GALLIAN, JOHN J., and DEL J. TRAVELLER. Department of Plant, Soil and Entomological Sciences, University of Idaho, P.O. Box 1827, Twin Falls, Idaho 83303-1827, and Amalgamated Sugar Co., P.O. Box 127, Twin Falls, Idaho 83303-0127. - Idaho rhizomania program developed in response to the state's first disease report.

Rhizomania in sugarbeets was detected for the first time in Idaho on June 17, 1992. Suspected plants from a sugarbeet field near Rupert, Idaho, were sent to the USDA in Salinas, California, and the Texas Agricultural Experiment Station in Bushland, Texas, for enzyme-linked immunosorbent assay (ELISA) for beet necrotic yellow vein virus. Results were positive in three separate sets of samples.

A rhizomania committee was established made up of representatives of all grower associations, Amalgamated Sugar Company, the University of Idaho and the Idaho Department of Agriculture. The committee still functions and it's purpose is to make decisions and implement programs to contain and control the disease. Although we recognize that eradication or containment of the disease indefinitely is not likely, greatly slowing its spread may be feasible. By taking the following steps, the Idaho sugarbeet industry is hoping to significantly delay movement and "buy time" to allow for the development of better control measures, including resistant varieties that are adapted to Idaho.

Delimiting survey: A delimiting survey was initiated within 24 hours after confirmation of the disease. By August 25, 1992, 354 fields (14,740 acres) were sampled in 9 counties. The disease was found in only 27 fields (670 acres). Twenty three of the fields are in Minidoka County near Rupert and four are just over the county line in Cassia County. Diseased fields had widely varying degrees of severity, from complete loss to barely discernable symptoms. Fields identified with the disease are located in a small area, about 7 miles in diameter.

Trained Amalgamated Sugar Company personnel did the sampling and sent them to California or Texas via overnight mail for analysis. Results were sent via fax to the University of Idaho as soon as they were completed and all information was then immediately faxed to the Amalgamated Sugar Company and the Idaho Department of Agriculture. Turnover time from sampling to receipt of results was 36 to 48 hours. Now that the Idaho Department of Agriculture has the capability to conduct ELISA testing, all samples are now being analyzed in Boise.

In late 1992, soil samples were taken from 96 additional fields and a bioassay for presence of the disease was completed on February 12, 1993. Of these, 20 within the rhizomania area tested positive for the disease. All have been in crops other than sugarbeets for 3 to 5 y3ears. These data support the hypothesis that the disease has been here previous to 1992, but expressed itself last year because of the abnormally high temperatures during April and May.

Rhizomania Policy and Procedures: The following policy and procedures were developed by the rhizomania committee and are currently being implemented.

* Rhizomania infested fields are off-limits to unauthorized personnel.
* Anyone entering infested fields wear protective disposable footwear or rubberized boots that are cleaned and sanitized with bleach when exiting.
* Equipment must be cleaned of any attached soil, then cleaned with high pressure hot water cleaning equipment before leaving rhizomania infested fields.
* When a field is confirmed rhizomania positive, the field is permanently posted "Absolutely No Trespassing"
* No beets will be contracted in known rhizomania infested fields or within one mile of known infested fields without a rhizomania negative soil test.

* The disease survey will continue, sampling suspected fields.
* Amalgamated Sugar Company is using the abandoned Schow receiving station within the rhizomania infested area to accommodate only the beets from all known rhizomania infected fields.
* Affected growers and Amalgamated Sugar Company cooperate to insure that all equipment used (trucks, harvesters, scoops, sample bags, pilers, rail cars, tools, etc.) are thoroughly sanitized before being used in non-infected areas.
* The sugarbeet industry will continue an aggressive education campaign for field sanitation in all crops and livestock to prevent further spread of rhizomania.
* The conversion of pilers to common handling and sanitary disposal of tare dirt, an Amalgamated Sugar Company program that had already been underway, has been accelerated to be 75% complete by the 1993 harvest and 100% complete by the 1994 harvest.
* No livestock will be grazed on known rhizomania infested fields in 1993.
* No field testing or research will be conducted in infested fields for 1993 to limit inoculum buildup and disease spread.
* One year of testing of resistant varieties in the Idaho-Oregon variety testing program will be required before seed can be marketed in Idaho.

Communication

* Numerous meetings were held with the sugarbeet industry to describe the disease and the program underway
* A newsletter was distributed describing the disease and the measures being taken in Idaho. Included in the 2000 recipients were growers, agribusiness, USDA and university researchers, and Extension personnel both in Idaho and other sugarbeet growing states.
* A meeting was held in Portland, Oregon, with 16 USDA, university, and Extension workers from other states where sugarbeets are grown to describe the Idaho program and assure them of the safety of Idaho agricultural products.
* Education meetings were held with the potato and bean industries to inform them of the problem and how the spread of the disease could be minimized within Idaho and to other states.
* Eleven scientists and sugar company personnel from Minnesota, North Dakota, Michigan and Ohio were hosted for a two day discussion and tour of the rhizomania affected area of Idaho.

Other crops

Although the disease does not affect any other crop grown in Idaho, there has been considerable concern that soil movement with other crops grown on rhizomania infested fields, particularly potatoes and beans, could spread the disease to other areas of Idaho and to other states where sugarbeets are grown. Minnesota, North Dakota and Michigan had been considering a quarantine of all Idaho potato and bean seed because much of our seed is planted in those states in the rotation with sugarbeets and posed a threat of spread into their areas. Michigan has imposed a quarantine against Idaho products coming from the rhizomania infested area, requiring that bean seed have a maximum of 0.05% soil associated with the seed. The Idaho bean industry agrees that requirements of the quarantine can be met.

The Western Bean Dealers Association developed the following policy in September, 1992:

* Bean seed should not be produced in a known rhizomania infected field or within a one mile radius of a known infected field.

* Current seed production (1992 crop) grown within the one mile boundary of a known rhizomania infected field should not be used for seed.
* Tare dirt brought in with bean crops from fields within the one mile boundary should be kept separate.

The Idaho Crop Improvement Association, the agency responsible for seed certification, has changed their certification standards to include the following:

* Inert matter (dirt and rocks) shall be reduced from the current 0.5% down to 0.1% in all bean seed.
* Bean seed may not be entered for certification on known rhizomania infected fields.

Response to the program has been positive. Minnesota and North Dakota do not feel that a quarantine is necessary against Idaho. There is now a general opinion that Idaho bean seed is probably more safe to plant than that from other rhizomania affected states where a vigorous rhizomania identification program has not been followed.

Future of Rhizomania in Idaho

The outbreak of rhizomania was probably a result of the climatic conditions experienced in 1992. It was an abnormally warm year during sugarbeet planting and early development of the crop. For example, the 4-inch average soil temperature for May, 1992, at Kimberly was 62.1 F compared with the 25 year average of 56.5 F. In addition, the high temperatures coupled with winter drought conditions required that many growers irrigate more frequently than normal in order to establish and maintain the crop during its early development. The resulting higher soil temperatures and higher soil moisture than normal provided the conditions favorable for the disease.

Observations and data strongly support the hypothesis that the disease has been in Idaho for at least several years. If so, then our climate is probably cool enough that we will only experience significant expression of the disease in some years. Reduced disease pressure may allow us to better manage rhizomania than can be accomplished in areas where the climate is warmer and severe losses will occur whenever it is present.

The Rhizomania Committee continues to meet as necessary to meet the challenge of dealing with the disease. One favorable result of the problem is that it has focused attention on the concept that agriculture is a dynamic industry, and no matter how unrelated various aspects may seem, we are interdependent. Other Idaho agricultural industries recognize that maintaining a viable sugarbeet industry is in the best interest of all Idaho agriculture.