Hoyle's Survey Shows Rhizoctonia Is Most Serious Potato Disease

TULELAKE — Rhizoctonia, perhaps one of the most serious potato disease in the Northwest, is also one of the oldest known and difficult potato problems. This has been emphasized by a recent survey of potato growing areas in Washington, Oregon, Idaho, and Northern California by Burton J. Hoyle of the Tulelake Station.

The chief researchers on this problem in the Northwest are professors Kinkel and Hoyman of Washington, Powelson and Carter of Oregon, and Weinhold, Hall, and Hoyle of California. Each of these experts have found independently, that by using soil fumigants and fungicides that yield increases of 50 per cent and more may be realized while not reducing the rhizoctonia level significantly. Much current thinking in scientific circles is that these chemicals have caused these increases by changing the basic soil microorganisms to the betterment of the crop without reducing rhizoctonia, or in some cases other detrimental organisms.

Hoyle, of California has shown that high yields can be associated with high levels of rhizoctonia on the stems. However, he points out that high levels of infection on the underground stolons, which connect the tuber to the stem, always damage the yield and quality. Such a situation increases the complexity and eventual solution of the problem. Research has uncovered a number of important findings about this fungus which must be taken into account for its eventual control. Some of these will be discussed.

Nature Of The Fungus

Rhizoctonia fungus is found in nearly all soils but there are in these same soils many different kinds of fungus, some good and some bad. Some attack only the tuber, some only the stems, and others may not be harmful except to other crops. The fungus grows like cobwebs both beneath and on top of the soil. It is often be easily observed by lifting the lower leaves of the plant late in the season and noted on the soil surface and on the plant stems and leaves.

Rhizoctonia does not remain "sleeping" in the soil, but is on active run-around. It has been known to travel 6 to 8 inches in 24 hours. Other soil diseases remain more or less static in the soil as "seeds" such as verticillum, and this kind does not damage the plants until the roots of the plant grow to the infection. Rhizoctonia does not wait. It moves in on the plant as fast as conditions permit. Once the fungus has grown to the plant it acts in one of two ways. It may wrap itself around the stem in a film but actually never penetrate into the stem, nor damage it. Careful work will allow one to put a sharp knife point under a portion of this film and unwrap it much as a layer of tissue paper, leaving the stem clean, white, and with no sign of damage. Rhizoctonia has been observed clinging to stones and other non-living surfaces. Some types of fungus are known to actually help a plant by clinging to a root, dissolving certain soil food elements and passing them along to the plant. Whether or not rhizoctonia can be helpful in any way to the potato plant is unknown at this time.

At times when the fungus reaches the plant, it sends a hook into the stem and proceeds to grow and live inside the stem. When this happens, the familiar infected lesion, or sore, is seen and the stem is sometimes cut off, girdled, and otherwise damaged. As soon as a water, or food conduction tube in the stem is damaged, the plant will suffer, yield will suffer, and in some cases symptoms are noted in the tops.

Control By Sterilizing

A soil may contain many hundreds of different kinds of fungs, bacteria, and microscopic animals. These soil "citizens" are all in balance with each other for a given situation of temperature, moisture and soil type. When one organism tends to increase its enemies also increase with the net result that they are both reduced to that point where they can mutually exist. When a soil is sterilized this delicate balance is upset and the first organism which gets back into the sterilized soil has a field day because its enemies have not returned to hamper it. Rhizoctonia being one of the most rapid growing of the soil community may thus do more damage to crops than before the soil was sterilized. Gradually the other soil hosts move in and conditions may get back to normal. For this reason, diseases such as verticilum may be controlled for several years easier than rhizoctonia.

It is also known that under field conditions it is nearly impossible to completely sterilize a soil. The soil portions which usually escape becoming sterilized are the clods. One tiny clod per square yard which is missed, or cannot be penetrated by the fumigant, is all that is needed to release enough Rhizoctonia villains to cause much damage. Rates of $400 per acre have been found inadequate to get all the bad guys.

Is Control Possible?

An intensive and continuing search for the right chemical is being carried on by many workers in the Northwest, including the Tulelake and Klamath field stations. It is entirely possible that such a chemical will be found, but other than chemical controls are possible. Research at the Tulelake Station has indicated two possibilities. One is to uncover, or breed, a potato plant which is resistant. Some genetic varieties have been tested at this station which look promising. None of this seed is as yet available but needs much more testing to determine if it has real value.

Another observation in the Tulelake Field Station research program showed promise that seed piece conditioning may reduce the amount of rhizoctonia infection. Although chemicals such as Captan can be important in reducing seed piece decay, the cut seed surface can gain additional protection from other conditions. The cut seed surface may become dry and desirable to the look by the accumulation of dried starch grains alone. Such a surface offers little if any protection against invading soil fungi or bacteria which cause soft rot.

By suberizing a cut surface at 68 degrees F. for a few days under high humidity a better protection may be obtained. These conditions, however, are also favorable to promote soft rot development and sometimes the disadvantages outweigh the advantages. A true periderm, or a skin allowed to form over a cut surface may look no different than the other types, but it will offer protection almost as good as the natural skin.

Conditions

Conditions for developing a true periderm can be at temperatures between 40 and 45 degrees F., in a high humidity and over a period of two or more weeks. The practical problems involved in obtaining this type of surface are not completely understood under commercial conditions.

Experiments are being set up this spring by Ken Baghot and Burt Hoyle in commercial cellars to investigate this further. Well-conditioned seed pieces combined with adequate chemical safeguards should go a long way to reduce seed decay and at the same time reduce rhizoctonia.

One final approach to rhizoctonia control is in the research mill. Michael Yacoub, an Egyptian pathologist, who was a recent visitor at the Tulelake Field Station, is working on such an approach. It has been discovered that certain kinds of soil organisms are antagonistic to, or repel rhizoctonia. Greenhouse studies have shown that when these are isolated and added to soil containing rhizoctonia that the rhizoctonia disappears. Although this is a long way from field use, it has a some-day possibility.

GIVEN HONORARY MEMBERSHIP — R. A. "Reub" Long, right, is shown above being welcomed into honorary membership in the Oregon County Agents Associations. Ben A. Newell, president of the group, presents Long a stockman's cane, insignia of membership.

R. A. Long Honored

R. A. "Reub" Long recently joined the ranks of Lake County men who have been elected to honorary membership in the Oregon County Agents Association.

One of three chosen for distinguished public service and community leadership, Long is a Fort Rock rancher, author, and member of the State Agricultural Advisory Board.

Other Lake County men who have earned this honor include Dan Hotchkiss, Gene Branson, and the late R. L. Weir Sr., who served for many years as a member of the state American Automobile Association and Pacific Motor Association.

Tips On Damaged Pipe

Aluminum irrigation pipe which has been dented or crushed by the recent floods can be salvaged for much less than it would cost to replace it with new equipment, points out Marvin Shearer, extension irrigation specialist at Oregon State University.

Damaged pipe should be repaired now, when dealers are not loaded down with other work, advises Shearer. The irrigation specialist predicts that growers who wait until spring to take their pipe in for repair may have to wait in line because of large amount of pipe needing repair.

Most dented pipe can be straightened with a special cam driven device. Pipe that is creased will have to be cut and repaired with a sleeve, however.

Farmers should contact their local dealer to find out whether they should take the pipe into the shop, or have the repair equipment brought to the farm. The important thing is to get the repair work done now though, says Shearer.

Irrigation pump motors which were flooded should be taken to an electric motor rewind shop for drying out. The bearings and insulation should also be checked for damage. All rewind shops have ovens for drying motors, and it is not an expensive operation.

Man's deepest sleep occurs during the first two or three hours of slumber.

11 4-H Leaders Attend Annual OSU Meeting

Eleven Klamath County 4-H Club leaders attended the 30th annual state 4-H leaders conference at Oregon State University, held Jan. 20-22, according to Francis A. Skinner, county extension agent.

"I pledge," the first two words of the 4-H pledge, was the conference theme. Featured speakers used the pledge and its application to youth today in their talks. More than 300 volunteer 4-H Club leaders attended. Burton Hutton is OSU state 4-H Club leader.

Dr. Hester Turner, dean of students at Lewis and Clark College, spoke at the Jan. 20 banquet sponsored by the Sears Roebuck Foundation. A special feature of the banquet program was the presentation of meritorious service awards to three outstanding 4-H Club supporters. The awards are made by the 4-H Leaders Association.

The Jan. 21 program opened with two special breakfasts—one for first and second year club leaders and the second for those in the program three years or longer. This is the second year for this program feature, designed as an added service to the leaders in their work.

State Rep. John Dellenback of Jackson County, former OSU staff member in political science, spoke at the first general assembly Jan. 21. His talk developed the part of the pledge which reads, "My hands to greater service." Robert L. Phillips, director of summer session, gave the welcome.

Larry Coppock, Adams, association president, presided at the association's annual meeting. Highlights were a report on the National 4-H Leaders Forum by Francis Krouse, Applegate, and presentation of the Portland General Electric Company's award to an outstanding county for 4-H leader accomplishments.

A program featured Oregon International Farm Youth Exchange delegates. IFYEs who reported on their experiences included Philip Krouse, who went to England and Wales; Susan Amundsen, Astoria, The Philippines; Grace Elliott, Astoria, Australia; and Gordon Cook, Canby, Korea.

Speakers at the final assembly Jan. 22 was Dr. Kenneth Erickson, Corvallis school superintendent, who stressed the importance of both mental and physical health in keeping with the 4-H pledge, and James Johnston, Portland, Crown Zellerbach Company, who spoke on loyalty and responsibility.

Gene M. Lear, associate director of OSU Cooperative Extension Service, explained the place of 4-H club work in the total OSU Extension Program at the luncheon sponsored by Standard Oil Company of California. Winners of 4-H scholarships given by the company received special recognition.

LEADERSHIP ACHIEVEMENTS — Outstanding programs in 4-H leadership were recognized at the 30th annual State 4-H Leaders Conference held recently at Oregon State University. Washington County won the top award. Shown here, receiving awards were, from left, Mrs. Earl Martin Scappoose, president of the Columbia County 4-H Leaders' Association; Mrs. Walter Blaisdell, Wemme, past president of Clackamas County Association; Joe L. Williams, PGE general division manager, who made awards; Mrs. Kenneth Suhr, Grants Pass, immediate past president Josephine County Association, and Mrs. Diana Gueck, Klamath Falls, president of the Klamath County 4-H leaders.

4-H NEWS
MIDLAND DAIRY

The second meeting of the Midland Dairy Club was held in December at the home of Mrs. Ida Scala, club leader. The club held a brief meeting and last year's record books were handed out.

After the meeting members had a Christmas party and games were played. Refreshments were served by Mrs. Scala. The next meeting will be on Jan. 10 at the home of Mr. and Mrs. Tom Bailey.

Don McNary,
News Reporter.

4-H NEWS

FORT ROCK — Four members of the Jolly Knitters 4-H Club had a slumber party Wednesday, Jan. 13, at the home of their leader, Mrs. Bud Parks.

During the course of the evening the girls discussed the aims of their group, better grooming, posture and health. Also, the girls did some knitting in order to straighten out their knitting problems.

Plans were begun for skits on posture and health, to be given for a community gathering. There was talk about an outing when weather and roads improve.

The four girls attending the party were Patricia Miles, Theresa Chancy, Stephanie Jackson and Darla Bowen of grades four, five and six.

BONANZA SHEPHERDS

The Bonanza Shepherds met at the homes of Diane Williams and Linda Frazier on Dec. 30 and Jan 20, respectively.

Visitors present at club meeting included Mrs. Logan, Mr. Williams, Megan Smith, Mrs. Hawkins, Mrs. Cox, Freeman Lee, Mrs. Vieira, Mr. and Mrs. Frazier and Mrs. Goossen.

Dues were set at 10 cents a meeting and $1 for the club year. Officers elected are Diane Williams, president; John Logan, vice president; Kathy Logan, secretary; Stacia Peterson, news reporter and Linda Frazier, recreation leader.

It was decided to have each member bring a dime for the IFYE program. Ken Logan was appointed to be chairman of the Weed Control Committee.

The next meeting will be a field day at lambing sheds to watch vaccinating and docking. The meeting will be on Jan. 24 at the Hatchett ranch. Mr. and Mrs. Paul Hatchett are leaders of the Bonanza Shepherds.

Stacia Peterson,
News Reporter.

MALIN BEEF CLUB

First meeting of the club was held during December at the Malin Community Hall. Officers elected were Riley Wilson, president; Gary Micka, vice president; Marylin Duncan, secretary; Beverly Duncan, sergeant at arms and song leader.

The project of "Why I Would Like A Hereford Heifer Calf" was discussed. New members will be initiated at the next meeting.

Neil McCaffery,
News Reporter.

National Wool Growers End National Meeting

PHOENIX, Ariz. (UPI)—The National Wool Growers Association ended its annual convention Saturday with election of officers and adoption of resolutions, including one to seek a major effort to "correlate and direct all research connected with the lamb industry."

George K. Hislop of Yakima, Wash., was elected president. James L. Powell of Fort McKavitt, Tex., was elected vice president. Re-elected vice presidents were J. R. Broadbent of Salt Lake City, Utah; Henry S. Hibbard of Helena, Mont.; W. E. Overton of Yeso, N.M., and Joseph M. Donlin of Casper, Wyo.

In other resolutions, the association:

—Declared "unrealistic and unworkable" the establishment of only one livestock and livestock products committee to advise the secretary of agriculture.

—Asked that an adequate quota be maintained on lamb and mutton imports, plus removal of the products from further tariff reduction.

—Called for establishment of a U.S. meat and animal research center at Clay Center, Neb., for testing larger numbers of animals "needed in genetic research" than is possible at present.

—Sought extension of the National Wool Act with accompanying adequate tariffs and increased research in wool use.

—Asked that mineral royalties to the states from federal lands be increased to 90 per cent.

—Opposed any change in federal income tax laws that would reduce present depletion allowances on oil and gas production.

—Deplored lack of livestock industry representation on committees studying the problem of predator control.

—Recommended continuance of the program permitting import of foreign sheepherders.

—Urged enactment of legislation to protect state and individual rights to water.

—Expressed belief in the right of each state to give consideration to factors in addition to population in apportioning representation of at least one house of the states having bicameral legislatures.

—Reiterated the need for effective programs of research and inspection for control of sheep diseases.

Originator Of 4-H Dies

McMINNVILLE (UPI)—Lewis R. Alderman, whose idea for a Children's Fair eventually grew into the 4-H Clubs of America, died in a hospital here Sunday. He was 92.

Alderman was state superintendent of public instruction from 1911 to 1913, when he resigned to become Portland school superintendent. He was director of education for the Navy in World War I and joined the U.S. Department of Education in 1925 as director of adult education.

Alderman's Children's Fair held at Star Mill near McMinnville in 1905 is regarded as a forerunner of the 4-H clubs.