

American Society of Sugar Beet Technologists

34th Biennial Meeting

February 28 thru March 3, 2007



Thursday, March 1, 2007

Call to Order: **Douglas J. Emek**,
Roger's Sugar Ltd., President

Welcome and Announcements:

Carol Windels, University of
Minnesota, General Chairperson

Invited Speakers

The World Sugar Situation

Luther Markwart, Executive Vice
President, American Sugarbeet
Growers Association, Washington,
D.C., *Sugar Situation in North
America*

Simon A. Harris, Advisor
British Sugar plc, Peterborough,
England, *Sugar Situation in the
European Union*

William H. Hejl, President
World Association of Beet and Cane
Growers, Amenia, ND, *Sugar
Situation in the World*

Questions and Answers for Panel:
Carol Windels, Moderator

Panel sponsored, in part, by the
Corsberg, Grinde, Shemilt Memorial
Fund*

Presidential Address: **Douglas J.
Emek**

Reports: Executive Vice President
and Committees; Announcements

*Three Holly Sugar Corporation
executives, Jack Corsberg
(Operations), Harold Grinde
(Environmental Affairs) and Gordon
Shemilt (Commodity Supply) were
killed in an airplane crash while
enroute to inspect a coal mine which

was supplying coal to one of its'
factories. A fund was set up with
contributions from company staff,
other industry members and associated
industry suppliers to honor the
memory of these three respected sugar
industry members. The fund was
created to provide funding to
encourage guest speakers for selected
Beet Sugar Development Foundation
or American Society of Sugar Beet
Technologists meetings or schools.

Thursday Afternoon, March 1

Session Leaders:

Robert Hatch and **Don Morishita**

The Future of Sugar Research – A Panel Discussion

Charley Richard, Sugar Processing
Research Inc. (SPRI), New Orleans,
LA

Jan Maarten de Bruijn, Commission
Internationale Technique de
Sucrierie (CITS), Breda, The
Netherlands

Tere Johnson, American Society of
Sugar Cane Technologists (ASSCT)
and International Society of Sugar
Cane Technologists (ISSCT), Belle
Glade, FL

Gail Wisler, United States
Department of Agriculture,
Agriculture Research Service
(USDA-ARS), Beltsville, MD

Mark Richard-Molard, International
Institute for Beet Research (IIRB),
Paris, France

Vadim Kochergin, The Audubon
Institute, St. Gabriel, LA

Larry Smith, Cooperative State
Research Education and Extension
Service (CSREES), Crookston, MN

Don Ryan, Sugar Industry
Technologists (SIT), Vancouver,
B.C., Canada

Tom Schwartz, Beet Sugar

Development Foundation (BSDF)
and American Society of Sugar Beet
Technologists (ASSBT), Denver,
CO

Each presenter will have 10 minutes
to: 1) briefly describe their
organization, 2) present challenges
currently faced in sugar research in
their organization, and 3) share their
perspective/outlook on the direction of
future sugar research. Following the
presentations, there will be an open
discussion among panelists and
attendees to brainstorm on how we
can further our industry through
research.

Friday Morning, March 2

Section A, Agronomy

Session Leader: **Steve King**

*Interference of broadleaf weeds in
sugarbeets.*

Odero, Dennis C.¹, **Abdelouhab
Mesbah²** and **Stephen D. Miller¹**,

¹University of Wyoming, Department
of Plant Sciences, Laramie, WY,
²University of Wyoming, Powell
Research and Extension Center,
Powell WY.

*Chemical and mechanical control of
group 1 resistant wild oats.*

Regitnig, Peter J.* and **Jennifer J.
Nitschelm**, Rogers Sugar Ltd., Taber,
Alberta, Canada.

*Beta vulgaris response to amide
herbicides.*

Guza, Corey J.*, **James F. Stewart**
and **Lee A. Hubble**, Michigan Sugar
Company, Bay City, MI.

*Influence of ALS-resistant kochia
control in corn on kochia control the
following year in sugarbeet.*

Wilson, Robert G., University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

Ten years of micro-rate use in North Dakota and Minnesota.

Dexter, Alan G.* and **John L. Luecke**, North Dakota State University and the University of Minnesota, Plant Sciences Department, Fargo, ND.

Two year in-field sprayer calibration survey of sugar beet growers.

Morishita, Don W.¹, **Stanley R. Gortsema²**, **Jerry D. Neufeld²** and **Dale L. Baker²**, ¹University of Idaho, Twin Falls R&E Center, Twin Falls, ID and ²University of Idaho, Power, Canyon and Minidoka County Cooperative Extension.

Late season weed control in sugarbeets by hand-weeding, mowing, or selective application of glyphosate.

Wilson, Robert G.*, **John A. Smith** and **C. Dean Yonts**, University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

Ethofumesate carryover potential in wheat and barley following sugar beet.

Morishita, Don W.¹, **Michael P. Quinn¹**, **Robyn J. Walton¹** and **Michael A. Becerra²**, ¹University of Idaho, Twin Falls R&E Center, Twin Falls, ID and ²Idaho Food Quality Assurance Laboratory, Twin Falls, ID.

Forum: Weeds

Session Leader: **Corey Guza**

Friday Morning, March 2
Section C, Entomology and Plant Pathology

Session Leader: **Mark Boetel**

Crop protection innovations in sugarbeet - Bayer CropScience.

Daniels, Jeffrey L., **Charles Hicks**, **Kelven Luff**, **John O. Martin**, **Dean W. Maruska**, **George Simkins**,

Michael Smith and **Kevin B. Thorsness***, Bayer Cropscience, Triangle Park, NC.

Relationship of clothianidin plus beta cyfluthrin, combined with build-up coating options, to germination and field emergence of beta vulgaris seeds.

Daniels, Jeffrey L.* and **Michael R. Schwarz**, Bayer Cropscience, Triangle Park, NC.

Seed treatment insecticides to manage soil insect pests of sugarbeet.

Boetel, Mark A.*, **Robert J. Dregseth**, **Allan J. Schroeder** and **Ayanava Majumdar**, North Dakota State University, Department of Entomology, Fargo, ND.

Variability in varietal response for resistance to sugar beet root aphid and potential implications.

Hein, Gary L.¹, **Rosana Serikawa²**, **John E. Foster²** and **John Thomas¹**, ¹University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE and ²University of Nebraska, Department of Entomology, Lincoln, NE.

Sugarbeet root rot in the Intermountain West.

Strausbaugh, Carl A.* and **Anne M. Gillen**, USDA-ARS, NWISRL, Kimberly, ID.

Field application of factory spent lime for suppression of Aphanomyces root rot of sugar beet.

Windels, C. E.¹, **A. L. Sims¹**, **J. R. Brantner¹** and **C. A. Bradley²**, ¹University of Minnesota, Northwest Research & Outreach Center, Crookston, MN and ²North Dakota State University, Department of Plant Pathology, Fargo, ND.

Control of Aphanomyces damping-off of sugar beet by hymexazol seed treatment when disease onset occurs at different plant ages and inoculum levels.

Brantner, J. R.* and **C. E. Windels**,

University of Minnesota, Northwest Research & Outreach Center, Crookston, MN.

Interaction of varying Fusarium oxysporum isolates with different sugarbeet lines.

Hanson, Linda E.*, **Amy L. Hill** and **Lee Panella**, USDA-ARS, Sugar Beet Research Unit, Fort Collins, CO.

Forum: Fusarium

Session Leader: **Linda Hanson**

Section F, Factory Operations

Session Leader: **Vadim Kochergin**

Experiences with briquetting and burning boiler fly ash in a coal-fired beet pulp dryer.

Carlson, Jeffrey L.* and **Parker Thilmony**, Minn-Dak Farmers Cooperative, Wahpeton, ND.

Co-treatment of digester effluent and pond stored wastewaters during 2005-2006 campaign.

Kawlewski, Ron¹, **Dennis J. Saye²** and **Ron Sanford¹**, ¹Southern Minnesota Beet Sugar Cooperative, Renville, MN and ²Nalco Company, Naperville, IL.

Eliminating hydrogen sulfide emissions from beet sugar wastewater.

Govind, Rakesh, University of Cincinnati and PRD Tech, Inc., Cincinnati, OH.

Rapid odor control for sugar plant process water and ponds.

Baures, Marc A., Hydrite Chemical Co., La Crosse, WI.

Impact of new SPCC Regulations on sugar manufacturing.

Sullivan, Shawn, Western Sugar Cooperative, Greeley, CO.

Reduction of washhouse sugar losses through water management of Minn-Dak Farmers Cooperative.

Carlson, Jeffrey L.*, **Brent Muehlberg** and **Upasiri**

Samaraweera, Minn-Dak Farmers Cooperative, Wahpeton, ND.

Forum: Environmental
Session Leader: **Dean DeLorey**

Friday Afternoon, March 2
Section A, Agronomy
Session Leader: **Steve King**

Impact of genetic resistance to sugarbeet cyst nematode on yield and quality of sugarbeets.

Poindexter, S.^{1*}, J. Stewart², L. Hubbell², R. Fogg² and C. Guza²,
¹Michigan State University Extension, Saginaw, MI and ²Michigan Sugar Company, Bay City, MI.

Are rhizomania resistant sugarbeet varieties nitrogen hogs?

Lamb, John A.^{1*}, Mark W. Bredehoeft² and Steven R. Roehl²,
¹University of Minnesota, Department of Soil, Water and Climate, St. Paul, MN and ²Southern Minnesota Beet Sugar Cooperative, Renville, MN.

Whole rotation effects on soil nitrate-N for sugar beet production.

Bredehoeft, Mark W.^{1*} and John A. Lamb²,
¹Southern Minnesota Beet Sugar Cooperative, Renville, MN and ²University of Minnesota, Department of Soil, Water and Climate, St. Paul, MN.

Determine the ideal population in 30 inch row spacing.

Hubbell, Lee A.^{*}, James F. Stewart and David B. Wilshowski, Michigan Sugar Company, Carrollton, MI.

30 inch vs. 18 inch row sugarbeet production — Nebraska research and grower experiences.

Smith, John A.^{*}, C. Dean Yonts, Robert M. Harveson and Robert G. Wilson, University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

Sections B & E, Physiology, Biotechnology, Genetics and Germplasm
Session Leader: **Lee Panella**

Integration of genetic, physical, and expression mapping resources for gene discovery and beet improvement.

McGrath, J. Mitchell, USDA-ARS, Michigan State University, Sugarbeet and Bean Research, East Lansing, MI.

Virus induced gene silencing of a gene repressing flowering in sugar beet.

Fenwick, Ann¹, Rebecca L. Larson², Patrick A. Reeves³, Christopher M. Richards³ and Lee Panella^{2*},
¹Beet Sugar Development Foundation, Fort Collins, CO, ²USDA-ARS, Sugar Beet Research Unit, Fort Collins, CO and ³USDA-ARS, National Center for Germplasm Preservation, Fort Collins, CO.

Protein changes associated with sugar beet resistance to Fusarium oxysporum.

Larson, Rebecca L.^{1*}, Amy L. Hill¹ and Alberto Nunez²,
¹USDA-ARS, Sugar Research Unit, Fort Collins, CO and ²USDA-ARS-EERC, Wyndmoor, PA.

Development of novel sources of resistance to Beet curly top virus through virus-induced gene silencing.

Wintermantel, William M.^{*}, Amy G. Anchieta and Patricia A. Nicely, USDA-ARS, Salinas, CA.

Rhizomania as seen from inside the beet cell: Identifying proteome differences between sugarbeet infected with Beet necrotic yellow vein virus and healthy sugarbeet.

Larson, Rebecca L.^{1*}, Alberto Nunez² and William M. Wintermantel³,
¹USDA-ARS, Sugarbeet Research Unit, Crops Research Laboratory, Ft. Collins, CO,

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Genetics of water content in sugarbeet roots.

McGrath, J. Mitchell^{1*} and **Daniele Trebbi**², ¹USDA-ARS, Michigan State University, Sugarbeet and Bean Research, East Lansing, MI and ²Michigan State University, Department of Crop and Soil Sciences, East Lansing, MI, 2(current address) Keygene N.V., Wageningen, The Netherlands.

Transgenic rhizomania resistant hybrids of sugar beets, providing strong resistance against different strains of BNYVV.

Lennefors, Britt-Louise^{1*}, **Eugene I. Savenkov**², **Jan Bensefelt**¹, **Elisabeth Wremerth-Weich**¹, **Petra Van Roggen**¹, **Stig Tuveesson**¹, **Lisette Laurin**¹, **Jari P. T. Valkonen**³, and **Jan Gielen**⁴, ¹Syngenta Seeds AB, Landskrona, Sweden, ²Department of Plant Biology and Forest Genetics, Swedish University of Agricultural Sciences, Uppsala, Sweden, ³Department of Applied Biology, University of Helsinki, Finland, and ⁴Syngenta Seeds, Saint-Sauveur, France.

Section F, Factory Operations Session Leader: **Rich Reisig**

A systemic approach to optimization of the “BMA K-2300” continuous centrifugal.

Rhoten, Christopher D.^{1*} and **Jeffrey L. Carlson**², ¹Western Sugar Cooperative, Scottsbluff, NE and ²Minn-Dak Farmers Cooperative, Wahpeton, ND.

Latest developments in the steamdrying technology for beet pulp, larger units. more energy recovery. The solution to avoid VOC emission, and the CO₂ reduction per invested \$ is higher than by other CO₂ reducing projects e. g. ethanol plants.

Jensen, Arne S., EnerDry ApS, Lyngby, Denmark.

Progressive steam dryer design enables highest capacities.

Krell, Lothar, BMA AG, Braunschweig, Germany.

Managing operational challenges of pulp steam driers.

Augustine, Glenn*, **Ron Kawlewski**, **Paul Rustad** and **Gary Cornelius**, Southern Minnesota Beet Sugar Cooperative, Renville, MN.

Weak cation thin juice softening – design and start-up considerations.

Suhr, Mark R.^{1*} and **Oliver Teschatsch**², ¹MS Processes Intl., LLC, Hutchinson, MN and ²ESCON GmbH, Berlin, Germany.

Ion exchange decolorization – possibility of resin rejuvenation.

Kochergin, Vadim^{1*}, **William Jacob**², **Michael Kearney**³ and **William Bornak**³, ¹Audubon Sugar Institute, Baton Rouge, LA, ²Amalgamated Research Inc. (ARI), Twin Falls, ID and ³Recirculation Technologies Inc. (RTI), Richboro, PA.

Potential of sugar beets as a fuel source.

Suhr, Mark R., MS Processes Intl., LLC, Hutchinson, MN.

Friday Afternoon, March 2 **Poster Session** **Agronomy**

Chairman: **Steve Poindexter**

1. Effect of row width and population on weeds and sugar beet yield and quality in Michigan.

Armstrong, Jon-Joseph Q.* and **Christy L. Sprague**, Michigan State University, Plant and Soil Sciences, East Lansing, MI.

2. Effects of nitrogen in the deep layers of the soil.

Biancardi, Enrico^{1*}, **Rosa Marchetti**², **Marco Bertaggia**¹, **Anna Orsi**², **Lidia Sghedoni**² and **Piergiorgio Stevanato**³, ¹CRA-Istituto Sperimentale per le Colture Industriali, Sezione di Rovigo,

Rovigo, Italy, ²CRA-Istituto Sperimentale Agronomico, Sezione di Modena, Modena, Italy and ³Dipartimento di Biotecnologie Agrarie, Università di Padova, Padova, Italy.

3. Response of four commercial sugar beet varieties to s-metolachlor and dimethenamid-P.

Bollman, Scott L.* and **Christy L. Sprague**, Michigan State University, Plant and Soil Sciences, East Lansing, MI.

4. Fine-tuning applied nitrogen rates for sprinkler and flood irrigated sugarbeet production.

Eckhoff, J. L. A.* and **C. R. Flynn**, Montana State University, Eastern Agricultural Research Center, Sidney, MT.

5. Evaluation of XBEET, an enhanced sugarbeet priming system in Michigan.

Hemb, Randall L.^{1*}, **James F. Stewart**², **Lee A. Hubbell**², **Ralph Fogg**², **Corey J. Guza**², **David B. Wishowski**² and **Steven S. Poindexter**³, ¹Germaines Technology Group, Gilroy, CA, ²Michigan Sugar Company, Bay City, MI, ³Michigan State University Extension, Saginaw, MI.

6. Weed control programs in glyphosate-resistant sugar beets.

King, Steven R., Montana State University, Southern Agricultural Research Center, Huntley, MT.

7. Use of a randomized nested block design in genetically modified, non-selective herbicide resistant sugar beet cultivar testing.

Roehl, Steven R.^{1*}, **Richard Horsley**² and **Osten Tvedt**¹, ¹Southern Minnesota Beet Sugar Cooperative, Renville, MN and ²North Dakota State University, Plant Sciences Department, Fargo, ND.

8. Timing of postemergence standard-split applications based on growing degree days in sugar beet.

Sprague, Christy L.* and **Gary E.**

Powell, Michigan State University, Plant and Soil Sciences, East Lansing, MI.

9. Development and evaluation of BeetCast risk management zones for Cercospora leafspot control in Michigan.

Wishowski, David B.*, James F. Stewart, Lee A. Hubbell and Corey J. Guza, Michigan Sugar Company, Bay City, MI.

Entomology and Plant Pathology

10. The effect of seed treatment and post-emergence insecticides on emergence, phytotoxicity, sugarbeet root maggot damage and root yield.

Gallian, John J.¹, Kelly V. Tindall¹, David M. Elison² and Dale L. Baker³, ¹University of Idaho, Twin Falls R&E Center, Twin Falls, ID, ²Amalgamated Sugar Co., Paul, ID, ³University of Idaho, Rupert, ID.

11. Characterization of genes associated with potential for fungicide resistance in Cercospora beticola.

Hanson, Linda E.¹, Gary D. Franc² and Lee Panella¹, ¹USDA-ARS, Sugar Beet Research Unit, Fort Collins, CO and ²University of Wyoming, Laramie, WY.

12. Predicting disease severity for sugar beet root rots using a pre-plant soil disease assay.

Harveson, Robert M., University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

13. Effectiveness of a precision applicator in applying pesticide granules synchronously with sugar beet seed.

Hein, Gary L.*, Rick Patrick, Charles K. Flint and John A. Smith, University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

14. In vitro compatibility between three bacterial sugarbeet disease-control agents and the entomopathogenic fungi, Metarhizium anisopliae and Beauveria bassiana.

Jaronski, Stefan T.¹, Cindy Fuller-Schaefer¹, Ben Larson² and Barry Jacobsen³, ¹United States Department of Agriculture, Agricultural Research Service, Northern Plains Agricultural Research Laboratory, Sidney, MT, ²Montana State University Extension Service, Richland County Office, Sidney, MT, and ³Montana State University, Department of Plant Sciences and Plant Pathology, Bozeman, MT.

15. Detection of Cercospora beticola by PCR in amended and naturally infested field soil.

Lartey, Robert E.*, TheCan Caesar-TonThat, Sophia Hanson, William M. Iversen and Robert G. Evans, USDA-ARS, Northern Plains Agricultural Laboratory, Sidney, MT.

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16. Bio-based management of sugarbeet root maggot by integrating an insect pathogenic fungus and cereal cover crops.

Majumdar, Ayanava¹, Mark A. Boetel¹, Stefan T. Jaronski², Robert J. Dregseth¹ and Allan J. Schroeder¹,
¹North Dakota State University, Department of Entomology, Fargo, ND and ²USDA-ARS, Northern Plains Agricultural Research Laboratory, Sidney, MT.

17. Evaluation of Cruiser seed treatment for control of wireworm damage in sugar beet.

Nitschelm, Jennifer J.*, Peter J. Regitnig and Greg. W. Nikles, Rogers Sugar Ltd, Taber, Alberta, Canada.

18. Influence of host resistance and insecticide seed treatments on curly top in sugarbeets.

Strausbaugh, Carl A.¹, Anne M. Gillen¹, John J. Gallian², Kelly Tindall², Stacey Camp³ and J. R. Stander⁴,
¹USDA-ARS, NWISRL, Kimberly, ID, ²University of Idaho, Twin Falls R&E Center, Twin Falls, ID, ³Amalgamated Sugar Co., Paul, ID and ⁴Betaseed, Inc., Kimberly, ID.

19. Mapping of curly top incidence and determination of genetic variation among viruses responsible for curly top in California.

Wintermantel, William M.¹, Amy G. Anchieta¹ and Rod Clark²,
¹USDA-ARS, Salinas, CA and ²California Curly Top Control Board, Fresno, CA.

Physiology, Biotechnology, Genetics and Germplasm

20. Ethylene production and its effect on storage respiration rate in wounded and unwounded sugarbeet roots.

Klotz, Karen L.* and Jeffrey C. Suttle, USDA-ARS, Northern Crop Science Laboratory, Fargo, ND.

21. A sugar beet Affymetrix chip.
Kraft, Thomas¹, Gerhard

Steinrücken¹, Jan Gielen², Tong Zhu³ and Todd Moughamer³,
¹Syngenta Seeds AB, Landskrona, Sweden, ²Syngenta Seeds S.A.S., Saint-Sauveur, France, ³Syngenta Biotechnology Inc., Research Triangle Park, NC.

22. A Beta vulgaris serine proteinase inhibitor gene (BvSTI) regulated by sugar beet root maggot feeding on moderately resistant F1016 roots.

Smigocki, Ann C.* and **David P. Puthoff,** USDA-ARS, Molecular Plant Pathology Laboratory, Beltsville, MD.

Chemistry and Instrumentation

23. Microplate assay for rapid determination of sucrose, glucose, fructose and raffinose.

Klotz, Karen L.¹ and Daniel N. Martins²,
¹USDA-ARS, Northern Crop Science Laboratory, Fargo, ND and ²Universidade Federal de Viçosa, Minas Gerais, Brazil.

24. An ubiquitous in line measurement instrument for density, total solids, concentration, especially brix in a today sugar factory.

Theisen, Karl H. and **Irma Geyer***, pro-M-tec Theisen GmbH, Ettlingen, Germany.

Factory Operations

25. Reduction of processing aids – apparatus to reduce antifoam, alkalising medium and lime.

Hein, Walter², Paul Dodd¹, Jason Grech¹, Günter Pollach² and Gerhard Rösner², ¹BetaTec Hop Products GmbH, Nürnberg, Germany and ²Zuckerforschung Tulln GmbH, Tulln, Austria.

Saturday Morning, March 3 Poster Session

See Friday Afternoon for Poster Titles
Chairman: **Steve Poindexter**
Section A, Agronomy
Session Leader: **Don Morishita**

Agriculture information systems for the sugar industry.

Telck, Alan B., Agterra Technologies, Inc., Sheridan, WY.

Field applications of sugar factory spent lime: Effects on soil phosphorus.

Sims, Albert L.¹, Carol E. Windels¹ and Carl A. Bradley²,
¹University of Minnesota, Northwest Research and Outreach Center, Crookston, MN and ²North Dakota State University, Fargo, ND.

Improvements and innovations in vented pile storage methodology and construction.

Elison, David M., The Amalgamated Sugar Co. LLC., Paul, ID.

Impact of mid-season water stress on sugarbeet growth.

Yonts, C. Dean, University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE.

Factors affecting technological quality of sugar beet relating to efficiency of sugar processing in Ghazvin Sugar Factory, Iran.

Honarvar, Masoud¹, Samira Bahramian² and Iraj Alimoradi³,
¹The Urmieh Sugar Factory and College of Food Technology, Science and Research Campus, Islamic Azad University, Tehran, Iran, ²College of Food Technology, Sanandaj, Iran and ³The Urmieh Sugar Factory, Tehran, Iran.

Utilization of BeetCast and tolerant sugarbeet varieties for managing cercospora leafspot in Michigan.

Stewart, James F.*, **Corey J. Guza**, **Lee A. Hubbell**, **David B. Wishowski** and **Mark A. Anderson**, Michigan Sugar Company, Bay City, MI.

Exploiting the genetic potential of sugarbeets.

Jansen, Rudolf, KWS SAAT AG, Einbeck, Germany.

Section C, Entomology and Plant Pathology

Session Leader: **Jan Debaene**

Host and viral factors that promote the emergence of resistance breaking variants of Beet necrotic yellow vein virus (BNYVV).

Acosta-Leal, Rodolfo*, **Becky Bryan** and **Charles M. Rush**, Texas Agricultural Experiment Station, Amarillo, TX.

Distribution and differentiation of resistance-breaking isolates of Beet necrotic yellow vein virus in the United States.

Liu, Hsing-Yeh* and **Robert T. Lewellen**, USDA-ARS, Salinas, CA.

Performance of rhizomania resistant sugarbeet under normal and resistance-breaking strains of Beet necrotic yellow vein virus.

Lewellen, Robert T.^{1*}, **Hsing-Yeh Liu¹**, **Anne M. Gillen²** and **Carl A. Strausbaugh²**, ¹USDA-ARS, Salinas, CA and ²USDA-ARS, Kimberly, ID.

A procedure for rapid detection of resistance breaking variants of Beet necrotic yellow vein virus (BNYVV) using real-time RT-PCR allelic discrimination assays.

Acosta-Leal, Rodolfo* and **Charles M. Rush**, Texas Agricultural Experiment Station, Amarillo, TX.

Incidence and spatial distribution of rhizomania in fields planted to rhizomania resistant cultivars.

Jones, David C.*, **Fekede Workneh** and **Charlie M. Rush**, Texas Agriculture Experiment Station, Bushland, TX.

Characterization of soils from different geographic origins containing Beet necrotic yellow vein virus (BNYVV) which overcomes Rz1 resistance in sugar beet.

Pferdmenges, Friederike and **Mark Varrelmann***, Institute of Sugar Beet Research, Department of Phytopathology, Göttingen, Germany.

Discovery of Beet Black Scorch Virus in the United States.

Weiland, John J.^{1*}, **Rebecca L. Larson²**, **Thomas P. Freeman³**, **Michael C. Edwards¹** and **Hsing-Yeh Liu⁴**, ¹USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND, ²USDA-ARS, Sugarbeet Production Laboratory, Fort Collins, CO, ³North Dakota State University, Fargo, ND and ⁴USDA-ARS, Sugarbeet Production Laboratory, Salinas, CA.

Discovery of resistance to seedling disease caused by Rhizoctonia solani AG2-2, description of the host-pathogen interaction, and development of a seedling disease screening nursery.

McGrath, J. Mitchell* and **Suba Nagendran²**, ¹USDA-ARS, Michigan State University, Sugarbeet and Bean Research, East Lansing, MI and ²Michigan State University, Department of Plant Pathology, East Lansing, MI.

Section D, Chemistry & Instrumentation

Session Leader: **Charley Richard**

Changes in quality and chemical characteristics of extract and sugar produced from extract as determined using accelerated storage methods.

Groom, David*, **Jim Heggeness** and **Terry McGillivray**, American Crystal Sugar Company, Moorhead, MN.

Amino acid elimination in chromatographic molasses separation systems.

Rearick, D. E.* and **Cheri McKay**, Amalgamated Research Inc., Twin Falls, ID.

Determination of Betaine in chromatographic separator using an NIR spectroscopy.

McGillivray, Terry* and **Beverly Jacobson**, American Crystal Sugar Company, Moorhead, MN.

Relative stability of stored extract with and without inoculation by high levels of mesophilic organisms.

Samaraweera, Indrani*, **Diane Rheault**, **Lynn Buschette**, **Terry McGillivray** and **David Groom**, American Crystal Sugar Company, Moorhead, MN.

Recent advances in Nalco's juice purification system.

Dang, Xiaojun, **Dennis Saye**, **David**

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Larson, Anthony Sommesse and Kevin Finkenbiner*, Nalco Company, Naperville, IL.

Microwave technology: An ubiquitous in line measurement instrument for density, total solids, concentration, especially brix in a today sugar factory.

Theisen, Karl H. and Irma Geyer*, pro-M-tec Theisen GmbH, Ettlingen, Germany.

Advances in fluorescence detection of sugar in water systems.

Dang, Xiaojun* and Dolores J. Soto, Nalco Company, Naperville, IL.

Methods for automated particle size analysis.

Kawlewski, Ron*, Steve Aakre and Jim Schueller, Southern Minnesota Beet Sugar Cooperative, Renville, MN.

Saturday Afternoon, March 3 Section C, Entomology and Plant Pathology

Session Leader: John Gallian

Timing of azoxystrobin fungicide application for control of Rhizoctonia Crown and Root Rot on Sugarbeet.

Jacobsen, Barry J.^{1*}, John C. Ansley¹, Ken Kephart², Nina K. Zidack¹, Alan Dyer¹ and Mareike R. Johnston¹, ¹Montana State University, Department of Plant Science and Plant Pathology, Bozeman, MT and ²Montana Agricultural Experiment Station, Southern Agricultural Research Center, Huntley, MT.

Survey of field soils for Cercospora beticola by PCR and ELISA.

Lartey, Robert T.*¹, TheCan Caesar-TonThat, William M. Iversen, Sophia Hanson and Robert G. Evans, USDA-ARS, Northern Plains Agricultural Laboratory, Sidney, MT.

What is the best time to apply fungicides for effective and economical Cercospora leaf spot control?

Khan, Mohamed F. R.* and Randy Nelson, North Dakota State University & University of Minnesota, Plant Pathology Department, Fargo, ND.

Occurrence of Cercospora beticola mating types in the Northcentral USA.

Secor, G. A.^{1*}, V. V. Rivera¹, J. Rengifo¹ and J. J. Weiland², ¹North Dakota State University, Department

of Plant Pathology, Fargo, ND and ²USDA-ARS, Northern Crop Science Laboratory, Fargo, ND.

Some like it straight, some like it mixed!

Khan, Mohamed F. R.* and Randy Nelson, North Dakota State University & University of Minnesota, Plant Pathology Department, Fargo, ND.

Forum: Cercospora
Session Leader: Gary Secor

Section F, Factory Operations
Session Leader: Mark Suhr

Billings BMA Tower 2000 installation and comparison to other Western Sugar BMA tower installations.
Zimmerman, Robert M.^{1*}, Ken Bennett² and E. Jeremy Coster³, ¹The Western Sugar Cooperative, Greeley, CO, ²The Western Sugar Cooperative, Billings, MT and ³The Western Sugar Cooperative, Denver, CO.

Experiences with processing sugarbeets frozen for long term storage.

Carlson, Jeffrey L.*¹, Brent Muehlberg and Upasiri Samaraweera, Minn-Dak Farmers Cooperative, Wahpeton, ND.
Fort Morgan evaporator failure.
Zimmerman, Robert M.* and Scott A Winn, The Western Sugar Cooperative, Greeley, CO.

New Bogazlyian Beet Sugar factory: the new reference of most modern technology.

Lachant, Emmanuelle*, Alain Thiebault, Pascal Dedole and Frederic Thrum, Fives Cail Group/Maguin S.A.S., Villeneuve d'Ascq, France.

Section A, Agronomy

Forum: Round-Up Ready
Session Leader: Alan Dexter

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