HB

544

PUBLIC OPINION MESSAGE

DEAR: REPRESENTATIVE DAVIDSON

NAME: ROBERT & JESSICA BITTNER
TITLE:
ADDRESS: 366 SWEREN STREET
CITY: FAIRBANKS ZIP: 99712
PHONE: 488-6529
BILL NO: HB 544
SUBJECT: APPROP: SEED POTATO RESEARCH
MESSAGE: AS FAIRBANKS FARMERS AND EX-PRESIDENT OF FARMERS MARKET, WE ARE CONCERNED WITH CONTROL OF NATIVE AND IMPORTED PLANT DISEASES. WE SUPPORT HB 544, RESEARCH ON DISEASE FREE SEED POTATOES. A LAND GRANT COLLEGE UNIVERSITY OF ALASKA SHOULD BE MANDATED TO SPONSOR THIS AGRICULTURAL RESEARCH. THANK YOU. EOM/CLS

POMID: ,7093450
DATE: 92/03/12
TIME: 09:34:50
LIONAME: FAIRBANKS LIO

COPIES: REPRESENTATIVES

CARNEY
FINKELSTEIN
HUDSON
IVAN
LEMAN
LINCOLN
MOYER
ZAWACKI

Hi Cliff Davidson

HB 544
Research for Disease-free Certification of Potatoes

The following bill calls for $375,000 to be spent on a major research project to develop virus and disease-free potatoes, in order that Alaska may continue to produce healthy potatoes for local and export market.

The Potato is a proven crop in Alaska, and a number of farmers are looking for ways of expanding their markets throughout Alaska, and establishing a thriving export market. This can be a solid revenue source, if we can insure the reputation of our product. There are diseases, such as Bacterial Ring Rot, for which there is no tolerance in the certification standards. These diseases need to be identified, methods of disease-free cultivation established, and varieties developed that are disease resistant.

On the cutting edge of world research, there are some very exciting research developments in bioengineering of disease resistant plants. Techniques are being developed to insert disease-resistant genes into a high-yielding crop cultivar. There are some fascinationg developments in boicontrol, using beneficial microorganisms to kill disease organisms. This type of control would avoid some of the poisonous fungicides.

The University of Alaska at Fairbanks has begun research in this direction, and would be in position to have a team of plant pathologists, genetic engineer, tissue culturist, biocontrol specialist, and student assistants come up with an excellent program. As a land-grant university, it has the obligation to conduct research that will better Alaskan agriculture.

There is only one suggestion I would offer, as a grower of many different crops. I would included in this bill a specification that 25% of the research be spent on general disease diagnosis and control analysis of current problems that arise on any crop on Alaskan farms.

This bill will be reviewed by the House Natural Resources Committee on March 15. Please have your comments into the Legislative Information Office, 452-4448, addressed to the Committee members and your represesentatives before that date.

Thank you,

Jessica Bittner
South Slope Greenhouses
366 Sweren St. Fairbanks, Ak. 99712

November 19, 1991
Jessica Bittner
366 Sweren St.
Fairbanks.99712

Re: Plant Disease Diagnostician
Fairbanks, Alaska

There is a critical need for a plant disease specialist to work in Fairbanks. We have native diseases that are tough as only winter survivors can be, and there are unlimited new species being introduced under our noses in shipments of seeds, rooted cuttings, nursery stock, bulbs, potato stock.

My husband and I have operated a truck farm and greenhouse range for ten years. We have enjoyed the long days of summer, and the surprisingly wide variety of vegetables, flowers, and nursery stock that thrive in this climate. Nonetheless, we have been struck disastrously by water molds, greenhouse and field fungi and bacteria. We asked for help from the Cooperative Extension and the University, but these agencies, although sympathetic, had not the time nor the expertise to help us with identification, nor the correct practices to deal properly with these problems. The necessary information came from sales representatives from the Northwest, hit-or-miss search through trade journals, and finally taking time away from farming to attend Plant Pathology courses.

As retail growers, we are frequently asked about plant problems. Information for insect control is fairly accessible, but microorganisms remain much more of a mystery. Because fungicides are so toxic, control measures need to stress clean up, clean stock, ventilation, etc., the less toxic copper and sulfur compounds, and the new field of biological control (microorganism antagonism, suppressive soils, etc.).

If Alaska is to have a future in Agriculture, particularly if we intend to export potatoes or certified seed of any variety, we will need to institute certification programs. Precise knowledge of diseases must be available to any grower. Our isolation can be an advantage, limiting disease spread, but we can ruin the advantage of virgin lands through ignorance.

The job of disease diagnostician, accompanied by a small lab for culturing and identification, could be under the aegis of either the University's Plant Pathology section or the the Cooperative Extension Service, whichever agency would commit to supporting Alaska's agriculture, and obtaining the necessary funding.

There are three great elements of American Agriculture -the Farmers, the Cooperative Extension, and the University. The more we can work together, the greater we can be.

Alaska State Legislature
Representative Niilo Koponen

Pouch V
Juneau, Alaska 99811
(907) 465-4992

House District 21

119 N. Cushman, Suite 207
Fairbanks, Alaska 99701
(907) 456-8172

M E M O R A N D U M

TO: Representative Cliff Davidson, Co-Chair Resources
Representative Georgianna Lincoln, Co-Chair Resources

FROM: Representative Niilo Koponen

RE: Additional Information Requested of HB 544

DATE: March 16, 1992

Because research is laborious and requires repeated trials and probing, and because there are hundreds of diseases afflicting potatoes, Dr. McBeath has delineated and prioritized four separate potato diseases that will require up to 10 years of research. The four diseases, in order of importance, are 1) Bacterial Ring Rot (BRR) 2) Bacterial Scab 3) Black Scurf 4) Soft Rot.

The research positions proposed will also allow for certification and diagnosis of potatoes under research. Each associate, assistant and aide will rotate the responsibilities of certification and diagnosis of potatoes. Currently, the Department of Natural Resources, Division of Agriculture/Plant Materials Center employs one diagnostician/certificatory of potatoes and other agriculture for the entire state. This person is expected to locate (visually) diseased seed potatoes entering Alaska. As we don't have a research lab for diagnosing diseased seed potatoes, it is necessary for this employee to send samples of suspicious potatoes to labs outside, each test averaging $100.00. It is estimated that the State of Alaska Department of Natural Resources spends thousands of dollars each year on outside diagnosis labs for diseased potato research alone. It will be necessary to employ an additional diagnostician/certificatory when research is completed, especially after potato production increases.

Dr. McBeath has attempted to attain funding from the Alaska Science & Technology Institute three separate times, and has been routinely denied as ASTI believes agriculture in Alaska is a fruitless business. Also, ASTI prefers to fund research that is considered

applicable, not basic (as they consider Dr. McBeath's proposed research). She has also sought United States Division of Agriculture-State Cooperative Research Program funding (USDA-SCRP) for three consecutive years, but was denied because Alaska does not have a Federal USDA-SCRP consulate. Also, they don't fund states such as Alaska, whom they don't consider to be potato productive.

WSJ 3/13

You Say Potato, I Say Vital Supply Of Plant Germplasm

At the Potato Center in Peru, Old Varieties Are Guarded And New Ones Invented

By Thomas Kamm
Staff Reporter of The Wall Street Journal

LIMA, Peru—Of the many episodes of high drama in the annals of seed banks, not least was what happened at the Peruvian village of Huancapi, high in the Andes.

In 1984, groups of armed men swept through the town, murdering dozens of its inhabitants. The survivors fled, abandoning their potato crop. The Huancapi potatoes—diverse, resistant to pests and disease, and delicious—were a genetic treasure. Now they would be lost forever, and with it another increment of the world's biodiversity.

Four years later, when the villagers of Huancapi returned to their abandoned farms and wrecked homes, they contacted the Centro Internacional de la Papa (CIP), or International Potato Center here. Agents of the CIP earlier had collected seeds from the village and stored them away as part of its world potato collection (300 different species, 4,500 different varieties). They were able to restore many of Huancapi's unique potatoes to cultivation.

When we last visited the CIP 15 years ago, the center was busy preparing for just such a genetic crisis. Carlos Ochoa, potato hunter, was trekking all over South America at considerable personal risk to gather as many potato varieties as possible before they were lost to disease, development or desertification.

'Catch Him Alive!'

On one expedition, Mr. Ochoa was collecting wild potatoes in the mountains of Northern Peru when he says he suddenly heard someone scream from above: "Catch him alive!" Mr. Ochoa fired shots into the air. The attackers responded by rolling rocks down the mountain, but Mr. Ochoa managed to hide in a trench and then ran away. "They must have thought I was a treasure hunter," says Mr. Ochoa. "And they were right. Potatoes are much more precious than a jewel."

It is the same spirit that has animated many of history's seed bank guardians, from the swashbuckling plant explorers of the 1920s to the heroic scientists of Leningrad's Institute of Plant Industry—who, under Hitler's siege, starved to death one by one rather than eat any of the samples of rice, peas, corn and wheat that guaranteed their countrymen's postwar food supply.

By now the CIP has collected most of the known potato species (three of them, or about 1% of the world's potatoes, are named after Mr. Ochoa), and the center is turning its attention to the production of new strains to fend off the threat of large-scale famine as the globe's population increases.

A Potato That Fights Back

Perhaps the most exciting potato in the CIP at the moment is the "hairy potato." By cross-breeding domestic varieties with a wild Bolivian potato species called *Solanum berthaultii*, which is inedible and has hairy foliage, the CIP—working jointly with Cornell University—has come up with an edible potato that is resistant to all major potato pests and costs less to produce. "Insects get trapped in the hair and die," explains Dr. Ali Golmirzaie, a geneticist here who works on the project. "The hairy potato saves costs by reducing the need for pesticides."

"You should make clear that the hair isn't on the potatoes," says K.V. Raman, a CIP entomologist. "It's on the foliage."

While it works within the Consultative

Please Turn to Page A6, Column 1

Alaska State Legislature

Representative Niilo Koponen

House District 21

Pouch V
Juneau, Alaska 99811
(907) 465-4992

119 N. Cushman, Suite 207
Fairbanks, Alaska 99701
(907) 456-8172

Position Paper for SSHB 544

Currently, Alaska remains virus free, due to strict interception of those in the Division of Agriculture/Plant Materials Center, Potato Disease Control Program. However, afflicted with a bacterial disease that is known to have existed in America since 1931, Alaska's potato farms are becoming hosts of Bacterial Ring Rot (BRR). This highly contagious disease makes the potato inedible and unsightly and is rated zero-tolerance. In other words, if one plant in a field of seed potatoes is found to have the disease, the entire field cannot be sold. To destroy the bacteria, highly toxic chemical herbicides are used that are environmentally destructive and costly to boot. Aside from having to rid the field of every potato for sterilization, it is necessary to grow grasses in the field up to four years before the field can be guaranteed BRR-free.

States such as Washington and Idaho are currently experiencing difficulty with vending their seed-potatoes due to buyers' fear of purchasing either viral or bacterial infected seed potatoes. Idaho has been experiencing a 25% rejection rate of their seed-potatoes.

Made illegal in the United States in 1937, BRR has been and continues to be the catalyst of many law-suits and unnecessary expenditures of time and money. If Alaska could guarantee it's seed-potatoes to be free of BRR and other diseases, the result would be a highly lucrative renewable resource.

The recently discovered fungus 'Trichoderma' has proven to be effective in destroying the fungus "Black Scurf", infecting potatoes and other tubers. Further research of the fungus may provide answers to an absolute cure for BRR and other diseases.

Alaska State Legislature

Representative Niilo Koponen

House District 21

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Juneau, Alaska 99811
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Fairbanks, Alaska 99701
(907) 456-8172

M E M O R A N D U M

TO: Rep. Cliff Davidson, Co-Chair Resources
Rep. Georgianna Lincoln, Co-Chair Resources

FROM: Representative Niilo Koponen (NK)

RE: Amending SSHB 544

DATE: March 12, 1992

Please amend Line 1 to read "An Act making a special appropriation to the Department of Natural Resources to fund research at the University of Alaska into the...". Additionally, the same changes must be done to Line 5, Section 1 "The sum of $375,000 is appropriated from the general fund to the Department of Natural Resources to fund research at the University of Alaska into the...". Thank you for your consideration.

DIAGNOSES AND CONTROL OF POTATO DISEASES IN ALASKA

Potatoes grow and produce well in Alaska; they are the most important agricultural crop in the state. One of the major advantages the Alaska potato industry has, is the absence of potato virus disease in the state. Growers can produce virus-free seed potatoes easily and cheaply.

The world seed potato market is valued at $5 billion per year. Virus diseases are the most serious problems of seed potato industries in the US, Canada and other countries. For instance, Shepordy, the potato favored by McDonalds, Wendy's, and other fast-food chains for making french fries, is grown extensively in the Pacific Northwest and Canada. Potato growers in the State of Washington now are planning to stop producing Shepordy seed potatoes due to the prevalence of the virus diseases and the high costs of disease control. Growers are looking for new sources of seed potatoes.

The virus problems in Washington and other states would provide an opportunity for the Alaska potato industry to develop and market virus-free seed potatoes, if the bacterial ring rot (BRR) problem in the state was solved. In 1990, over 200 acres of potatoes in Alaska were not harvested due to BRR, representing 20 percent of the total acreage in the state. This disease causes rot in potatoes and makes them inedible. This disease is highly contagious and very hard to control; it is spread through diseased tubers, plants and through contaminated tools, storage bins, sacks, clothing, etc.

Bacterial ring rot is quarantined in Europe. It is the only disease in US and Canada with a "zero tolerance" regulation: the entire field of seed potatoes is rejected based on a single find of the diseased plant. To potato seed growers, BRR usually means loss of the crop and possible legal entanglement. This disease is extremely difficult to diagnose through visual observation, because diseased plants may appear to be healthy under certain conditions. For reliable diagnosis, highly sophisticated laboratory tests are essential. Unless proper diagnosis and adequate control are established, there is no future for the development of Alaska potatoes industry.

In recognition of this serious situation, the Alaska Farmer/Stock Growers' Association unanimously passed resolutions in 1991 and 1992 to support the establishment of a Potato Station. The functions of this station would include diagnoses of bacterial ring rot, scab (another major disease on potatoes in the state), and other diseases on seed potatoes as well as research on disease control, and improvement of germplasms through biotechnology.

An increment from the State Legislature would establish a diagnostic clinic at UAF for regular tests of potato diseases. The causes of bacterial ring rot and other important potato diseases would be investigated. Research would focus on non-chemical means of disease control such as biological control and plant transformation. The increment would fund 3.0 FTE research associates, 2.0 FTE research assistants, pool for lab assistants, equipment, supplies and travel.

The increment will cost $370,000.

APPROACHES:

1) Bacterial Ring Rot Diagnosis

A diagnostic clinic will be established on the Fairbanks campus. A close working relationship will be established among the PI, diagnostician, and manager of the Potato Program, at the Plant Materials Center for the coordination of potato sampling methods and laboratory tests. A vigorous regimen of diagnostic tests--such as indirect fluorescent antibody stain, enzyme-linked immunosorbent assay (ELISA), gel diffusion tests, Gram stain and DNA fingerprinting--will be developed and implemented. Samples will be tested for BRR as well as viruses. Negative results from these diagnostic tests will provide Alaska seed growers with evidence they require to market potatoes in and out of state. Diagnostic results also will make their case more defensible in legal disputes.

2) Potato Disease Research

Research will be designed to learn about the cause of bacterial ring rot, scab, soft rot, black scurf, and other potato diseases. How do these pathogens cause diseases? What strains are primary? and what differences are there between Alaska pathogens and those of other states? This research will complement the disease diagnosis to improve its accuracy. Findings on weakness of pathogens will also be of assistance in the development of disease control. Research priority will be given to BRR and potato scab, because there is no effective method to control or manage them. Scab is the major cause of unmarketable potatoes in Alaska.

3) Potato Disease Control and Germplasm Improvement

Because diseases such as bacterial ring rot and scab do not respond to conventional means of control (chemical control), non-traditional methods of biological control and plant transformation are the focus of this proposal. Natural enemies of bacterial ring rot and scab will be found, manipulated, and tested for their ability in protecting plants and tubers against these diseases. Anti-bacterial genes from exotic sources (silkworm, bacteria, fungi, etc.) will be inserted into potato plants using genetic engineering and plant tissue culture techniques. Disease resistant properties of the transgenic plant will be tested and selected. Other useful characteristics e.g., frost resistance, early maturing, etc. can also be introduced into potato plants for the purpose of germplasm improvement.

EQUIPMENT JUSTIFICATION

A refrigerated high speed centrifuge, UV fluorescent microscope, UV spectrophotometer, ELISA plate reader, incubators, shaker, electrophoresis apparatus, gel dryer, etc. are needed to equip the diagnostic clinic. A potato planter, a hiller and a digger are needed for research conducted in the field.

BUDGET (yearly):

Personnel (salary + benefits):

Research Associate (diagnosis)	$52,000
Research Associate (plant genetic engineering)	$52,000
Research Associate (biological control	$52,000
Research Assistant (plant tissue culture)	$39,000
Research Assistant (potato pathology)	$39,000
2 Laboratory Aides, @ $13,000 each (students)	$26,000
2 Agricultural Helpers, @ $6,500 each (students)	$13,000
Equipment	$60,000
Materials	$25,000
Travel	$12,000
Total	$370,000

SALCHA FARMS
P.O.BOX 0019
SALCHA.AK.99714

TO
NILLO KAPONEN
JUNEAU, ALASKA

20 FEB 1992

DEAR SIR; IT HAS BEEN AT LEAST 4 YEARS SINCE WE HAD A RING ROT INVASION. AT THAT TIME CANADA WAS WELL ON ITS WAY TO SET UP TESTING STIATIONS. I'M AFRAID THAT WE ARE TO LATE TO BREAK INTO AN OVERSEAS MARKET. POSSIBLY IN THE FUTURE RUSSIA MAY BE OPEN TO OUR POTATO SEED PRODUCTION. I KNOW WE HAVE SEVERAL VARIETIES THAT WOULD BE PRODUCTIVE IN THEIR LATITUDE.

BILL CAMPBELL OF THE ALASKA HAS DONE AN OUTSTANDING JOB OF INSPECTION AND SUPPLYING US WITH DISEASE FREE PLANTLETS. I AM ENCLOSING A COPY OF A LETTER HE WROTE TO MR SIBERT LAST YEAR WHEN WE WERE ATTEMPTING TO FUND JENNIFERS PROPOSAL THROUGH A GRANT FROM THE SCIENCE AND TECHNOLOGY FOUNDATION. HE EXPLAINS THE PROBLEM FROM THE INSPECTORS VIEWPOINT.

SEED POTATO GROWERS LOCATED IN THE INTERIOR HAVE SEVERAL ADVANTAGES, FIRST WE HAVE LARGE ACREAGES AVAILABLE THAT HAVE NEVER BEEN PLANTED TO POTATOES. THEREFORE NEVER EXPOSED TO SOIL-BOURNE DISEASES. SECONDLY OUR DRY COLD MITIGATES THE CARRY-OVER OF A NUMBER OF POTATO DISEASES. OUR DISADVANTAGES,IN ADDITION TO THE MORE OBVIOUS CLIMATIC LIMITATION,IS THAT DISEASES SUCH AS BACTERIAL RING ROT DO NOT DEVELOP TO A RECOGNIZABLE POINT DURING MOST SEASONS. THEREFORE A GROWER RAISING SEED IN THE INTERIOR AND CERTIFIEING SAME TO BE DISEASE FREE IS TEMPTING FATE. WITH THIS IN MIND AND IN ANTICIPATION OF FUTURE FOREIGN MARKETS OPENING UP I APPROACHED DR.JAMES DREW AND DR. JENIFER MCBEATH WITH THE PROBLEM,HOPING THAT A SERVICE STATION FOR SEED GROWERS COULD BE ESTABLISHED THAT WOULD GIVE CREDENCE TO OUR CERTIFICATION.

YOURS TRULY

KEITH V PRICE

Niko Kapsner

November 19, 1991
Jessica Bittner
366 Sweren St.
Fairbanks.99712

Re: Plant Disease Diagnostician
Fairbanks, Alaska

There is a critical need for a plant disease specialist to work in Fairbanks. We have native diseases that are tough as only winter survivors can be, and there are unlimited new species being introduced under our noses in shipments of seeds, rooted cuttings, nursery stock, bulbs, potato stock.

My husband and I have operated a truck farm and greenhouse range for ten years. We have enjoyed the long days of summer, and the surprisingly wide variety of vegetables, flowers, and nursery stock that thrive in this climate. Nonetheless, we have been struck disastrously by water molds, greenhouse and field fungi and bacteria. We asked for help from the Cooperative Extension and the University, but these agencies, although sympathetic, had not the time nor the expertise to help us with identification, nor the correct practices to deal properly with these problems. The necessary information came from sales representatives from the Northwest, hit-or-miss search through trade journals, and finally taking time away from farming to attend Plant Pathology courses.

As retail growers, we are frequently asked about plant problems. Information for insect control is fairly accessible, but microorganisms remain much more of a mystery. Because fungicides are so toxic, control measures need to stress clean up, clean stock, ventilation, etc., the less toxic copper and sulfur compounds, and the new field of biological control (microorganism antagonism, suppressive soils, etc,).

If Alaska is to have a future in Agriculture, particularly if we intend to export potatoes or certified seed of any variety, we will need to institute certification programs. Precise knowledge of diseases must be available to any grower. Our isolation can be an advantage, limiting disease spread, but we can ruin the advantage of virgin lands through ignorance.

The job of disease diagnostician, accompanied by a small lab for culturing and identification, could be under the aegis of either the University's Plant Pathology section or the the Cooperative Extension Service, whichever agency would commit to supporting Alaska's agriculture, and obtaining the necessary funding.

There are three great elements of American Agriculture -the Farmers, the Cooperative Extension, and the University. The more we can work together, the greater we can be.

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF AGRICULTURE/PLANT MATERIALS CENTER
...PRACTICAL PLANT TECHNOLOGY FOR THE NORTH

HC 02, BOX 7440
PALMER, ALASKA 99645
PHONE: (907) 745-4469

August 7, 1991

Dr. John Sibert
Alaska Science & Technology
Institute
550 W 7th Avenue Suite 360
Anchorage AK 99501-3555

Dear Dr. Sibert:

The disease Bacterial Ring Rot (BRR) of potatoes is a major concern to the North American industry. It is one of the most serious diseases of potato because of the ease and rapidity with which it can spread. The occurrence of this disease in potatoes grown in North America is often cited as the principal reason fresh potatoes are prohibited entry into Europe and Asia. Regions where the disease is said not to occur do not want this problem introduced, and, thus the disease is a trade barrier.

Ring Rot was first reported in North America in 1931. Potato certification agencies quickly adopted a zero tolerance for the disease in seed potato fields believing that this would lead to the elimination of this disease, but Ring Rot is still a major cause of the rejection of seed fields. Certification agencies and seed growers have been the targets of multi-million dollar law suits over this disease during the last several years.

Seed potato inspectors look for symptoms of the disease while walking seed fields. The symptoms that the inspectors are seeking can be masked. Symptom expression is affected by various factors. The cultivar will have its own reaction dictated by its genetic makeup and its physiological age. Symptom expression is affected by the environment due to variations in air and soil temperature, soil moisture and fertility, and the length of the photo period. The innoculum concentration in an infected seed piece will also affect symptom expression. Typically, 25% of the plants derived from innoculated tubers used in research plots, develop symptoms under ideal conditions. An acre planted to potatoes has a population near 15,000 plants. If there is a 1% infection level with 25% expression rate, only 38 plants will be showing symptoms. The dilemma facing the field inspector is obvious, but could be greatly improved if a systematic sampling procedure was coupled with a detection method independent of symptom expression. The Canadian Certified Seed Program has begun to test seed lots for Ring Rot with such a system, but the serological detection methods they are using are expensive and the probability of erroneous conclusions is high.

The detection method proposed by Dr. Jenifer McBeath would not necessarily reduce the cost of testing, but could reduce the probability of error to more acceptable levels.

The project proposed by Dr. McBeath would directly and immediately benefit Alaska's potato growers. The fact that Ring Rot occurs in Alaska reduces the potential of exporting seed potatoes to near zero, even though the disease is not presently found in the seed. Pin pointing the diseased lots would help identify probable innoculum sources and aid in its elimination. There is no facility within Alaska that has the capability to sero-diagnose suspect plants. The most exact methods need to be used because of the economic implications of the disease. Suspect material is sent out of state for confirmation, but this takes a week or more. Funding of this proposal would give Alaska's potato growers a readily available diagnostic service.

Sincerely,

William L Campbell

William L. Campbell
Potato Disease Control Program

WLC/ds

cc: Dr. Jenifer McBeath
Keith Price
Paul Huppert

Fairbanks North Star Borough

25th Silver Anniversary

February 25, 1992

Hon. Nilo Koponen
AK House of Representatives
State Capitol Building
PO Box V
Juneau, AK 99811

Dear Representative Koponen:

The Fairbanks North Star Borough Agricultural Commission supports your bill to provide funding for potato disease research by the University of Alaska Agriculture and Forestry Experiment Station.

Table stock potatoes have historically been a successful and reliable crop for Interior Alaska, and the seed potato industry has great potential for expansion. The increasing prevalence of certain potato diseases in traditional seed-producing regions of the lower 48 represents an opportunity for growers in our state with regard to the export market. Since many of these diseases persist in the soil for years, there will be a growing shortage of "clean" tubers for both table stock producers as well as certified seed farmers throughout the Northwest. However, this "niche" market can only be exploited if Alaskans can keep our potato growing areas free of these diseases.

Seed potatoes currently imported into our state constitute a grave threat to a potential export industry built on disease-free certification. Specifically, while no outbreaks of viral potato diseases have been documented in our state, several instances of bacterial ring rot disease have been identified, which led to the total loss of income from those fields to the producer. This disease can be extremely difficult to identify in the field and requires specialized laboratory equipment to verify suspected outbreaks.

We must isolate and prevent any spread of this disease in our limited agricultural land base. A potato testing facility is needed to rigorously inspect incoming seed as well as to certify an export crop. This type of testing should not be conducted at the Palmer Plant Materials Center because of the danger of contaminating the foundation seed potato propagation program currently conducted there.

809 Pioneer Road · P.O. Box 1267 · Fairbanks, Alaska 99707 · 907/452-4761

Due to the extemely regional nature of this project, it has been unable to Attract outside (Federal) funding. In the absence of established commodity growers' associations in this state (which are renowned for their lobbying influence with their respective lower 48 Congressional delegations) the FNSB Agricultural Commission believes that it is the State government's role to fund projects such as this which have immediate relevance to Alaskan agriculture. Self-sufficiency and "value-added products" are the espoused goals for our policies regarding natural resources: this project is an attempt to fulfill them for the agricultual sector of our economy.

In addition, a project of this type points out the need for our State to establish a permanent source of funding for Alaska-specific (and hence nationally non-competitive) ag research.

Sincerely,

Gena M. Delucchi

Gena M. Delucchi, Chair
FNSB Agricultural Commission

cc: FNSB Mayor Sampson
Dr. Jennifer McBeath
AK Farmers and Stockgrowers

Alaska Farmers & Stockgrowers

Association, Inc.

"THE ALASKA FARM BUREAU"

February 20, 1992

To: Representative Niilo Koponen
House of Representatives
P.O. Box V
Juneau, Alaska 99811

From: Robert Franklin, President
Alaska Farmers and Stockgrowers Association
P.O. Box 75184
Fairbanks, Alaska 99707

Dear Representative Koponen,

We understand you will be introducing a bill to establish a state-wide bacterial ring rot inspection station, located in the interior, to be used in Alaska seed potato production. Equipment used for ring rot detection will also detect other bacterial diseases. The resolution platform of the AF/SA calls for strong support of this measure. We will support you, and the bill you introduce to the utmost.

I'm sure you know that bacterial ring rot is a serious problem in many agricultural areas of the lower 48 states. Alaska, on the other hand, has no significant infestation of this bacteria. It is in the best interest of the Alaskan potato producers to maintain disease-free seed in order to prevent this bacteria from posing a major threat to crops. An inspection station such as the one you are proposing will provide the essential screening needed to eliminate contaminated seed from entering Alaska and to locate any sources of the bacteria which may already exist here.

It is extremely important that this legislation be implemented as quickly as possible in order to protect Alaskan crops before ring rot infestation occurs. We trust you will introduce legislation as soon as possible. Passage of a bill establishing this inspection station during this legislative session would be highly desirably.

Sincerely,

Robert Franklin

Robert Franklin

Rep. Kopsonen

January 10, 1992

Dear Jay:

I would like you to consider the following important issues for the potato industry in Alaska.

The potato has been profitably grown on a commercial scale in Alaska since the turn of the century. The annual cash value of the Alaskan potato crop has exceeded $3,000,000 in recent years and has averaged well over $2,000,000 through the last decade. Alaskan potatoes now consistently command more than 60% of the in-state fresh market and are occasionally exported to Seattle. Thus, they compete quite successfully in both quality and price with imports from other states.

The commercial stability of this crop is due largely to Alaska's relative isolation from diseases and pests. These maladies require expensive chemical control in other potato growing areas. Alaska is by no means immune from the importation of potato diseases, however. At times, significant quantities of the local crop have been left unharvested because of disease problems typically acquired through purchase of infected seed from lower 48 sources. Keeping disease problems at a minimum is thus a key factor in keeping the industry commercially profitable. This effort starts with a source of seed potatoes free of diseases, coupled with a seed certification program that minimizes reinfection during seed production. The next step requires growers to incorporate the clean seed and necessary sanitation practices into their management scheme.

The Potato Disease Control Program operated by the Alaska Plant Materials Center has given the Alaskan growers the opportunity to do just this. The program is basic to the health of the potato industry and is one of the few state successes in it's effort to stimulate agriculture in Alaska. It has been patterned after similar programs in the lower 48 and Canada, but it has been designed specifically to fit Alaska's needs. Laboratory-grown, disease-free seed potatoes produced by the PMC have enabled farmers to replace their diseased seed and clean up their farms without relying on out-of-state imports. On-farm testing of new varieties can now be accomplished without the fear of introducing diseases not now found in Alaska. This on-farm testing has clearly demonstrated the potential of producing russet and red-skinned, as well as white, varieties in Alaska that can compete with the imported potatoes now filling these market niches.

The Potato Disease Control Program further assists the industry through monitoring the health of the certified seed crop and the table potatoes, diagnosing diseased plants, recommending control strategies, and through various demonstration projects designed for educational value. The close ties the industry has to the PMC have come about largely due to the quick response the program has given to individual grower problems.

The foundation the industry requires for future growth depends upon this type of government support. Already we have seen progress in disease loss reduction, increase of finished product quality, and inroads to niche markets with russet and red potatoes. Long-term needs include the continuation of programs that have clearly demonstrated their value. It is important the technical personnel that the industry relies on are able to keep current with innovative developments through attending scientific meetings and training programs outside the state.

Technological innovations can be adapted to Alaskan conditions only if someone with our needs in mind attends these meetings. The industry needs to identify and reduce production costs which would enhance the possibility of producing potatoes for processing. Foreign markets need to be explored, especially for seed potatoes, to utilize our advantages of disease freedom and geographic location.

Thank you.

Sincerely,

Paul Huppert

cc: Ron Larson

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Researcher gains ground in plant war

By JOSE LAMBIET
Staff Writer

A general in what she calls "microbial warfare," Jenifer McBeath throws her hordes of good fungus against bands of bad fungus that cause diseases in plants.

In her laboratory, the outcome of the battles—fought at a scale visible only through electronic microscopes—almost always goes the way of the good fungus, which she discovered five years ago within Alaska's frozen soil.

Yet McBeath, a University of Alaska Fairbanks researcher, said she is still a few years away from winning her war.

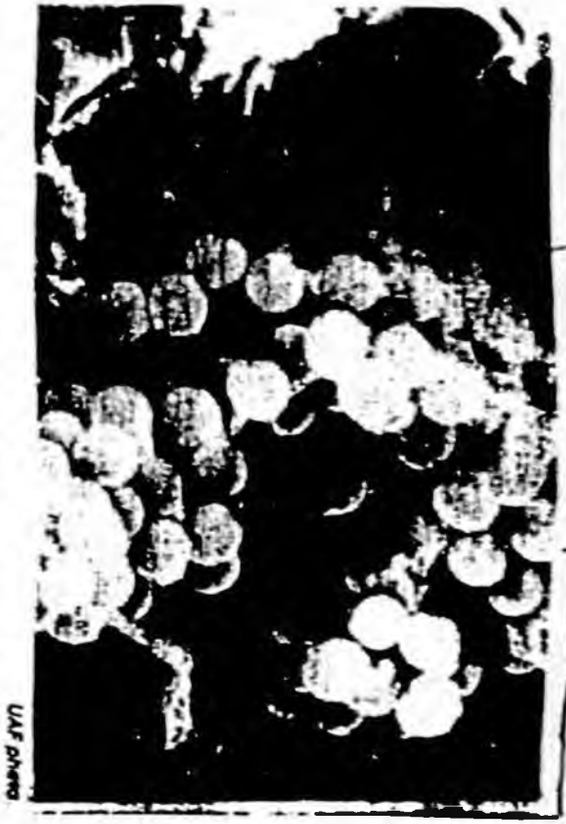
Once she does, the state's farmers and casual gardeners alike will be able to fight fungous diseases in their plants and crops with natural means instead of chemical ones.

"Chemical fungicides are a health hazard," said the researcher. "They pollute the environment and contaminate the water. The fungus I discovered is a natural way to fight disease in plants grown commercially on farms or in greenhouses."

McBeath said she still has several years of testing to conduct before the product can be commercialized, but four multi-national companies have recently signed a confidential agreement with UAF to test the fungus in their laboratories and on fields.

"When people think of Alaska's resources, they think about gold, oil and game," McBeath said. "They don't know a real treasure in the state is the microbial life in Alaska's soil, such as these fungi. We have some unique, untapped ele-

(See FUNGUS, Page A-7)



CLOSEUP—The fungus Trichoderma as viewed through an electron microscope. Early tests at UAF show that the fungus may be as effective as chemical agents now used to fight plant disease.

UAF photo

FUNGUS: UAF research

(Continued from Page A-1)
ments in our ground."

An associate professor in plant pathology and biotechnology at the UAF School of Agriculture, McBeath discovered in 1986 a particularly strong strain of microbial mold that fed on disease-causing fungi. Although the use of biological means to fight disease-causing fungi is nothing new, McBeath's discovery—called cold-tolerant Trichoderma—is more effective than most Trichoderma previously discovered. It also was the first found in Alaska.

Alaska's Trichoderma, which she found in the soil of UAF's experimental farm as well as near Chena Hot Springs, near Delta and near Palmer, works well in cold temperatures.

"One of the advantages of our Trichoderma," said McBeath, "is that it is active at low temperatures, grows fast and can be used in a wide variety of soils and environmental conditions."

Other types of Trichoderma discovered elsewhere in the country can only be used in greenhouses and need warm temperatures to thrive, which prohibited their use in Alaska. Now, McBeath's discovery can be used outdoors even in the northern regions when plants and crops need it the most: in the colder temperatures of the spring.

Disease-causing fungi attach themselves to seeds, roots or the plants themselves, and feed on them. While feeding and multiplying, they damage the plants, leaving brown spots on leaves or spuds and even killing some mature plants. Fungi often look like cobwebs.

McBeath's Trichoderma, however, annihilates the bad fungi by eating it. When the bad fungus has disappeared, the Trichoderma dies off or looks for more "food" elsewhere.

"Fungus causes more diseases in plants than anything else," said McBeath, who has been using a $61,000-a-year grant from the UAF Natural Resources Fund to conduct her experiments.

So far, McBeath and her staff of eight have conducted most of her experiments at UAF on potatoes, which are prone to fungi attacks. The data she collected indicate the Trichoderma works well, but she still has to figure out a way to commercialize the product.

"I think this product will give people an alternative," said McBeath, who was born in China and has worked at UAF since 1977. "They will not have to use chemicals anymore."

And that's good news for people like Jessica Bittner, the owner of South Slope Greenhouses on Chena Hot Springs Road.

"I tried some of the Trichoderma in my greenhouse and it works great," said Bittner.

THE COUNTRY COUSIN IS BLOSSOMING, TOO

Roger H. Salquist, chief executive of Calgene Inc., can smile as he tours his greenhouses in Davis, Calif. In a few months, he hopes to market the world's first genetically engineered, good-tasting tomato. The yellow flowers blooming in his hothouses are a treasure, too: The plants produce canola, which can be used to make nonpolluting industrial lubricants, healthier cooking oils, and cheaper cosmetics ingredients. It's exciting stuff. Yet Calgene's market value of $180 million trails that of many biomedical companies. "Everybody assumes if you can spell 'gene' you can cure Alzheimer's," says Salquist. "I've got to bury a guy in 50 pounds of oil before they believe me."

Calgene, two dozen other small companies, and several research efforts inside the likes of Monsanto Co. and Ciba-Geigy Ltd. are the ugly ducklings of biotech. A decade ago, they, too, embraced genetic engineering. But they took the road less traveled—into agriculture and industrial processes. So far, the payoff has been small: James McCamant, editor of the *AgBiotech Stock Letter*, says that less than $200 million worth of ag biotech products are sold worldwide each year.

LEANER MEAT. That number should soon start to grow. This year, the industry could receive two key product approvals from the Food & Drug Administration. One is Calgene's tomato. The other, sold by Monsanto, American Cyanamid Co., and others, is called BST. It's a growth hormone that increases milk output in cows. Meanwhile, Celgene Corp. in Warren, N.J., has just won a contract from General Electric Co. for eight "bioreactors," the first such plants in the U.S. They use microbes to break down cancer-causing methylene chloride, an industrial solvent.

Ag biotech's weakness hasn't been a lack of markets: Total agribusiness revenues in the U.S. top $1 trillion a year. Companies such as Biotechnica International, DNA Plant Technology, Escagenetics, IDEXX, and Belgium's Plant Genetic Systems, have a roster of exciting projects: disease- and pest-resistant crops, alternatives to petrochemicals, animal drugs and vaccines, food safety tests, and ways to grow livestock with leaner meat. Companies such as Mycogen Corp. and Ecogen Inc. are replacing chemical pesticides with safer, less polluting "biopesticides" that use microbes, not chemicals, to fight pests. Still others are developing microbes that eat pollution. Monsanto alone has spent about $1 billion in the past decade on ag biotech.

The problem is, none of this happens fast. Ag biotech lags behind biomedical companies in basic research, partly because altering whole plants and animals is trickier than making cells churn out a single protein to use in a drug. And the industry is constrained by other forces of nature. "There is only one summer [a year]," notes Peter S. Carlson, chief scientist at Crop Genetics International Corp. in Hanover, Md., which is developing pesticide-producing bacteria that live inside corn plants. Researchers have to wait for growing seasons or for gestation cycles in animals to see if their experiments work.

BLUE YONDER. Even more frustrating is that while Wall Street cheers medical companies as if they were prizefighters, ag biotech companies are dodging bullets. Opponents such as gadfly Jeremy Rifkin and the Environmental Defense Fund argue that the long-term effects of genetic tinkering are unknowable, potentially dangerous, and not worth the risk. Their protests have delayed initial field trials of some ag biotech products.

It hasn't helped that the industry has been caught in regulatory never-never land. The FDA, the Agriculture Dept., and the Environmental Protection Agency haven't written final regulations governing the industry, in part because of an internal Administration battle over how to regulate ag biotech products. The industry is lobbying to break the logjam. But if the resulting regulations are seen as lax, says Margaret G. Mellon, the National Wildlife Federation's biotech expert, "environmental groups will generate opposition as never before."

A lot rides on Calgene's Flavr Savr tomato. Calgene's technology blocks genes in tomato cells from making an enzyme that triggers rot. The tomatoes can be picked riper, so they taste better and still withstand shipping. Salquist hopes the Flavr Savr will have a market of $150 million annually by the late '90s. If it's a hit, it might dispel fears of ag biotech and grease the regulatory wheels—even without Calgene's fancy oils.

By Joan O'C. Hamilton in Davis, Calif., with John Carey in Washington and Julia Flynn Siler in Chicago

CON KEITH

BIOTECH ON THE FARM

Product	Developers	Anticipated approval	Market potential Millions*
ROT-RESISTANT TOMATO	Calgene, DNA Plant, ICI	1992	$150
BST (MILK-PRODUCTION HORMONE)	Monsanto, American Cyanamid, Upjohn, Eli Lilly	1992	300
INSECT-HERBICIDE-RESISTANT CORN	Crop Genetics, Pioneer Seed, DeKalb	1994	1,000
PST (LEAN PORK HORMONE)	Monsanto, American Cyanamid, SmithKline	mid-1990s	500
INSECT-HERBICIDE-RESISTANT COTTON	Monsanto, Calgene	1995	200

*Annual sales

DATA: AGBIOTECH STOCK LETTER, COMPANY REPORTS