

**TITLE:** A Regional Technology Transfer Program for Grass Seed Production Systems

**OBJECTIVES:** Disseminate existing and new information on grass seed production to producers and grass seed industry representatives in the non-irrigated region of the Pacific Northwest (PNW) in a timely and effective manner.

**INVESTIGATORS:**

**Principal Investigators:** John Holman, Extension and Research Support Scientist (0.5 FTE) and Donn Thill, Prof. Weed Science (0.05) FTE; Department of Plant, Soil, and Entomological Sciences, University of Idaho, PO Box 442339, Moscow, ID 83844-2339; jholman@uidaho.edu or dthill@uidaho.edu.

**Cooperators:** County extension educators and grass seed industry field consultants in the non-irrigated region of the Pacific Northwest, who disseminate extension information and assist with on-farm experimentation; Kentucky bluegrass growers in the non-irrigated region of the PNW, who provide on-farm experimentation sites.

**ABSTRACT:**

Timely dissemination of information on grass seed production is integral to the success and viability of the grass seed industry in the non-irrigated region of the PNW. Information is disseminated to producers, industry representatives, government agencies, university personnel, students, and public. Additionally, the team's extension program serves as a critical link between the University of Idaho Kentucky Bluegrass Team and the region's grass seed industry. The extension specialist provides feedback to the research team from producers who have tested new grass seed production techniques. The extension program disseminates information through various venues, such as publications, electronic mailings, field days, and grower meetings.

**JUSTIFICATION:**

Kentucky bluegrass production is ideally suited to the PNW due to the region's cool, wet winters and springs that allow the grass to grow lushly. The region's warm, dry summers provides ideal conditions for seed maturity and harvest operations. Established stands of bluegrass prevent soil erosion and nutrient loss, protecting the region's highly erosion prone soils, water quality, and aquatic life.

Survey results clearly show that information must be disseminated to producers and grass seed industry representatives to insure timely adoption of new non-thermal residue management practices (Rwiza 2003). Grass seed producers and industry representatives also need timely delivery of new information on weed control, soil fertility, and other production information. This will be achieved through a dedicated extension program that focuses on timely dissemination of information on grass seed production.

There are several benefits of a regional extension program on grass seed production. First, grower awareness can be increased resulting in acceptance and adoption of new production practices that minimize or eliminate the need for open field burning, while maintaining profitability, minimizing soil erosion, and improving air quality. Second, an established extension program increases producer attendance and participation at extension events. Third, extension programming can gain public approval and support of non-thermal or reduced thermal

grass seed production. Fourth, dissemination of information can maintain or increase grass seed production acreage and the number of grass seed producers in the PNW.

## **PROGRESS:**

Positive impacts of the Kentucky bluegrass extension program include:

- Good attendance at field tours for the past four years
- Implementation of research results by growers
- A strong working relationships between the grass seed industry, producers and the University of Idaho bluegrass team
- The Kentucky bluegrass website receiving an average of 45 and 60 sessions (multiple page views) per day (Figure 1)
- The website receiving an Award of Excellence from the American Society of Agronomy in 2004.

The most commonly viewed web pages on the Kentucky bluegrass website are the conversion calculator (54%), index page (29%), searchable database (9%), links (5%), and needs (4%) sections (Figure 2). The most people that use the website live in Washington, but people all across the United States and from other countries have accessed the website. The most common users were from Washington (~20%), California (~10%), Virginia (~10%), Idaho (~5%), and Utah (~2%). In addition to the high number of users accessing the website, there are other indicators that the website and information database are making positive impacts. For example, the Idaho State Department of Agriculture uses the database annually to help determine if an “economically viable alternatives to field burning” have been developed, and the Idaho Attorney General’s Office has used information from the website in judicial hearings. The website also serves as a useful tool for posting dates, directions and agendas for field tours, and is used by county extension educators, industry consultants, producers, public, students, and university faculty to access current information on grass seed production.

Dissemination of information occurs through numerous local, regional, and national presentations, the Kentucky bluegrass list serve, mass media publications, extension reports and publications, individual contacts, media interviews, field tours, conferences, and the Kentucky bluegrass website. Four extension publications recently have been published:

- The Effect of Residue Management on Kentucky Bluegrass Production
- The Effect of Residue Management on Kentucky Bluegrass Growth and Seed Production
- An Industry Amidst Conflict and Change: Practices and Perceptions of Idaho’s Bluegrass Seed Producers
- Public Attitudes and Perceptions of Air Quality and Bluegrass Seed Residue Burning in Northern Idaho

In addition, two refereed journal publications “Livestock Use as a Non-thermal Residue Management Practice in Kentucky Bluegrass Seed Production Systems” and “Structural Composition, Growth Stage, and Cultivar Affects on Kentucky Bluegrass Forage Yield and Nutrient Composition” were recently accepted for publication by the Agronomy Journal.

College students learned about bluegrass production through class lectures and field tours. Moscow High School students in a senior level physics class designed and built a portable field burned with input from Kentucky bluegrass team members. Elementary students learned about bluegrass through the Agriculture in the Classroom program, which used the “Idaho Bluegrass Production” workbook and tours of a bluegrass production fields. In addition to the website, a

list serve, unit converter, contact list, and research database containing over 250 references are avenues of information dissemination. Results from a survey of producers in Idaho and Washington State asking them to define their bluegrass production information needs and preferred method of delivery was compiled and is being used to help focus future research and extension objectives.

Some accomplishments of the current bluegrass extension program over the past four years include:

- Established a new Kentucky bluegrass seed production extension program
- Established a core team of production, industry, research, and web design personnel to provide advice on the extension program's information dissemination
- Organized annual field tours of bluegrass research
- Produced numerous extension reports, presentations, information updates, and mass media articles
- Provided numerous media interviews
- Participated in numerous local and regional meetings, conferences, and workshops
- Participated in Environmental Protection Agency (EPA) and ISDA meetings concerning bluegrass post-harvest residue management
- Provided ISDA, North Idaho Farmers (NIFA), Safe Air For Everyone (SAFE), grass seed industry, public, and growers with technical information regarding bluegrass seed production and residue management
- Established a Kentucky bluegrass website (<http://www.ag.uidaho.edu/bluegrass/>), list server, unit converter, and research database
- Established a downy brome and broadleaf weed control studies in bluegrass
- Conducted a survey of bluegrass growers in ID and WA to determine their information needs and preferred method of information delivery
- Compiled historical burn and non-burn bluegrass yield data by county for ID and WA
- Compiled historical bluegrass acreage data by year and county for ID and WA, and OR
- Established a study to evaluate the effect of swathing date on bluegrass seed quality
- Produced an extension publication on the effect of residue management on Kentucky bluegrass production
- Produced an extension publication on the effect of residue management on Kentucky bluegrass growth and seed production
- Drafted an extension publication on reduced and non-thermal bluegrass residue management
- Participated in all University of Idaho bluegrass research projects
- Conduct a study to evaluate time of fertilizer application on bluegrass seed yield under different residue management systems
- Initiated a study to evaluate bluegrass forage quality
- Co-authored "Idaho Bluegrass Production" Agriculture in the Classroom activity book
- Organized an Agriculture in the Classroom student tour of a bluegrass production field and explained the field burning issue to them
- Compiled a contact list of producer, industry, government, and public individuals interested in obtaining bluegrass production information and research updates
- Provided technical information to ISDA for their determination on economically viable alternatives to the thermal disposal of bluegrass residue

- Met with University of Idaho student organizations to discuss bluegrass production and residue management
- Met with herbicide industry representatives to discuss weed management issues and management options in bluegrass seed production
- Led a field tour of Kentucky bluegrass seed production research in conjunction with Grass Seed Cropping Systems for a Sustainable Agriculture (GSCSSA) in 2004
- Provided technical information to the grass seed industry, extension educators, grass seed producers on all aspects of grass seed production in ID, WA, MT, UT, and OR.

**INTERACTIONS:** Cooperates with all members of the UI Kentucky bluegrass team and Bill Johnston at WSU.

**TIMELINE:** The current Kentucky bluegrass extension program will run until June 30, 2007. No funds are requested for federal FY2007 because John Holman has left the UI for a faculty position at Kansas State University.

**PUBLICATIONS, REPORTS, AND PRESENTATIONS FOR 2005-2006:**

***Refereed Journal Publications:***

***Refereed Extension Publications***

Wulfhorst, J.D., L. Van Tassell, B. Johnson, J. Holman, D. Thill. 2006. An industry amidst conflict and change: practices and perceptions of Idaho's bluegrass seed producers. University of Idaho Research Bulletin 165.

Holman, J. and D. Thill. 2005. Kentucky bluegrass seed production. University of Idaho Extension Bulletin 842.

Holman, J. and D. Thill. 2005. Kentucky bluegrass growth, development and seed production. University of Idaho Extension Bulletin 843.

***Proceedings and Abstracts***

Wolfley, Jared, Larry Van Tassell, Donn Thill, and John Holman. 2006. "Evaluation of non-thermal methods in the production of Kentucky bluegrass seed." Selected paper at the 2006 Western Agricultural Economics Association Meetings, Anchorage, AK. June 2006. Abstract: *Journal of Agricultural and Resource Economics*. 31,3(2006):in print.

Johnston, W., C. Golob, R. Johnson, J. Burns, and J. Holman. 2005. Development of high yielding Kentucky bluegrass for non-thermal seed production. GSCSSA Progress Report. p.13-16.

Holman, J. and D. Thill. 2005. A regional technology transfer program for Kentucky bluegrass production systems. GSCSSA Progress Report. p.35-38.

Thill, D., J. Johnson-Maynard, J. McCaffrey, L. Van Tassell, J. Wulfhorst, and J. Holman. 2005. Integrated residue management systems for sustained seed yield of Kentucky bluegrass without burning. GSCSSA Progress Report. p.39-54.

Holman, J., D. Thill, J. Johnson-Maynard, K. Umiker, C. Hunt, and J. McCaffrey. 2005. Effect of reduced-burn and no-burn residue management on Kentucky bluegrass seed production. Proc. Western Society of Crop Science.

***Non-refereed Extension Publications, Projects, and Mass Media Articles***

Holman, J. 2006. University of Idaho Kentucky bluegrass field tours scheduled. Ag Equipment Power. Clinton Publishing, Inc. ISSN. 1535-9409.

Thill, D., J. Johnson-Maynard, C. Hunt, D. Crawford, J. McCaffrey, L. Van Tassell, J.D. Wulfhost, W. Chun, K. Hart, J. Church, and J. Holman. 2005. Integrated residue management systems for sustained seed yield of Kentucky bluegrass without burning. Western Sustainable Agriculture Research and Education Report.

Holman, J., J. Johnson-Maynard, K. Umiker, J. Reed, and D. Thill. 2005. Early fall nitrogen application in Kentucky bluegrass for enhanced seed yield. Washington Turfgrass Seed Commission Report.

Holman, J., J. Reed, and D. Thill. 2005. Downy brome control in established Kentucky bluegrass. Washington Turfgrass Seed Commission Report.

Holman, J. 2005. Sod webworm moths causing damage. Ag Equipment Power. Clinton Publishing, Inc. ISSN. 1535-9409.

Holman, J. 2005. Kentucky bluegrass seed production website. Washington Turfgrass Seed Commission Bi-Annual Report.

Solan, A., J. Holman, and D. Thill. 2005. Bluegrass research comes into its own at the University of Idaho. University of Idaho Extension Trends 2004-2005.

***Conference Presentations***

Holman, J. and D. Thill. 2005. Kentucky bluegrass extension program. GSCSSA. Annual GSCSSA meeting, Albany, OR. Nov 16.

Holman, J., D. Thill, J. Johnson-Maynard, J. McCaffrey, C. Hunt, L. Van Tassell, and J.D. Wulfhorst. 2005. Kentucky bluegrass research at the University of Idaho. GSCSSA. Annual GSCSSA meeting, Albany, OR. Nov 16.

Johnston, W., C. Golob, R. Johnson, J. Burns, and J. Holman. 2005. Development of high yielding Kentucky bluegrass for non-thermal seed production. GSCSSA. Annual GSCSSA meeting, Albany, OR. Nov 16.

***Extension Presentations***

Holman, J. 2006. Integrating crop and livestock systems for environmental and economic sustainability. Kansas State University. (30 participants).

Holman, J. 2006. Cattle grazing and forage production within Kentucky bluegrass seed production systems. Samuel Roberts Noble Foundation (50 participants).

Holman, J. 2006. Kentucky bluegrass research. Idaho State Dept. of Agriculture Crop Residue Disposal Program Training. (10 participants).

Holman, J. 2005. Weed control and nutrient management in non-thermal Kentucky bluegrass production systems. Washington Turfgrass Seed Commission. (15 participants)

Holman, J. 2005. Grass seed production in the post-burn era. Far West Agribusiness Association. (100 participants)

Holman, J. 2005. Integrating crop and livestock systems for environmental and economic sustainability. Oklahoma State University. (30 participants)

Holman, J. 2005. Grazing grass seed post-harvest residue to reduce field burning and developing an integrated research and extension program. University of Wisconsin-Madison. (50 participants)

Holman, J. 2005. Alternatives to thermal Kentucky bluegrass seed production. Oregon State University. (20 participants)

Holman, J. 2005. Stretching the dollar in Kentucky bluegrass production systems. Oregon State University. (20 participants)

Holman, J., D. Thill, J. Johnson-Maynard, C. Hunt, J. McCaffrey, L. Van Tassell, J.D. Wulfhorst, D. Crawford, J. Reed. 2005. A team approach to addressing a critical grass seed production issue. PSES Dept. field tour. (100 participants)

Reed, J., D. Thill, and J. Holman. 2005. Herbicide suppression of Kentucky bluegrass stands in an alternate year production system. PSES Dept. field tour. (100 participants)

Holman, J. 2005. Weed control studies in Kentucky bluegrass. University of Idaho Weed Science field tour. (50 participants)

Holman, J. 2005. Alternatives to Kentucky bluegrass field burning. Environmental Science Seminar. (20 participants)

Wulfhorst, J.D., L. Van Tassell, J. Holman, and D. Thill. 2005. North Idaho Kentucky bluegrass producer, industry, and university roundtable. North Idaho Farmers Alliance. (25 participants)

Holman, J. 2005. Alternatives to Kentucky bluegrass field burning. Pacific Northwest Farm Forum and Ag Expo. (25 participants)

### ***Interviews***

Holman, J. 2006. SportsTurf Magazine. March 22, 2006.

Holman, J. 2005. Western Farmer Stockman. September 22, 2005.

Holman, J. 2005. KPNV News Radio. Sandpoint, ID. October 23, 2005.

Holman, J. 2005. Capital Press Newspaper. Potlatch, ID. June 9, 2005.

Holman, J. 2005. University of Idaho College of Agriculture Educational Communications press release. June 17, 2005.

Holman, J. 2005. Researchers seek answers to ag's burning question. Lewiston Tribune. June 13, 2005.

***Field Tours***

Holman, J. 2006. Integrated reduced-burn and non-burn residue management field tour and progress report. Potlatch, ID.

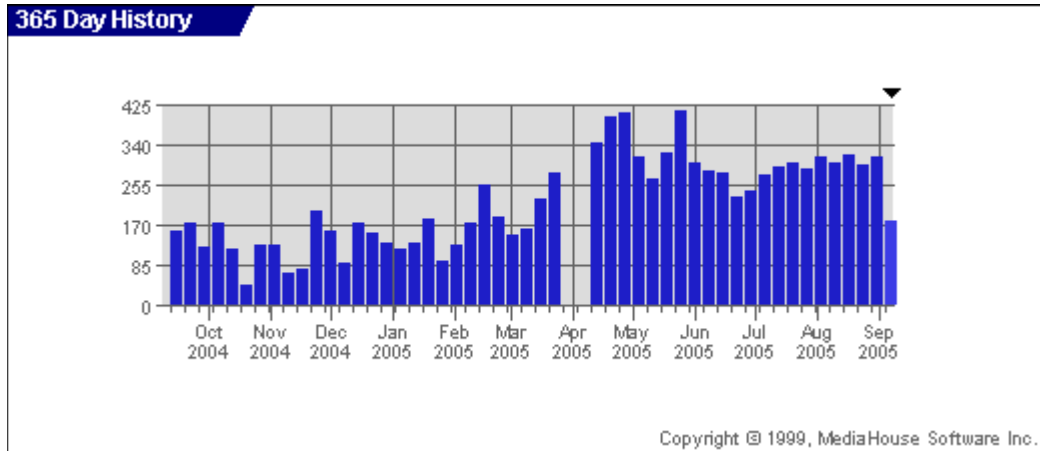
Holman, J. 2006. Reduced burn management of Kentucky bluegrass post-harvest residue field tour and progress report. Worley, ID.

Holman, J. 2005. Integration of cattle as a non-thermal alternative to managing Kentucky bluegrass residue and progress report. Potlatch, ID.

Holman, J. 2005. Integrated reduced-burn and non-burn residue management field tour and progress report. Potlatch, ID.

Holman, J. 2005. Reduced burn management of Kentucky bluegrass post-harvest residue field tour and progress report. Worley, ID.

**Figure 1.** The number of sessions on the Kentucky bluegrass website by month.



**Figure 2.** Most commonly viewed web pages on the Kentucky bluegrass website.

