

2002 STEEP PROJECT PROGRESS REPORT
(November 2001 through October 2002)

PROJECT TITLE: Expanding Access to PNW STEEP Cropping Systems Technology

INVESTIGATORS:

PNW STEEP Extension Cropping Systems Specialists Team

Roger Veseth, WSU/UI Extension Conservation Tillage Specialist, Moscow/Pullman
Don Wysocki, OSU Extension Soil Scientist, Pendleton
Russ Karow, OSU Extension Agronomist, Corvallis
Stephen Guy, UI Extension Crop Management Specialist, Moscow
Bill Schillinger, WSU Dryland Agronomist, Lind
Joe Yenish, WSU Extension Weeds Specialist, Pullman
Larry Robertson, UI Extension Crop Management Specialist, Aberdeen
Brad Brown, UI Extension Crop Management Specialist, Parma
John Burns, WSU Extension Agronomist, Pullman
Greg Schwab, WSU Extension Soils Specialist, Pullman
Dennis Tonks, WSU Extension Dryland Cropping Systems Specialist, Davenport

Cooperators:

Other PNW extension specialists and educators; researchers on STEEP and related projects; conservation districts; USDA-NRCS; producer organizations; Ag-support industry

INTERIM REPORT: November 2001 through October 2002

PROJECT OBJECTIVES: Increase grower awareness and adaptation of STEEP and related research technologies as integrated components of conservation tillage systems through continuation and expansion of technology transfer efforts including:

- 1) PNW STEEP Extension Conservation Tillage Update
- 2) PNW Conservation Tillage Handbook Series
- 3) Internet Web site -- PNW STEEP Conservation Tillage Systems Technology Source (<http://pnwsteep.wsu.edu>)
- 4) PNW Direct Seed Systems E-mail List Server
- 5) NW Direct Seed Cropping Systems Conferences
- 6) Field Days and Tours on Conservation Tillage Systems

KEY WORDS: Direct seed cropping systems

STATEMENT OF PROBLEM: Lack of access to new research technologies by PNW growers and agricultural support personnel limits the success and slows the adaptation and adoption of conservation tillage systems in the region.

AGRONOMIC ZONES OF INTEREST: All Pacific Northwest cropland agronomic zones can benefit from this technology transfer program on conservation tillage systems, particularly those agronomic zones targeted in STEEP research projects.

ABSTRACT OF ACCOMPLISHMENTS: A variety of technology transfer programs and products have been included in this STEEP project from November 2001 through October 2002. Three issues of the *PNW STEEP Extension Conservation Tillage Update* newsletters were

completed and a fourth is in progress for November 2002. Four *PNW Conservation Tillage Handbook Series* publication (distributed through the *Update* newsletter issues) were added to the *Handbook*. Other publications included: journal papers – 4; abstracts – 8; university research and extension publications – 36; and Ag media articles – 21. Team members gave more than 49 presentations on new technologies from STEEP and related programs at grower meetings to a total audience of 3325. Team members also organized and promoted more than 14 field days and tours in the region highlighting STEEP and related technologies on direct seeding and/or more intensive cropping and crop options with a total attendance of more than 1730. The project Web site “PNW STEEP Conservation Tillage Systems Technology Source” (<http://pnwsteeep.wsu.edu>) was updating with the new Handbook Series publications and Update issues, the 2001 STEEP Annual Report, 2002 NW Direct Seed Conference Proceedings, 2003 Conference information, and numerous other resources. The PNW Direct Seed E-mail List Server grew from an initial network of 230 Ag support personnel and growers in early 2000 to over 470 in November 2002, with more than 80 messages posted this year. The January 16-18, 2002 Northwest Direct Seed Cropping Systems Conference was held in conjunction with the Spokane Ag Expo and attended by over 860 growers and Ag support personnel. It featured 24 speakers, including 10 growers, from Idaho, Oregon, Washington, and the Canadian Provinces of Alberta and Saskatchewan. A detailed Proceedings was distributed at the Conference and added to the Web site. The 2003 Northwest Direct Seed Cropping Systems Conference and Trade Show has been developed for January 8-10 in Pasco, WA, with the Jan. 7-8 PNW STEEP Research Review as a special pre-conference feature. It will feature 28 speakers, including 6 growers, from Idaho, Oregon, Washington, South Dakota and New Zealand.

RESULTS AND INTERPRETATION: Specialists on the PNW STEEP Extension Cropping Systems Team worked with STEEP and related program researchers, other extension specialist and educators, and Ag support personnel to summarize new “state-of-the-art” conservation tillage management technologies from an integrated cropping systems approach. The following is a description of the project accomplishments by technology transfer methods during this project period:

1) *PNW STEEP Extension Conservation Tillage Update* -- This newsletter continues to be an effective PNW technology transfer tool. A total of three issues were published in FY2002 (December 2001, February and May 2002). The December 2001 issue included brochures / programs for the December 2001 Columbia Plateau Wind Erosion / Air Quality Project Annual Research Review and the January 2002 NW Direct Seed Cropping Systems Conference, a new PNW Conservation Tillage Handbook Series publication on the PNW Direct Seed List Server, and highlights of 2002 coming events. The February 2002 issue included a special promotion on the availability of the 2000 NW Direct Seed Cropping Systems Conference Proceedings, a description of the new STEEP projects funded in 2002, an article on the WSU Extension publications on grower experiences with alternative crops in eastern Washington, a new PNW Conservation Tillage Handbook Series on economics of conservation tillage in a wheat-fallow rotation, updated list of Web site resource links on cropping systems technologies, an announcement on the new PNW Extension publication on retooling agriculture – a report on direct seed cropping systems research in the PNW, and highlights of upcoming 2002 coming events. The May issue included two new PNW Conservation Tillage Handbook Series on expanding Internet / e-mail access to PNW direct seed systems technology and the occurrence of Rhizoctonia root rot in direct seed systems in a low precipitation zone, an updated table of

contents for the PNW Conservation Tillage Handbook, and a detailed description of upcoming 2002-03 field days, tours related to conservation tillage systems. The November 2002 issue is in progress and will include brochures for the Dec. 5-6, 2002 Annual Research Review of the Columbia Plateau Wind Erosion / Air Quality Project, the Jan. 7-8, 2003 STEEP Annual Research Review, and Jan. 8-10 NW Direct Seed Cropping Systems Conference and Trade Show. It will also include a description and order form for the new video from the June 2002 Direct Seed Drill Demonstration featuring 11 drills near Genesee, ID, plus a preliminary listing of 2003 field days, tours and other coming events related to conservation tillage systems.

The current *Update* mailing list is over 2,850, including PNW producers (about 1,960), county extension agents, conservation districts, NRCS staff, and Ag service industry, Ag media and other support personnel. The *Update* provides a conservation tillage systems information resource for local and regional newsletters and education programs, and for the media.

2) PNW Conservation Tillage Handbook Series -- Four new *PNW Handbook Series* were distributed through the December 2001, February 2002 and May 2002 issues of the *PNW Conservation Tillage Update* newsletter for addition to the *Handbook*, and were added to the Internet version of the *Handbook* on our PNW Web site (<http://pnwsteep.wsu.edu>). The Series titles and authors are listed at the end of this report. Printed copies in the *Update* are 3-hole punched and ready for insertion into the large 3-ring binder *Handbook*. Since the *Handbook* was published in 1990, 53 new *Series* publications have been completed. The *Handbook* now contains 152 *Handbook Series* publications and is a major reference on conservation tillage systems technologies in the Northwest.

3) Web Site - PNW STEEP Conservation Tillage Systems Technology Source (<http://pnwsteep.wsu.edu>) -- The Internet and E-mail are rapidly becoming a major communications and technology access tools for PNW Ag support personnel and growers. Most all offices of cooperative extension, conservation districts, NRCS, Ag service industries, and an increasing number of growers in the Pacific Northwest have Internet / E-mail access. A 2001 USDA National Agricultural Statistics Service study showed that an average of 58% of PNW growers have Internet access, up dramatically from 18% in 1997 and 40% in 1999. Idaho leads the nation with 62%. Along with the growth in Internet and E-mail use, Northwest growers are increasingly moving towards direct seeding and more intensive cropping systems to improve productions efficiency and profitability, cropland productivity, and environmental protection. The PNW STEEP Web site and new PNW Direct Seed E-mail/Web List Server (see # 4 below) are helping meet this expanding PNW demand for computer technology access and an improved communications network on direct seed cropping systems.

The STEEP Web site currently averages over 200 hits per day and provides access to conservation tillage systems technology developed through STEEP and related NW research programs. The entire *PNW Conservation Tillage Handbook Series* is now on the Web site, including the four new Handbook Series distributed in the December 2001, February 2002 and May 2002 Update issues.

There is a Web site page for the NW Direct Seed Cropping Systems Conferences (see Conferences #5 below) where you can select the 1998 through 2003 Conferences. The Conference page has a direct access Web site URL (<http://pnwsteep.wsu.edu/directseed>) that is utilized in publicizing the Conferences and providing access later to the proceedings and Conference video information. In advance of the Conferences, the Conference pages include: Conference overview; preliminary agenda; Conference brochure; sponsorship prospectus; Conference registration; poster exhibition registration; hotel registration and a link to the

Spokane Ag Expo Web site. Templates have also been created to permit online completion, printing and mailing / faxing, the Conference sponsorship prospectus, Conference registration and poster exhibition registration.

Other new features on this Web site include: a new page on the Columbia Plateau Wind Erosion / Air Quality Project, with the 78-page, full-color project publication titled "Farming With the Wind" added to the Web page as a PDF file (to view and print in print form); color photo additions with the STEEP logo; logos of UI, OSU and WSU at the top of the Web index pages; and navigation enhancements for the PNW Direct Seed List Server (see #4 below) Web page. A calendar of events on direct seed systems is continually updated with applicable events in the Northwest and North American.

4) PNW Direct Seed E-mail / Internet List Server – This List Server offers an exciting communications link on new information resources, events, research results, technology innovations and experiences from the dryland production regions of the Inland Northwest. It also helps provide access to direct seed systems technology that may be adapted to Northwest production conditions from other regions and countries. Messages are received by e-mail and are also stored on the List Server Web site for later reference, and for access by those added to the List Server over time.

The initial address list in early 2000 included about 230 university and USDA-ARS researchers, extension specialists, county/area Ag extension educators, conservation districts, USDA-NRCS staff, PNW grower organizations, Ag industries representatives and growers from across the dryland cropping areas of the Inland Northwest. From this initial base network, the List Server has expanded with interested growers and other Ag support personnel across the region. The List Server grew to 310 by November 2000, 400 by November 2001 and currently is over 470. More than 60 messages have been posted on the List Server in the past year. Publicity efforts will continue on the availability of this new technology access and communications tool.

The List Server Web site can be accessed for subscription and viewing of messages through the PNW STEEP Web site (<http://pnwsteep.wsu.edu>). Subscription requests can also be sent to Team members. All interested growers and Ag support personnel are encouraged to participate in the List Server. The goal is to help develop a stronger communication network and partnership among growers, researchers, Ag-support groups and agencies, and Ag industry to accelerate the development and grower adaptation of direct seed systems in the region.

5) Northwest Direct Seed Cropping Systems Conferences – The fifth annual Conference was held on January 16-18, 2002 in Spokane, WA. It was attended by 860 growers and Ag support personnel. Veseth worked with the Spokane Chamber of Commerce Ag Bureau to coordinate the Conference organization and publicity in conjunction with to the Jan. 15-17 Spokane Ag Expo -- the largest Inland Northwest Ag Show with over 300 exhibits -- and PNW Farm Forum and seminar series in adjoining facilities. Conference registration included entrance into the Ag Expo and Farm Forum. In exchange, Ag Expo received contacts for prospective exhibitors from previous Conference Trade Shows.

The Conference was organized as a service to Northwest growers by two groups: 1) the PNW STEEP program through the STEEP Extension Team and 2) the PNW Direct Seed Association. It was co-sponsored by 12 Ag companies and agencies, and developed and promoted in cooperation with 12 PNW grower organizations and Ag support groups.

The program featured 24 speakers, including 10 growers, from Idaho, Oregon, Washington, and the Canadian Provinces of Alberta and Saskatchewan. A Direct Seed Poster

Exhibition also featured 32 posters. Some major program areas focused on management strategies for direct seed cropping systems include: changes in nutrient cycling and fertility management over time; managing for improved soil biology and direct seed benefits to soil health; redesigning crop rotations; and Brassica crop selection and management.

Panel sessions provided in-depth discussions on several topics including: impacts and management of soil acidity, the make-up and management of key soilborne crop pathogens; field record systems, mapping strategies and the integration of financial and physical farm data; strategies for managing heavy wheat residue, and intensifying rotations in the low and intermediate rainfall zones.

Publicity efforts were conducted in cooperation with the main PNW grower organizations in the Inland Northwest dryland cropping region to get Conference brochures to NW growers and Ag support personnel. These included: ID Grain Producers Association, OR Wheat Growers League, WA Assoc. of Wheat Growers, ID Assoc. of Soil and Water Conservation Districts, OR Assoc. of Conservation Districts, WA Assoc. of Conservation Districts, and USA Dry Pea and Lentil Council. Collaborative publicity efforts were also arranged to provide brochures or the Conference articles and the Website URL to NW Ag service industry field staff through many of the major Ag service companies and Ag industry organizations, including the Far West Agri-Business Association.

The Conference Website was kept up to date with the latest program and Conference information. It included also on-line registration for Conference co-sponsorships, Conference pre-registration and poster exhibition registration.

Planning the 2003 Northwest Direct Seed Cropping Systems Conference and Trade Show – The sixth annual Conference and new Trade Show will be held on January 8-10, 2003 at the WestCoast Hotel in Pasco, WA. The Conference registration will include entrance into the Jan. 7-8 PNW STEEP Annual Research Review at the same location. The STEEP Review is being developed as a pre-conference feature to encourage growers and Ag support personnel attendance and their input on the research program. The Direct Seed Trade Show is the first commercial trade show with the Conference since 2000 and will feature over 30 commercial exhibits.

The Conference is again being organized as a service to Northwest growers by two groups: 1) the PNW STEEP program through the STEEP Extension Team and 2) the PNW Direct Seed Association. The Conference will be co-sponsored by a number of Ag support companies and agencies, and developed in cooperation with 12 PNW grower organizations and Ag support.

The program will feature 28 speakers, including 6 growers, from Idaho, Oregon, Washington, South Dakota and New Zealand. A Direct Seed Poster Exhibition will also highlight research and educational projects in the region. Conference presentations will provide the latest in direct seed systems research results, equipment and management innovations, and experiences. Topic areas include: high versus low disturbance openers, weed control, stacked rotations and other pest management strategies, transition economics, marketing strategies, residue management options, managing soil carbon and productivity, and grower experiences. Activities and accomplishments of PNDISA in 2002 will also be highlighted. At least 10 industry representatives will present new commercial innovations in direct seed drills and openers for seed and fertilizer placement, residue management and hillside stability.

Publicity efforts will be conducted in cooperation with the main PNW grower

organizations in the Inland Northwest dryland cropping region to get Conference brochures to NW growers and Ag support personnel. Direct brochure mailings are planned through ID Grain Producers Association, OR Wheat Growers League, and WA Assoc. of Wheat Growers. Collaborative publicity efforts with the brochures and/or Conference articles and the Website URL are also underway with the ID Assoc. of Soil and Water Conservation Districts, OR Assoc. of Conservation Districts, WA Assoc. of Conservation Districts, USA Dry Pea and Lentil Council, and NW Ag service companies and organizations, including the Far West Agri-Business Association.

The Conference Website (<http://pnwsteep.wsu.edu/directseed>) is being kept up to date with the latest program and Conference information. It includes a Conference overview, STEEP Review program, updated agenda, speaker pictures and biographical summaries, Conference brochure, sponsorship and trade show prospectus, sponsor and exhibitor listings, poster exhibition, hotel reservations, and Conference pre-registration.

6) Conservation Tillage Field Days and Tours – The Team compiled descriptions of 38 field days, tours and other events in 2002-03 highlighting new cropping systems technologies for direct seeding in the Inland Northwest and applicable areas of the Northern Great Plains and Canadian Prairie Provinces. The listing was distributed in May 2002 through mailings to Extension Ag Educators, Conservation Districts, USDA-NRCS offices, the main Ag service companies and fieldmen. The event descriptions were also included in the May issue of the PNW Extension Conservation Tillage Update newsletter (included in registration materials at a number of the field days below), put on the PNW Conservation Tillage Systems Information Source Web site, sent on the PNW Direct Seed E-mail List Server.

Many of the Team members were involved in organizing field days, tours and trials that featured conservation tillage and/or more intensive cropping systems and crop options. These events included:

- May 22 -- Western Whitman County Research Tour beginning at Lacrosse, WA – organized with assistance from Burns (90 attended)
- May 29 – Field Day at the OSU Hyslop Farm near Corvallis, OR - organized by Karow and Bill Young (120 attended)
- June 4 -- Field Day at WSU / USDA-ARS / OSU Ralston Project on Integrating BMPs and Genetics to Improve No-Till Spring Cropping Systems in the NW Crop-Fallow Region – organized by Veseth (110 attended)
- June 6 -- Field Tour of WSU Horse Heaven Hills research - organized by Schillinger (40 attended)
- June 11 -- Field Day at OSU Columbia Basin Agricultural Research Center at Pendleton - organized with assistance from Wysocki (260 attended)
- June 12 -- Field Day at OSU Columbia Basin Agricultural Research Center at Moro - organized with assistance from Wysocki (100 attended)
- June 12 -- ClearWater Direct Seeders (grower group in eastern WA and northern ID) field – organized by David Barton, UI Latah Co. Extension, with assistance from Veseth (45 attended)
- June 13 -- Field Day at WSU Dryland Research Station at Lind - organized by Schillinger (170 attended)
- June 25 – Direct Seed Drill Demonstration near Genesee, ID – organized by Latah and Nez Perce Conservation Districts with assistance from and videotape production by Veseth (280 attended)

- June 25-26 -- Quality of Life Direct Seed Cropping Tour (eastern WA and northern ID) for representatives of environmental groups and agencies - organized through the Pacific Northwest Direct Seed Association with assistance from Veseth and Wysocki (45 attended)
- June 26 -- Field Day at the WSU Wilke Farm near Davenport – organized by Tonks (80 attended)
- June 27 -- Direct Seed Research Field Day at the USDA-ARS / WSU Palouse Conservation Field Station near Pullman - organized by Veseth (140 attended)
- July 2 -- Field Day on UI Canola, Rapeseed and Mustard Research Program - organized by Jack Brown, UI Brassica Breeder, with assistance from Guy (120 attended)
- July 11 -- Field Day at WSU Spillman Agronomy Farm near Pullman – organized by Burns (200 attended)

EXPECTED OUTCOMES: The Project has 4 expected outcomes or impacts:

- 1) Increased PNW grower and Ag support personnel access to new conservation tillage systems technology developed through STEEP and related research efforts.
- 2) Increased effectiveness and profitability of growers' conservation tillage systems in the PNW as a result of access to and incorporation of appropriate new technologies and management strategies into grower's production systems.
- 3) Increased rate and extent of grower adaptation and adoption of conservation tillage systems as a result of improved effectiveness and profitability, plus a corresponding reduction in cropland soil erosion impacts on air and water quality.
- 4) Increased grower and Ag support industry / group recognition of and support for STEEP and related Northwest research and education programs on more intensive cropping systems under conservation tillage.

INTERACTIONS (COOPERATION) WITH OTHER SCIENTISTS CONDUCTING RELATED ACTIVITIES: A primary focus of this project is to collaborate with scientists on STEEP and related projects to integrate new technology on conservation tillage systems into effective educational programs and materials for Northwest growers and Ag support personnel. Many of the Team specialists are also investigators on other STEEP or related research projects.

PUBLICATIONS AND PRESENTATIONS (on conservation tillage systems technologies)

Pacific Northwest Extension Publications (PNW Conservation Tillage Handbook Series)

- Veseth, R. December 2001. PNW Direct Seed List Server Continues to Expand Technology Access. Pacific Northwest Conservation Tillage Handbook Series No. 16, Chap. 2. PNW Extension publication in Idaho, Oregon and Washington.
- Veseth, R. May 2002. Expanding Internet / E-mail Access to Pacific Northwest Direct Seed Cropping Systems Technology. Pacific Northwest Conservation Tillage Handbook Series No. 17, Chap. 10. Pacific Northwest Extension publication in Idaho, Oregon and Washington.
- Janosky, J., D. Young, and W. Schillinger. Feb. 2002. Economics of Conservation Tillage in a Wheat-Fallow Rotation. Pacific Northwest Conservation Tillage Handbook Series No. 16, Chap. 10. Pacific Northwest Extension publication in Idaho, Oregon and Washington.
- Cook, R.J., W. Schillinger, N. Christensen, R. Jirava, and H. Schafer. May 2002. Occurrence of the Rhizoctonia "Bare Patch" Disease in Diverse Direct-Seed Spring Cropping Systems in a Low-Precipitation Zone. Pacific Northwest Conservation Tillage Handbook Series No. 19, Chap. 4. Pacific Northwest Extension publication in Idaho, Oregon and Washington.

Pacific Northwest Extension Publications (others)

Cook, J.R., E. Adams, S. Guy, D Huggins, A. Kennedy, D. Ruark, R. Smiley, D. Thill, R. Veseth, D. Wilkins, D. Wysocki, E. Zakarison, and R. Zenner. 2002. Retooling Agriculture: A report on direct-seed cropping systems research in the Pacific Northwest. PNW 553. Univ. of Idaho, Oregon State Univ. and Washington State Univ.

Pacific Northwest Extension Conservation Tillage Update (newsletter)

Veseth, R.J., D. Wysocki, R. Karow, S. Guy, B. Schillinger, Y. Yenish, J. Burns, G. Schwab, D. Tonks, B. Brown and L. Robertson. Dec. 2001. Pacific Northwest STEEP Conservation Tillage Update newsletter. 14 pgs. Univ. of Idaho, Oregon State Univ. and Washington State Univ.

Veseth, R.J., D. Wysocki, R. Karow, S. Guy, B. Schillinger, Y. Yenish, J. Burns, G. Schwab, D. Tonks, B. Brown and L. Robertson. Feb. 2002. Pacific Northwest STEEP Conservation Tillage Update newsletter. 20 pgs. Univ. of Idaho, Oregon State Univ. and Washington State Univ.

Veseth, R.J., D. Wysocki, R. Karow, S. Guy, B. Schillinger, Y. Yenish, J. Burns, G. Schwab, D. Tonks, B. Brown and L. Robertson. May 2002. Pacific Northwest STEEP Conservation Tillage Update newsletter. 30 pgs. Univ. of Idaho, Oregon State Univ. and Washington State Univ.

Veseth, R.J., D. Wysocki, R. Karow, S. Guy, B. Schillinger, Y. Yenish, J. Burns, D. Tonks, B. Brown and L. Robertson. Pacific Northwest STEEP Conservation Tillage Update newsletter.. Univ. of Idaho, Oregon State Univ. and Washington State Univ. (in progress for Nov. 2002)

Refereed Journal Articles

Cook, R.J., W.F. Schillinger, and N.W. Christensen. 2002. Rhizoctonia root rot and wheat take-all in diverse direct-seed spring cropping systems. *Canadian Journal of Plant Pathology* 24:349-358.

Guy, S.O. and D.B. Cox. 2002. Reduced tillage increases residue groundcover in subsequent dry pea and winter wheat crops in the Palouse region of Idaho. *Soil and Tillage Res.* 66:69-77.

Janosky, J.S., D.L. Young, and W.F. Schillinger. 2002. Economics of conservation tillage in a wheat-fallow rotation. *Agronomy Journal* 94:527-531.

Stubbs, T.L., A.C. Kennedy, and W.F. Schillinger. 2002. Soil ecosystem changes during the transition to no-till cropping. *Journal of Crop Production* (in press).

Published Abstracts

Castle, S.C., D.J. Schotzko, J. Johnson, S. Guy, N.A. Bosque-Perez. 2002. Species composition, incidence, and relative abundance of Hessian fly, *Mayetiola destructor* (Say), parasitoids in northern Idaho. *In* 2002 Entomology Society of America Abstracts.

Guy S. and Y. Wu. 2002 Yellow mustard response to seeding date and N fertilization (abstract). p. 1. *In* Proceedings of the 2002 Western Soc. Of Crop Sci., 3 July, Honolulu, HI. ASA, Madison, WI.

Guy, S.O. and Y. Wu. 2002. No-till and conventional till comparisons of wheat, barley, and pea varieties. *In* 2002 Agronomy Abstracts. ASA, Madison, WI.

Karow, R., R. Veseth, S. Guy, S. Wuest, and D. Wysocki. 2002. AGSTATS02 – A Simple Statistical Analysis Program for On-Farm Testing. Agronomy Abstracts. Amer. Soc. Agronomy, Crop Sci. Soc. Amer., Soil Sci. Soc. Amer., Madison, WA

Kennedy, A.C., T.L. Stubbs, and W.F. Schillinger. 2002. Soil quality changes with the transition to no-till dryland cereal systems. [CD-ROM]. Soil Science Society of America annual meeting 11-14 Nov., Indianapolis, IN. *ASA, CSSA, and SSSA Abstracts*.

Schillinger, W.F., and D.L. Young. 2002. Cropping systems research in the driest wheat region of the world. [CD-ROM]. American Society of Agronomy annual meeting 11-14 Nov., Indianapolis, IN. *ASA, CSSA, and SSSA Abstracts*.

Schillinger, W.F., T.C. Paulitz, and A.C. Kennedy. 2002. Direct seeding into heavy irrigated cereal stubble instead of burning. Soil Science Society of America annual meeting 11-14 Nov., Indianapolis, IN. *ASA, CSSA, and SSSA Abstracts*.

Tonks, D.J., D.J. Rugel, D. Roberts, T. Platt, J. Newkirk, A.D. Esser, and E.B. Adams. 2002. The Wilke Project - a case study for the value of grower centered research and extension. *West. Soc. Weed Sci. Proc.* 55:32.

Proceedings

Veseth, R.J. Jan. 2002. Editor. Proceedings of Fifth Northwest Direct Seed Cropping Systems

Conference. Jan. 16-18, 2002, Spokane, WA. Northwest Direct Seed Conference office, P.O. Box 2002, Pasco, WA, and on the Web (<http://pnwsteep.wsu.edu>) Pg. 1-177.

Veseth, R.J. and R.S. Karow. 2002. Direct Seeding or No-Till.... What's the Difference. No-Till Farmer's Strategies, Techniques and Tactics Guaranteed to Increase Your No-Till Profits – Proceedings from the 10th Annual National No-Tillage Conference, Jan. 9-12, 2002, St. Louis, MO, Pg. 30-33.

University Research and Extension Reports

Burns, J. and R. Veseth. June 2002. Co-Editors. 2002 Field Day Proceedings: Highlights of Research Progress. Tech. Rpt. 02-1. Crop and Soil Sciences Dept., Washington State University, Pullman, WA.

Cook, R.J., S. Ullrich, and W. Schillinger. 2002. Performance of advanced line and varieties of spring barley seeded directly into wheat or barley stubble. pp. 113-115. In: *2001 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Esser, A.D. and D.J. Tonks. Direct Seed Issues in Lethbridge, Alberta, Canada. Agricultural Horizons Newsletter. Feb 2002.

Esser, A.E and D.J. Tonks. 2002. Spring Cereal Fertilization, Lincoln County. 2002 On-Farm Test Results. OFT-01. Pg. 29-30.

Esser, A.E and D.J. Tonks. 2002. Spring Cereal Fertilization, Northwest Whitman County. 2002 On-Farm Test Results. PFT-01. Pg. 31-32.

Guy S.O. and Y. Wu. 2002. Mustard seeding date and N fertilizer rate at Moscow. p. 26-29. In 2002 Rapeseed, Canola and Mustard Field Day Proceedings, Univ. of Idaho, Plant, Soil and Ent. Sci.

Guy, S.O., N.A. Bosque-Perez, S.D. Eigenbrode, J. Johnson-Maynard, and L.M. Dandurand. 2002. Assessing the impact of no-till and conventional-till on crop, variety, soil, insect, and disease responses. p. 36-49. In STEEP 2001 annual report. Spokane, WA, 16-18 Jan., Univ. of Idaho, Oregon St. Univ., Wash. St. Univ., USDA-ARS, and NRCS.

Guy, S.O., K. McPhee, and D. Huggins. 2002. Evaluation of wheat and pea varieties under direct and conventional seeding in Washington, Idaho, and Oregon. p. 28-35. In STEEP 2001 annual report. Spokane, WA, 16-18 Jan., Univ. of Idaho, Oregon St. Univ., Wash. St. Univ., USDA-ARS, and NRCS.

Guy, S.O. and Y. Wu. 2002. Northern Idaho Extension Small Grain and Legume Variety Performance Trials 2000-2001. Progress Report 355. Univ. of Idaho Coop. Ext., Moscow, ID.

Smith, L.J., S.O. Guy, Y. Wu, and K.N. Hart. 2002. North-Central Idaho Cooperative Extension Crop Management Trials 2001. Progress Report 358. Univ. of Idaho Coop. Ext., Moscow, ID.

Juergens, L., D. Young, and W. Schillinger. 2002. Winter wheat after fallow yield survey results for Ritzville growers, Adams county, WA. pp. 141-142. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Juergens, L., D. Young, R. Jirava, and W. Schillinger. 2002. Economics of alternative no-till spring crops at Jirava farm, Ritzville, WA. pp. 132-133. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Juergens, L., D. Young, and W. Schillinger. 2002. Economics of no-till annual spring cropping systems project, Ritzville, WA. pp. 134-135. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Schillinger, W., R. Papendick, S. Guy, P. Rasmussen, and C. van Kessel. 2002. Precipitation and evaporation in five dryland cropping zones in the Western United States. pp. 95. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Schillinger, B., D. Rowell, H. Schafer, D. Young, S. Albrecht, and S. Schofstoll. 2002. Cropping systems

- research in the driest wheat region of the world. pp. 100-101. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Schillinger, B., H. Schafer, and B. Sauer. 2002. Long-term dryland cropping systems research at Lind: The next six year. pp. 89. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Schillinger, W., H. Schafer, B. Sauer, T. Paulitz, A. Kennedy, D. Young, A. Kennedy, S. Schofstoll, R. Veseth, D. Wysocki, K. Saxton, B. Fode, K. Schroeder, and C. Claiborn. 2002. Irrigated cropping systems research at Lind. pp. 96-99. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Schillinger, B., R. Jirava, H. Schafer, J. Cook, D. Young, A. Kennedy, and S. Schofstoll. 2002. Long-term direct seed alternative cropping systems research at the Ron Jirava farm: Year 5. pp. 92-94. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Schillinger, W., H. Schafer, B. Sauer, and S. Schofstoll. 2002. Post-harvest management of Russian thistle pp. 122. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Schillinger, W., H. Schafer, B. Sauer, A. Kennedy, and K. Saxton. 2002. Dryland direct-seed annual cropping systems at Lind: The first four years. pp. 90-91. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.
- Tonks, D.J., D.J. Rugel, and D. Roberts. 2002 The Wilke Direct Seeding Project. Agricultural Horizons Newsletter, Oct. 2002.
- Tonks, D.J. 2002. Wilke Field Day report. CSANR. Aug. 2002 Newsletter.
- Tonks, D.J. 2002. Northwest Direct Seed Cropping System Conference. CSANR. Feb 2002 Newsletter.
- Tonks, D.J. 6th Annual Wilke Field Day. 2002. Lincoln and Adams Area Community Update. Aug. 2002.
- Tonks, D.J., D.J. Rugel, and D. Roberts, 2002. Wilke Project 4-year Wrap up.
- Tonks, Dennis. 2002. Wilke Research and Extension Farm. In *2002 Field Day Proceedings: Highlights of Research Progress*. Dept of Crop and Soil Sciences Tech. Pub. 02-1. pg 8.
- Tonks, D.J. and D.J. Rugel. 2002. The Wilke Direct Seed Project. In *2002 Field Day Proceedings: Highlights of Research Progress*. Dept of Crop and Soil Sciences Tech. Pub. 02-1. pg 87.
- Veseth, R.J. March 2002. Universities Retooling Farming. Washington State University Cooperative Extension Focus newsletter. Pullman, WA
- Veseth, R., D. Wysocki, R. Karow, S. Guy, B. Schillinger, J. Yenish, G. Schwab, J. Burns, D. Tonks, L. Robertson, and B. Brown. June 2002. Expanding Web / E-mail Access to PNW Direct Seed Cropping Systems Technology. 2002 Field Day Proceedings: Highlights of Research Progress. Tech. Rpt. 02-1. Crop and Soil Sciences Dept., Washington State University, Pullman, WA.
- Veseth, R., D. Roe, and D. Wysocki. June 2002. PNW Direct Seed Case Study Series Available. 2002. Expanding Web / E-mail Access to PNW Direct Seed Cropping Systems Technology. 2002 Field Day Proceedings: Highlights of Research Progress. Tech. Rpt. 02-1. Crop and Soil Sciences Dept., Washington State University, Pullman, WA.
- Veseth, R. June 2002. NW Direct Seed Conferences Expand Technology Access. 2002 Field Day Proceedings: Highlights of Research Progress. Tech. Rpt. 02-1. Crop and Soil Sciences Dept., Washington State University, Pullman, WA.
- Veseth, R.J. June 2002. Field Tours and Demonstrations on Direct Seed Cropping Systems. Washington State University Tri-County Area Newsletter – Whitman, Asotin and Garfield Counties. Pomeroy, WA
- Wu, Y. and S. Guy. 2002. 2001 Western regional dry pea, lentil and chickpea trails: Idaho, Univ. of Idaho.

- p. 80-84. In R. Short et al. (ed) 2001 Dry Pea, Lentil Chickpea and Winter Legume Breeding Progress Report. USDA-ARS and Dept. of Crop and Soil Sci, Wash. St. Univ., Pullman, WA.
- Wysocki, D.J. 2001. Understanding Soil Organic Matter. Oregon Agri. Exp. Stn. Special Report 1026 pp 96-101.
- Wilkins, D.E., D.J. Wysocki, and M.C. Siemens. 2001 Effect of Fertilizer Placement and Soil Winter on Emergence of Yellow Mustard. Oregon Agri. Exp. Stn Special Report 1026. pp 77-83.
- Young, D.L., W.F. Schillinger, and F.L. Young. 2002. How the 2001 drought affected the economic risk of continuous no-till hard red spring wheat in Adams and Benton counties experiments. pp. 136-140. In: *2002 Field Day Proceedings: Highlights of Research Progress*. Dept. of Crop and Soil Science Technical Report 02-1, Washington State University, Pullman, WA.

Popular Publications -- Ag Media

- Cook, J., B. Schillinger, N. Christensen, R. Jirava, and H. Schafer. 2002. Rhizoctonia "bare patch" disease in diverse direct-seed spring cropping systems in a low-precipitation zone. *Wheat Life* (in press for Nov. issue).
- Guy, S.O. 2002. No-Till Performance Shown. Article by S. Allen. In *Agri-Times Northwest*. 1 February, 2002.
- Janosky, J., D. Young, and W. Schillinger. 2002. Economics of conservation tillage in a wheat-fallow rotation. *Wheat Life* Vol. 45, 3:45-50.
- Veseth, R.J. Nov. 16, 2001. Northwest Direct Seed Cropping Systems Conference. *Crop and Soils News/Notes*, Oregon State Univ. Corvallis, OR
- Veseth, R.J. Nov. 2001. Northwest Direct Seed Cropping Systems Conference. *Ag Equipment Power*, Yakima, WA
- Veseth, R.J. Nov. 2001. Direct Seed Advise Offered. WSU College of Ag and Home Economics Information Dept. news release carried in: Nov. *Agri-Times Northwest*. Pendleton, OR; Nov. *The Growers' Guide*, Colfax, WA; Nov. 2 *Agri-Times Northwest*, Pendleton, OR.
- Veseth, R.J. Nov. 2001. Northwest Direct Seed Conference Slated. WSU College of Ag and Home Economics Information Dept. news release carried in: Nov. 2 and 16 *Green Sheet*, Washington Association of Wheat Growers, Ritzville, WA; Nov. *The Growers' Guide*, Colfax, WA
- Veseth, R.J. Dec. 2001. PNW Grower Direct Seed Web Forum. *Wheat Life*, Washington Association of Wheat Growers, Ritzville, WA.
- Veseth, R.J. Dec. 2001. Northwest Direct Seed Cropping Systems Conference. *Direct Link*, Pacific Northwest Direct Seed Association, Pasco, WA
- Veseth, R.J. Dec. 21, 2001. 10 Direct Seeders to Speak. *Agri-Times Northwest*, Pendleton, OR.
- Veseth, R.J. Jan. 4, 2002. Direct Seed Conference to Spotlight Technology Advances. *Capital Press*, Salem OR.
- Veseth, R.J. Jan. 4, 2002. Cropping Systems Conference Set for Spokane Jan. 16-18. *Agri-Times Northwest*, Pendleton, OR
- Veseth, R.J. Jan. 2002. 10 Growers to Share Direct Seed Experiences. *The Growers' Guide*. Colfax, WA
- Veseth, R.J. Jan. 11, 2002. Direct Seed Conference Info. *Green Sheet*. Washington Assoc. of Wheat Growers. Ritzville, WA.
- Veseth, R.J. Jan. 11, 2002. Direct Seed Conference Registration Includes Ag Expo and Farm Forum. *Capital Press*. Salem, OR.
- Veseth, R.J. February 2002. Grower Direct Seed Case Studies Provide Advise. *The Growers' Guide*, Colfax, WA.
- Veseth, R.J. March 2002. Dryland Cropping Region Alternative Crops. WSU College of Ag and Home Economics Information Dept. news release carried in: March 1 *Green Sheet*. Washington Assoc. of Wheat Growers. Ritzville, WA; March 2002 *The Growers' Guide*, Colfax, WA.
- Veseth, R.J. March 2002. Reducing Greenhouse Gas Emissions. *The Growers' Guide*, Colfax, WA
- Veseth, R.J. June 2002. Description of 2002 NW Field Days and Tours. *The Growers' Guide*, Colfax, WA

Veseth, R.J. June 2002. Direct Seed Research Field Day June 27. WSU College of Ag and Home Economics Information Dept. news release carried in: June *The Growers' Guide*, Colfax, WA; and June 21 *Green Sheet*. Washington Assoc. of Wheat Growers. Ritzville, WA; June 14 Capital Press, Salem, OR

Veseth, R.J. Oct. 2002. 2003 NW Direct Seed Conference. WSU College of Ag and Home Economics Information Dept. news release carried in: October issue of *The Growers' Guide*, Colfax, WA

Presentations at Professional Meetings:

Wu, Y. and S.O. Guy. 3 July, 2002. Yellow Mustard Response to Seeding Date and N Fertilization. Western Society of Crop Science. Honolulu, HI.

Tonks, D.J. March 2002. The Wilke Project – A case for grower driven research. Western Society of Weed Science. Salt Lake City, UT.

Presentations at Producer and Ag Support Meetings:

Guy, S.O., 5 Nov., 2001. 2001 North Idaho Extension Variety Cereal and Legume Studies. NezPerce Co. Crop Advisory Comm. Lewiston, ID. 14 attended.

Guy, S.O., 6 Dec., 2001. 2001 N. Idaho Legume Variety Trials. USA Dry Pea and Lentil Assoc. Annual Grower's Meeting. Moscow, ID. 105 attended.

Guy, S.O., 8 Jan., 2002. Pea, Wheat and Barley Variety Response to Tillage. Clearwater Direct Seeders, Lewiston, ID. 30 attended.

Guy, S.O. and Y. Wu. 16 Jan., 2002. Variety Performance of Dry Pea, Spring Wheat, and Barley in a No-till and Conventional Till Comparison. Poster. 2002 PNW Direct Seed Conference. Spokane, WA. 860 attended.

Guy, S.O. 5 Feb., 2002. Variety Performance in Northern Idaho and Variety Response to Tillage. Idaho Co. Crop School. Greencreek, ID. 75 attended.

Guy, S.O. 6 Feb., 2002. Variety Performance in Northern Idaho and Variety Response to Tillage. Latah Co. Crop School. Moscow, ID. 40 attended.

Guy, S.O. 7 Feb., 2002. Variety Performance in Northern Idaho and Variety Response to Tillage. NezPerce Co. Crop School. Lewiston, ID. 63 attended.

Guy, S.O. 21 Feb., 2002. Variety Performance in Northern Idaho and Variety Response to Tillage. Boundary Co. Crop School. Bonners Ferry, ID. 24 attended.

Guy, S.O. 22 May, 2002. Six Years of Crop Production Research and Extension Work. UI/PSES Promotion Meeting. Moscow, ID. 45 attended.

Guy, S.O. and Y. Wu. 2 July, 2002. Mustard Management: Seeding Date, Seeding Rate, N Fertilization. PSES Brassica Field Day, Moscow, ID. 80 attended.

Guy, S.O. 10 July, 2002. Pea No-Till Variety Performance and Chickpea Seed Treatment in No-Till. NezPerce Co. Rimrock Crop Tour. Genesee, ID. 58 attended.

Guy, S.O. 23 July, 2002. Idaho Barley Production and Varieties. Taiwan Trade Team Meeting. Moscow, ID. 11 attended.

Guy, S.O. 25 July, 2002. Idaho Barley Production and Varieties. Japanese Trade Team Meeting. Moscow, ID. 10 attended.

Johnson-Maynard, J. K. Umiker, and S. Guy. 16 Jan., 2002. Changes in Soil Biota and Soil Physical Properties in the Early Stages of No-Till. Poster. 2002 PNW Direct Seed Conference. Spokane, WA. 860 attended.

Schotzko, D., S. Castle, S. Guy, and N.A. Boxque-Perez. 16 Jan., 2002. Effect of Tillage Practices on Incidence and Abundance of Hessian Fly in Northern Idaho. Poster. 2002 PNW Direct Seed Conference. Spokane, WA. 860 attended.

Tonks, D.J. June 2002. Highlights and Summary from the first 4-year rotation of the Wilke Direct Seed Project and small plots. 6th Annual Wilke Field Day, Davenport, WA. 65 attended.

Tonks, D.J. and D.J. Rugel. June 2002. The Wilke Direct Seed Project. Presentation to 4H Hub leadership. 15 attended.

Tonks, D.J., D.J. Rugel, and D. Roberts. April 2002. The Wilke Direct Seed Project field tour in conjunction with Water Quality Conference sponsored by Dept. of Ecology. 10 attended.

- Tonks, D.J. Wilke Project Update. March 2002. Edwall Chemical Corp. Annual Meeting. Davenport, WA. 75 attended.
- Tonks, D.J. Feb 2002. Improved Cheatgrass Control. Research in the Dryland Cropping Area and Adams Conservation District Meeting. Ritzville, WA. 70 attended.
- Tonks, D.J. Jan 2002. The Wilke Project – An Update on No-till Farming Research (2 sessions). Pacific Northwest Farm Forum. Spokane, WA. 53 attended.
- Tonks, D.J. Jan. 2002. Direct seeding Do's and Don'ts from the Wilke Project Experience. Direct Seeding 101 Workshop WSU Coop Ext. Davenport, WA. 45 attended.
- Veseth, R. J. Dec. 13, 2001. Grower Technology Access for Wind Erosion Control. Columbia Plateau Wind Erosion / Air Quality Project Research Review, Pasco, WA – 75 attended.
- Veseth, R., D. Wysocki, S. Guy, B. Schillinger, J. Yenish, G. Schwab, J. Burns, D. Tonks, and L. Robertson. Jan. 16, 2002. Pacific Northwest Research for Successful Conservation Tillage Systems. Poster. 2002 PNW Direct Seed Conference. Spokane, WA. 860 attended.
- Veseth, R.J. Jan. 23, 2002. Strategies for Making the Transition to Direct Seeding Systems. Cereal Industry Seminar, Walla Walla Cooperative Extension. Walla Walla, WA – 95 attended.
- Veseth, R.J. Jan. 29. Review of the 2002 NW Direct Seed Cropping Systems Conference and Plans for 2003. ClearWater Directs Seeders, Lewiston, WA – 30 attended.
- Veseth, R.J. Feb. 5, 2002. Strategies for Transitioning to Direct Seeding. University of Idaho Prairie Area Cereals School. Greencreek, ID – 85 attended.
- Veseth, R.J. Feb. 6, 2002. Strategies for Transitioning to Direct Seeding. University of Idaho Cereals School. Moscow, ID – 70 attended.
- Veseth, R.J. Feb. 7, 2002. Technologies and Strategies for Direct Seed Systems. University of Idaho Extension Cereals School. Lewiston, ID – 65 attended.
- Veseth, R.J. Feb. 21, 2002. Strategies for Transitioning to Direct Seed Systems. Boundary County Grain Producers Workshop. Sandpoint, ID- 35 attended.
- Veseth, R.J. April 5, 2002. What's Behind the Direct Seed Movement in the Pacific Northwest and Worldwide. Invited lecture at University of Idaho Soil and Water Quality Seminar Series. Moscow, ID – 18 attended.
- Veseth, R.J. May 14, 2002. 2003 Direct Seed Cropping Systems Conference. Pacific Northwest Direct Seed Assoc. Board of Directors Meeting. Moscow, ID – 30 attended.
- Veseth, R.J. May 16, 2002. Update on Extension Technology Transfer in Cropping Systems Technologies for Wind Erosion Control. Columbia Plateau Wind Erosion / Air Quality Project Review. Pullman, WA – 25 attended.
- Veseth, R.J. and D. Wysocki. June 24 – What's Driving the Growth in Direct Seed Systems in the Pacific Northwest. Introduction program for the Pacific Northwest Direct Seed Association's Quality of Life Direct Seed Cropping Tour in the Inland Northwest. Spokane, WA – 45 attended.
- Wu, Y. and S. Guy. 4 March, 2002. Mustard Seeding Date and N fertilizer responses. PNW Brassica Research Review. Moscow, ID. 74 attended.
- Wysocki D. J. February 6. Growing Lupins in Eastern Oregon." Lupin Extension Meeting, Hermiston, Oregon. Attendance 50.
- Wysocki D. J. 15 February. Managing for Soil Quality. Mid-Columbia Soil Quality Workshop, The Dalles, Oregon. Attendance 150
- Wysocki D. J. 22 February. Straw Values for Conservation and Nutrients. RC&D Meeting on potential use of straw as a fiber source. Athena, Oregon. Attendance 30
- Wysocki D. J. 24 February. Fire as a Management Tool. EPA Workshop on Agricultural Burning. Blue Mountain Community College, Pendleton, Oregon. Attendance 100
- Wysocki D. J. 27 February. Managing Dryland Wheat Cropping Systems for Profitability and Environmental Quality. Oregon Wheat Commission Annual Meeting. The Dalles, Oregon. Attendance 45
- Wysocki D. J. 6 June. Growing and Fertilizing Hard Wheats. Wasco County Crop and Conservation Tour. The Dalles, Oregon. Attendance 55

Wysocki D. J. 12 June. Nutrient Management on Hard Wheat. Pendleton Ag Research Field Days. Pendleton, Oregon. Attendance 230

Wysocki D. J. 12 June. Fertilizer Placement in No-Till Fall-Seeded Canola. Pendleton Ag Research Field Days. Pendleton, Oregon. Attendance 230

Wysocki D. J. 13 June. Nutrient Management on Hard Wheat. Sherman Station Field Days, Moro, Oregon. Attendance 100

Wysocki D. J. 14 June. Dryland Agriculture in Eastern Oregon. Pendleton Leadership Development Program. Pendleton, Oregon. Attendance 30

Wysocki D. J. 20 June. Growing and Fertilizing Hard Wheats. Gilliam County Crop and Conservation Tour. Schutler Flat, Oregon. Attendance 50

Wysocki D. and R.J. Veseth. June 24. What's Driving the Growth in Direct Seed Systems in the Pacific Northwest. Introduction program for the Pacific Northwest Direct Seed Association's Quality of Life Direct Seed Cropping Tour in the Inland Northwest. Spokane, WA – 45 attended.

Wysocki D. J. 12 September. Potential of Using Kernel Separation to Select for Various End Use Qualities. OSU and Wheat Industry Sustainability Workshop. Boardman, Oregon. Attendance 50.

Sp3exr02.doc