

The WAWG is also keeping a close eye on state legislation involving a worker's right to know. According to Bly, every farmer would have to list all hazardous substances and hold meetings for his employees to talk about the list.

"It would involve a lot of unnecessary paperwork," he said. "We are not against safety. We do not need the extra paperwork. It will not make operations safer."

Douglas-Grant Wheat Meeting

A joint Douglas County-Grant County Wheat Growers program will be held Feb. 21 at 1:30 p.m. in the Coulee City Grade School.

The program will feature goatgrass and cheatgrass identification and control.

Hort Highlight

"It's the growers' obligation to deliver fruit of good condition to the warehouse"--Tom Auvil, horticulturist, Trout, Inc., at the 1983 Washington State Horticultural Association annual meeting.

NEW OFFICERS

Joining Bly as new WAWG officers for one-year terms are Gayle Gering, Ritzville, first vice-president, and Jim Walesby, Almira, second vice-president.

Jim Miller of Garfield served as the 1983 president.

The 1984 county association presidents and directors of the WAWG board in Central Washington are as follows:

Adams County--Grant Miller, Lind, president and director.

Benton County--Jim Moon, Prosser, president and director.

Douglas County--Cecil Trefry, president and director.

Franklin County--Dana Herron, Connell, president; Ray DeRue, Washuena, director.

Grant County--Kathy Bohnet, Wilson Creek, president and director.

Lincoln County--Bernie Duenwald, Davenport, president; Karl Kupers, Harrington, director.

Yakima and Klickitat counties--Fred Wilkins, Bickleton, president and director.

Hort Highlight

"Folks, let's admit that we have very little political clout as an industry any more... only two or three percent are in the agriculture industry now... we need some new spheres of influence... we need to get involved with political action committees"--United States Congressman Sid Morrison, 1983 Washington State Horticultural Association annual meeting.

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continued from page 2

Controlling weeds is essential

Cooperation Needed

Although county weed assessments do not affect the state and federal lands, the lands are required to conform to the state weed law. In fact, Stiverson is strongly convinced that all must participate.

"Okanogan County can and will get a handle on it if everyone will cooperate," she said.

Included in this needed cooperation are the Department of Natural Resources, Bureau of Indian Affairs, Bureau of Land Management, the State Game Department and the United States Forest Service, who are beginning to respond to the problem, she said.



Yellow Starthistle

Uniting the agriculturists themselves can be a problem. "It's a real challenge to get these three groups--dryland wheat, dryland range and irrigated land--united," said Jim Griffin, Yakima County extension agent.

Yakima County activated its weed board in 1974 and hires a full-time employee. The county also has a weed district begun in 1950, serving about 14 percent of the irrigated area.

Griffin said that the first line of effort for the county weed board is to control new weeds that have just started in the county. Weedboards generally make up a list of the priority weeds, and do not necessarily include those which have already achieved a strong foothold in the county.

Griffin believes the attack on new weeds is successful. For example, 24 patches of invading Johnsongrass in Yakima County have been reduced to two.

Continued control is imperative, however, he stressed. "You can never assume a weed is completely gone from that site," he said. "In order to protect that land area, you have to keep on it."

Keeping On It

Grant County also believes in "keeping on it."

Jim Weitzel, Grant County commissioner and the immediate past president of the Eastern Washington Weed Board Association, claims that his county has "one of the most effective and most progressive weed boards" in the state, according to state legislators and State Weed Board members.

The Grant County Weed Board started in 1980 after the county commissioners were petitioned by farmers. It hires four employees, including a supervisor, two inspectors and a secretary, all of which are qualified in weed control.

The county also has five weed districts which were established prior to 1980 and which work cooperatively with the county.

Tax Guides

Revised farmers' tax guides are available free from county cooperative extension offices.

The guide is designed to be helpful in organizing 1983 income tax returns.

"We have the reputation of one of the cleanest farm areas in the state," Weitzel said, noting that as a result, seed companies are taking an interest in the county.

"We will never be perfectly clean," he said, "but it is a lot cleaner than it was."

Irrigated landowners pay 20 cents per acre, rangeland and dryland pay eight cents per acre, and scrubland is assessed at four cents per acre. Land within the cities is not assessed.

"Everyone has to uniformly control their weeds," Weitzel said, including land owned by the state, the federal government and railroad companies.

"We had a little resistance at the very first," he said. "But the farmers are supporting us."

Enforcement

When the weed people find a weed problem, they first talk to the farmer about controlling it, Weitzel said.

If the farmer does not make an effort to control it, a red flag is posted at the area and a registered letter sent to the

landowner. The landowner then has 10 days to comply, or the county will spray the weeds and add the bill to the person's taxes.

Weitzel stressed that no one is exempt from the program--not even himself. This last year, a renter of land owned by Weitzel was posted for weeds. "Me--a county commissioner!" he said.

Enforcement by county weed boards is the last step, however.

"The idea isn't to force someone to control their weeds," Kropf said. "It's to have people control their own problems; to let them know there is help available."

Hort Highlights

"It doesn't take very many bad apples to ruin the whole box"--Joe Brownlow, Washington Apple Commission manager on marketing the highest quality fruit, 1983 Washington State Horticultural Association annual meeting.

"The growers should harvest their fruit with the warehouse marketing plan in mind"--Tom Auvil, horticulturist, Trout, Inc., at the Washington State Horticultural Association annual meeting.

"We will have to work together like we never have before to provide a continuity of harvest... housing... transportation... the only way to protect our investments is to put our acts together"--United States Congressman Sid Morrison, 1983 Washington State Horticultural Association annual meeting.

continued from page 5

Priest Rapids Orchard

Wind is one of the biggest problems for Mattawa growers. Beverly Orchard uses a three-wire trellis system for its Granny Smith trees.

Lowell said that some people have expressed concern that the additional fruit will hurt the apple market.

"This is going to be a boom area for awhile--a growing area," he said.

"The apple market will be complicated. The emphasis will be on quality in order to survive."

continued from page 8

Great Granny Crop

Wind is also a big problem in the area. At Priest Rapids Orchards, Talbot ties down trees with plastic string, stapling one end of the string at the base of one tree to a high branch on the next tree.

"You can see by looking at the trees which way the wind blows," he said.

Talbot pointed out where the original central leaders of the oldest trees have been sawn off because the wind had gradually bent them over. He lightly calls it a "modified central leader open center."

"It's not really your textbook example," he said seriously, "but they do grow a lot of fruit."

With the 26 acres on the ranch that are in their fourth leaf, "a lot of time and care is being taken to see that they grow straight," he said.

Frost has also been discovered to be a problem in the area. The area is not frost-free as it was once considered.

"The first year I was here, we were totally wiped out," Talbot said. "Last

year, we were moderately hit.

"I was told that we would be hit by frost once every 30 years," he said, adding that when he first discovered the frost damage, he "didn't believe it."

Since then, Priest Rapids has begun to add wind machines and other orchardists are also designing systems.

"One year can pay for that huge investment," Talbot said.

Jackrabbits have also proven a problem, destroying many young trees by eating their bark.

New orchardists have taken note of the damage and it is "not uncommon for orchardists to drive around a couple of hours a night shooting rabbits," Talbot said.

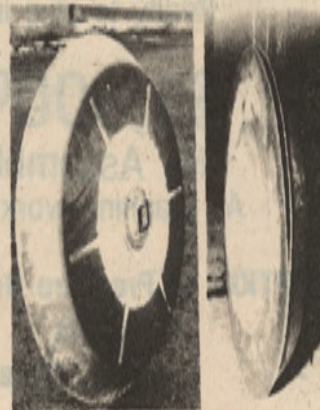
There are chemicals which will kill the animals, but they are very expensive, he said.

Talbot noted that some of these disadvantages will lessen as the area develops and, overall, positive growth is the feeling for the future.

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Winter wheat-summer fallow areas

Scientists study narrow drill spacing

Seeding spring grains with narrow drill spacing may be beneficial to the farmer under certain conditions, according to Dr. Allan J. Ciha, research agronomist with the United States Department of Agriculture at Pullman.

Ciha has studied drill spacing with spring wheat as part of an erosion control research program.

The studies have been conducted in areas in Eastern Washington where farmers continue to use a winter wheat-summer fallow rotation.

"During the last five years, we have gone into some of these summer fallow areas and looked at the potential of replacing the winter wheat-summer fallow rotation with annual cropping of spring grains," Ciha said.

"By planting spring grain each year and keeping the stubble on the surfaces, the soil erosion would be greatly reduced."

The main thrust of the study, he said, is to determine if annual cropping would be economically feasible with spring grains.

And, for the farmer, part of the economics is deciding whether he would be better off purchasing a drill with narrow spacing, such as six or eight inches, for the spring grain seeding.

Ciha explained that most winter wheat in the summer fallow areas is seeded with 14 and 16-inch spacing, which is necessary to form deep furrows to reach moisture at seeding in the dust mulches formed during the summer fallow.

At Lind, which gets an average rainfall of 8 to 10 inches, an average increase of one and one-half bushels per acre was shown with the narrow spacing (six inch) with spring wheat over a wide spacing (13 inch).

In the Pullman area, which gets an average rainfall of 20 to 22 inches, average yield was increased by four and one-half bushels in a similar row spacing study. However, farmers do not summer fallow in this higher rainfall area because of the adequate moisture. Also, they already use narrow row spacing.

At Lind, with an average yield of 30 bushels per acre from spring wheat, the increase was five percent with the narrow rows.

But whether or not this five percent increase would be feasible to the farmer "depends on the number of acres the farmer would want to seed to spring grains," Ciha said.

A narrow drill does provide better distribution of the plants which will compete better with weeds, he added.

Wide row spacing with spring grains does work well because they do not tiller as much as winter grains, Ciha said. With winter wheat, the wide row spacing is not detrimental since the wheat plants can form a large number of tillers and cool temperatures in the early spring allows for a longer time for tillering to take place.

"On the other hand, spring grains will only produce a few tillers and the temperatures elevate rather quickly in the spring after planting, so the plants don't have as much time to tiller," Ciha said.

Seeding Rate

Related to drill spacing is the seed rate, which was also studied during the last three years.

Eight different varieties were tested,

and not all varieties responded the same, Ciha said.

For example, at a low seeding rate, one variety may show a difference in yield because it may not tiller as much, whereas another variety may tiller more and not show a difference in yield between a low and high seeding rate.

Seeding rates of 30, 60, 90 and 120 pounds per acre of spring grains were tested.

An important discovery Ciha noted was that there was basically no difference above 60 pounds per acre in yield response.

And, he said, 30 pounds was usually

not high enough for the spring wheat to obtain enough tillers, and therefore not enough productive heads were produced to maximize grain yield.

In spring grains, he stressed, if a farmer uses wider spacing, increasing the seeding rate made no difference in final grain yield.

"The three years did not show that it would be beneficial," he said, "to go above a seeding rate of 60 pounds per acre."

"If the producer wants to keep his costs down, all that increasing the seeding rate above 60 pounds per acre would do would be to increase his expenses."

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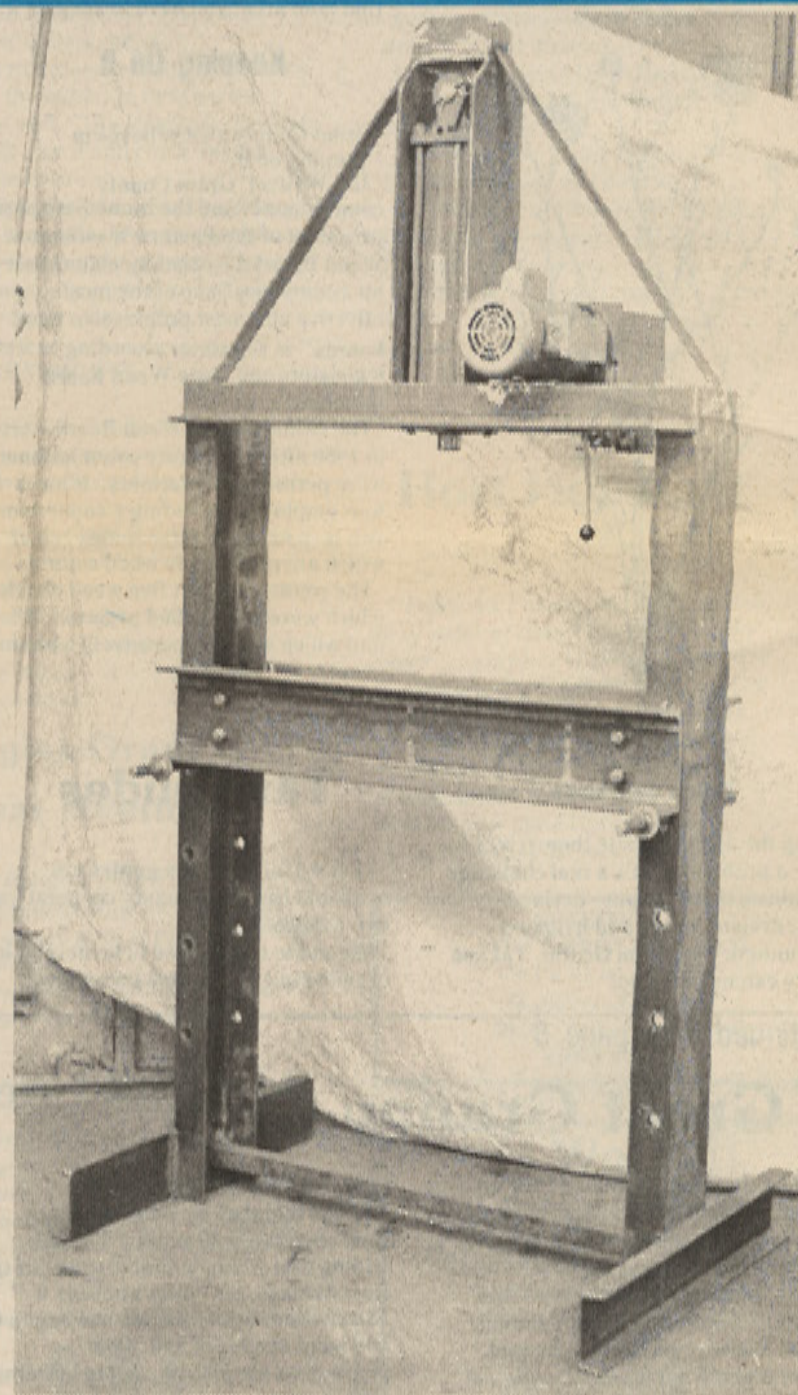
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