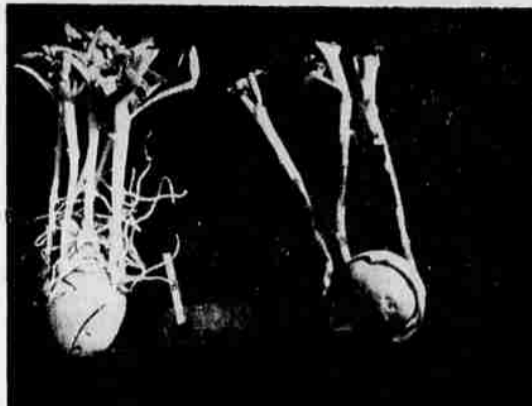


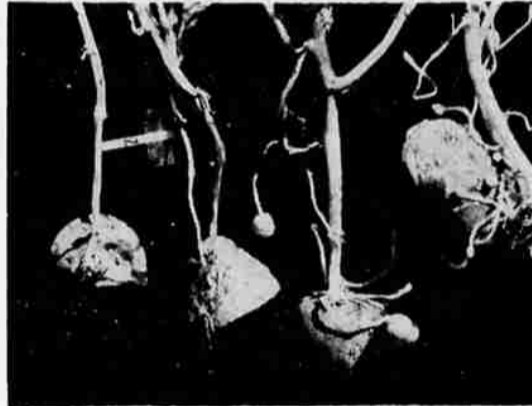
Study At Tulelake Field Station May Help Improve Potato Yield



READY TO EMERGE — This sprout was just about ready to emerge from the soil. Most of the roots have been cut away to show the swellings at the stem nodes from which the potatoes will develop. Note that there are two sprouts from one eye. Each of these sprouts should produce four marketable tubers for it to be a profitable plant.



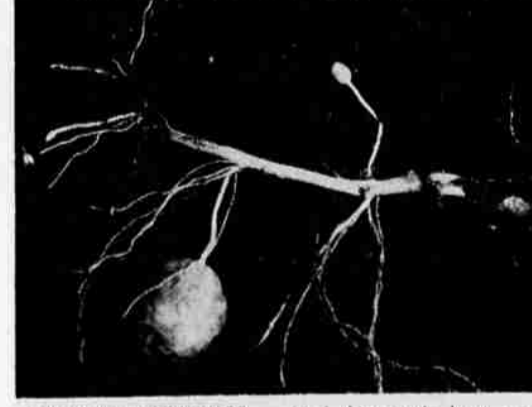
CONTRAST — The plant on the left is healthy and the stolons are clean and growing. The plant on the right has lost all its first and second set and is struggling to establish a third set. The roots have been cut away and both plants had equal size tops.



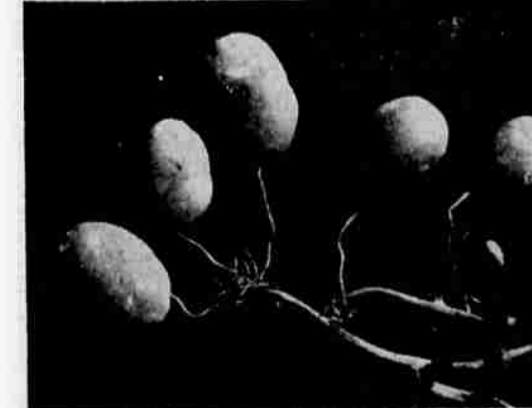
LATER PHOTO — Two healthy plants on the right and two plants which have lost their first set, picture taken on July 22. Both plants were equal for top size and appearance.



DEFORMITIES — Once a first set is lost by rhizoctonia the second set usually forms closer to the main stem as shown in this picture. This causes a crowding and subsequent deformities. Rhizoctonia is sometimes seen on the small tuber itself and although this tuber may survive it will be scarred and deformed.



EXPLAINS DIFFERENCE — Had rhizoctonia been controlled, all tubers on this stem would be the size of the large one in this photo. This shows why some hills have both large and small potatoes.



PROFITABLE STEM — Here is one stem from a plant which is carrying its weight for the farmer. The stolons are free from rhizoctonia and have five tubers all from the first set, each from a different node. This was on Aug. 5. Through July these potatoes were found to be increasing in size by two to four times each week.

Basic research at the Tulelake Field Station indicates a tremendous, untapped potential for increasing potato yields and quality. As part of a continuing investigation into causes of poor potato yields, Burton J. Hoyle, superintendent of the station went underground to study the essential tuber development and to find out what happens in its early life.

This study revealed that the average Gem potato plant usually starts out with over 30 tubers but misfortune overtakes most of them leaving only one or two marketable potatoes per plant. This can be calculated, according to Hoyle, from the fact that the usual Basin potato field is planted with about 22,000 seed pieces. If each seed piece produced one plant of two, 8 ounce potatoes the yield would be close to 200 sacks of US No. 1s, which is just about the Basin's average yield.

Doubling this would require primarily the production of 4 to 6 marketable potatoes per plant which essentially calls for fewer casualties among the embryo potatoes. The present limitations to high yields lies in the fact that too few of the right kind and too many of the wrong kind of potatoes are produced.

The right kind of potatoes are those where eight to 10 tubers are formed early in the season. The wrong kind are those plants producing either too few or too many potatoes per plant and those formed too late in the season to mature. Only by understanding and controlling the factors causing a good or bad set of tubers can the yields be increased significantly.

When the seed piece is planted in the spring it takes three to four weeks to send up its stems to the surface. There may be one to eight or more per seed piece. Each of these stems will produce under certain conditions upwards of 10 to 12 tubers. Therefore controlling the number of stems through seed piece size, storage, and handling is very important. By the time the stems have reached the surface they are three to four inches in length and at this very time a root system is well started.

All of the roots start at specific locations on the stem and usually there are six areas from which they develop. Each of these areas is called a node and all nodes lie between the seed piece and the surface. This is why it is important to keep the surface soil moist in the early life of the potato because there are roots in no other area. Adequate moisture here also affects the kind and quality of crop.

At each of the nodes where a cluster of roots have formed is the birthplace of the new born spud. Buried deep among the roots and peering from the stem one or more stolons come snaking into the world. This string-like stolon is lighter in color than the roots and at its tip is a growing bud which can be detected at the time the leaves are just peeking through the surface soil to mark the row. In a few days this bud will form a small potato if it stays underground or a leaf if it pokes out into the air and light.

There may be two or three stolons developing at each root node and as they reach out 1/2 to 2 inches the small tubers are much in evidence. The tops are usually two to four inches tall when these are clearly seen, but much of character and future performance has already been determined.

Over the next period of approximately two weeks one tuber at each node usually outgrows all the others at the same node according to the research at the field station. As this one tuber enlarges it forms chemical substances which are transmitted back along the stolon to suppress the other small, developing tubers. These arrested tubers then dry up, fall off, or in other ways disappear.

This is the natural way the plant limits itself to the number of potatoes it can adequately mature. This stage of growth has normally been reached two to three weeks after emergence and in another two weeks the top growth should be maximum size. If our plant has been normal and healthy and cooperative with the farmer it would most desirably be as follows: Have two to three stems with three to four rapidly developing tubers on each stem. All other small and undesirable ones would have been held back or lost. From this time on, little remains but to supply adequate water and fertilizer which act to size the crop up.

Unfortunately there are villains in all walks of life and the po-

1. The number of eyes which develop in the seed piece.
2. The total number of stems.
3. Number of nodes per stem.
4. Number of buds per node.
5. The number of tubers.
6. The average weight per tuber.

Cultural factors affecting any one of these six will alter the form and quality of the final yield. As our research progresses each new chemical and method will be tested as to which of the six yield factors it affects, and how. By this means the chief function of each yield factor will be determined and controlled at will. Not only will the doubling of present yields be possible, but controlling the crop for specific type and size can be accomplished. The first step is the control of rhizoctonia without which increasing yield is problematical.

FARM REVIEW

HERALD AND NEWS, Klamath Falls, Oregon Tuesday, October 15, 1963 PAGE 7

Soil Tests In Fall Allow Ample Time To Prepare

The cost of a planned continuing program of soil testing is merely a small premium paid by the farmer to assure full returns from a substantial annual investment in fertilizer, lime or soil amendments, reminds Arthur S. King, Oregon State University extension soil conservation specialist.

Soil tests taken in the fall can assure the producer of having the proper information in time to make plans for the next year's soil fertility program, King points out.

Farmers who take soil tests in the fall have an opportunity to obtain information to fully understand the meaning of the test, he notes. They have ample time to shop for the best combination of materials to fulfill the test recommendations. Often tests will show some materials will be most effective if applied in the fall or early winter.

The laboratory is now in a position to complete a test for cation exchange capacity for an

ICC Halts Shipments

PORTLAND (UPI)—The Interstate Commerce Commission has ordered a temporary suspension of grain shipments to Pacific Northwest ports due to the backlog of wheat-filled railcars currently chocking Oregon and Washington railway sidings.

Some 8,000 cars are backed up in the area awaiting shipment to overseas points.

The glut is blamed on the later than usual harvest in the wheat areas of Oregon and Washington, and the simultaneous movement of the grain with regular shipments from Montana. The situation is further compounded by bumper crops from southern Idaho.

Spokesmen for the Commodity Credit Corp., a federal agency, and Cargill, Inc., one of the world's largest grain dealers, say the backlog has nothing to do with the recent announced sale of wheat to Russia.

H. C. Herington, traffic manager for Cargill in Portland, said it would be about 15 days before ports in the area would be cleared of the present congestion so that normal shipments from inland points can be resumed.

Calama, in Chile's Atacama Desert, has never recorded any rainfall.

Cheese Gets Joint Boost

Oregon and Wisconsin joined forces last week to give the nationwide October Cheese Festival a send-off in Oregon.

Oregon Dairy Princess Linda Olsen of Coos Bay represented Oregon and Wisconsin's representative was that state's Alice in Dairyland, Miss Marilyn Draeger.

The itinerary for the two dairy products representatives took them to Salem where their official visits included one to the Oregon Department of Agriculture.

In the absence of Director of Agriculture James F. Short the two were greeted by Paul Rowell, chief of the department's agricultural development division, and Kenneth Carl, chief of the dairy and consumer services division.

In welcoming the visitor from Wisconsin, who was in Oregon, of course, to promote Wisconsin cheese, Rowell commented that Oregon dairy producers were glad to join those of her state in featuring quality cheese among all consumers.

He remarked that Oregon's volume of cheese production did not quite equal that of Wisconsin, but pointed to the fine quality of Oregon's cheddar cheeses and reminded of national awards taken by Oregon cheese.

Market	1961		1962		1963	
	Yield	Value	Yield	Value	Yield	Value
1. By Variety						
Ball	93	13	7441	6869	2383	3908
Truck	156	132	2650	2811	718	814
Total	249	265	10091	9680	3101	4722
2. By Grades						
U. S. 1	436	171	8134	7545	2685	3343
U. S. 2	81	18	1425	1227	264	393
U. S. Com'l.			52	8		
Total	517	189	9611	8780	3151	4736
3. By Variety						
Reds	37	21	298	301	113	189
Whites	128	99	880	1008	222	222
Bussels	353	69	6295	7278	2912	3877
Mixed			146	181	72	104
Total	517	189	9621	8788	3117	4792
	(758)	(736)	(716)	(766)	(524)	(496)
Other Outlets						
Seed	1	2	2	4		
Export	1	1	1	1		
Food Processing	14	12	1147	1180	254	4097
Non-Food			359	954	354	114
Stock			262	221	208	143
Livestock Feed	148	51	2642	221	208	143
Total	258	(252)	(292)	(245)	(108)	(513)
TOTAL DISPOSITION	600	600	13616	13118	6066	8706
					1143	3076
					2120	2727

Stronger Organizations Emphasized By Freeman

WASHINGTON (UPI)—Agriculture Secretary Orville L. Freeman wants the Extension Service to put more emphasis on leadership in rural area development and less emphasis on the traditional job of helping farmers grow bigger crops.

The change in the extension program was underlined last week when Freeman announced the appointment of Dr. Lloyd Davis as the new administrator of the Federal Extension Service.

The federal agency, a part of the Agriculture Department, cooperates with the 50 state extension services in educational programs.

In announcing Davis' appointment, Freeman said the Federal Extension Service, through its ties to the states, a strategic role to help people organize for economic growth.

Freeman said the extension service has been shifting its emphasis in this direction. "We expect rural areas development will receive even more emphasis in extension work in the future," he said.

The Agriculture Secretary said the nation's great progress in food production has released agricultural resources for new rural industries, recreation and other enterprises.

Davis, the new Federal Extension Director, had been serving as deputy director since 1962 and as acting director since last June. Dr. E. T. York Jr., the former Federal Extension chief, resigned in June to take a post at the University of Florida.

A native of Tennessee, Davis earlier had held extension jobs at

Cornell University and at the University of Massachusetts.

The Agriculture Department predicted the 1963 honey crop is expected to set a new record of 291,249,000 pounds.

This would be six per cent above the previous record, which was set in 1961. It would be seven per cent bigger than last year's honey crop.

The increase in production this year is due largely to stepped-up productivity in bee colonies. USDA's crop reporting board said the number of colonies on hand at the beginning of the 1963 season was up one per cent from last year. The estimated production per colony this year is up to an average of nearly 52 1/2 pounds, up six per cent from last year.

The Agriculture Department said that both domestic and export markets for honey this year have been stronger than a year ago.

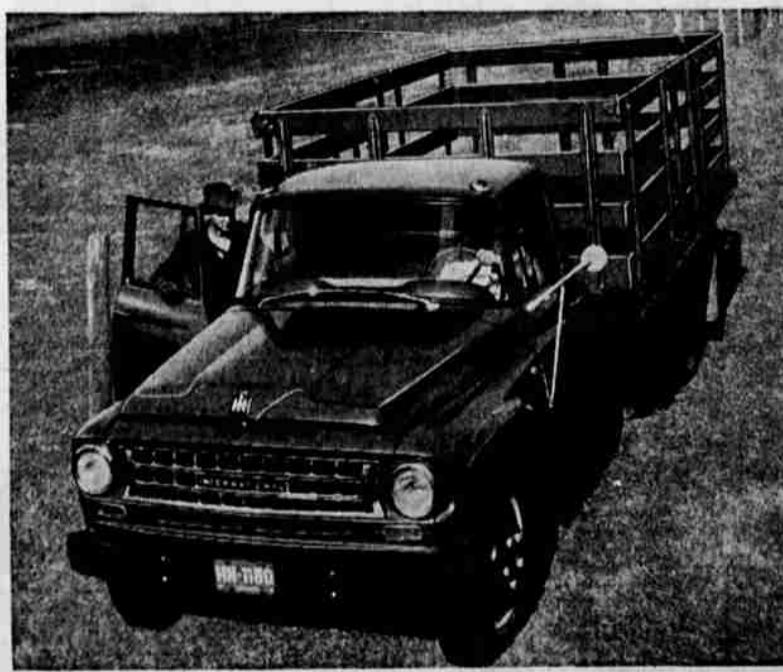
Freeman reported that three countries which export dairy products to the United States have agreed to limit their shipments in 1963 and 1964.

REMEMBER!
when it comes to a truck, see Bob or Juck — Trucks are their business!
JUCKELAND
MOTORS, Inc.
Your International Dealer
11th & Klam. Ph. 2-2581

New performance, new comfort, for town or country

New INTERNATIONAL stake gives you big load space, easy handling, luxury cab!

There's so much that's new in this INTERNATIONAL, you hardly know where to look first. New, stylish designing. New extra-comfort cab, with nice extra luxuries. New 37 amp. alternator; and smoother synchromesh shifting. Clear inside-stake space up to 9 ft. long, 7 ft. wide. GVW ratings up to 15,000 lbs. Welded-steel platform base, with 3/4" oak or hickory shiplap floor. Removable racks have eased edges, rounded corners. One-piece end gate with drop chain optional. For a real multi-purpose hauler, you simply can't beat it. Come in and see!



Ford Trucks Last Longer
on the FARM
See your Farm Truck Headquarters
BALSIGER MOTOR CO.
Main of Esp. Ph. TU 4-3121

FARM LOANS
The PRUDENTIAL Way
NEW 50 year amortization plan with more liberal appraisals and lower annual payments on farms or ranches with gravity, sprinkler or well irrigation in Klamath, Lake, Modoc and Siskiyou Counties. 5 1/2% interest. Very prompt service. No appraisal fee.
BARNHISEL AGENCY
112 So. 8th St. Ph. TU 2-3461

VALLEY PUMP AND EQUIPMENT CO.
COMPLETE PUMPING SERVICE
ALL MAKES REPAIRED CALL TU 4-9776
Now at Merrill-Lakeview Jct. — Next to John Deere

JUCKELAND MOTORS INC.
11th and Klamath Ph. TU 2-2581
INTERNATIONAL TRUCKS WORLD'S MOST COMPLETE LINE