U.S. Wheat & Barley
Scab Initiative

MINUTES

USWBSI Steering Committee Meeting

Tuesday, April 16, 2013, 8:30 AM – 4:15 PM
Doubletree by Hilton Bloomington Minneapolis South
Minneapolis, MN

Co-Chairs: Art Brandli (Private Grower, MN) and Dave Van Sanford (Univ. of Kentucky)
Members Present: Jim Anderson (Univ. of Minnesota), Bill Berzonsky (South Dakota State Univ.), Robert Brueggeman (North Dakota State Univ.), Doug Buehler (Michigan State Univ.), Mike Davis (American Malting Barley Association), Erick DeWolf (Kansas State Univ.), Ruth Dill-Macky (Univ. of Minnesota), Rich Horsley (North Dakota State Univ.), Dave Kendra (Quaker Oats/PepsiCo, IL), Mike Jossund (NAWG Rep, MN Wheat and Promotion Council, MN), Fred Kolb (Univ. of Illinois), Louie Kuster (ND Wheat Commission), Laird Larson (Private Grower and South Dakota Wheat Commission), CJ Lin (Mennel Milling Co., OH), Jolanta Menert (Busch Agricultural Resources, Inc., CO), Gary Muehlbauer (Univ. of Minnesota Charles Ottem (ND Barley Council), Pierce Paul (OH State University), Jim Pestka (Michigan State Univ.), David Schmale (Virginia Tech.), Carl Schwinke (Siemer Milling Co., IL), Clay Sneller (Ohio State Univ.), Kevin Thorsness (Bayer CropScience, ND), Brian Walker (Horizon Milling, MN), Jochum Wiersma (Univ. of Minnesota, MN), Steven Xu (USDA-ARS, ND) and Marv Zutz (MN Barley Council)
Participating via Interactive Phone/Adobe Connect – Jose Costa (Univ. of Maryland); Jodie Jellison (Virginia Tech.) and Kay Simmons (USDA-ARS-NPS)
Staff: Sue Canty (USWBSI-NFO, MI) and Don Lilleboe (Lilleboe Communications, ND)
Members not present: Bob Brunick (MillerCoors, ID), Elias Elias (North Dakota State Univ.) and Bruce Freitag (ND Wheat Commission)
Guests: Bruce Hamnes

Meeting chaired by Art Brandli.

1. **Opening Remarks and Introductions**

2. **Review of the Agenda**
   Agenda was amended as indicated below and then approved by the SC:

   - Item #4 - update from USDA-ARS will precede update from Mike Davis.
   - Small breakout discussions, there will be only have one instead of two, and it will go from 1:15 to 2:55 PM.

3. **Approval of Minutes from 12/06/12 Steering Committee Meeting**
   Motion: Motion made and seconded to accept the minutes as presented.
   Discussion: None
   Action: Motion carried.

4. FY13 and FY14 Federal Funding Updates

Kay Simmons – Update on USDA-ARS Issues including FY13 Budget

ARS has had two very challenging budget years (FY12 and FY13). With the sequestration, approximately 7% cut to the USWBSI's funding for FY13. The President's budget for FY14 does not include funding for the USWBSI. Per Simmons, most of ARS' external research initiatives were not included in FY14 proposed budget. Under these funding challenges, ARS is focusing on funding core internal research. The FY14 proposed budget for USDA-ARS is primarily redistributing funding to go for high priorities including big data, handling big data, food safety, climate change and new initiatives. Simmons indicated she very much values the coalition and partnership and what has been accomplished to date with the Scab Initiative. A lot of good research has been done, and will have impact for years to come.

Mike Davis – Update on FY13 and 14 Federal Budget

For FY13, the Sequester along with the cut in the Continuing Resolution had a big impact on the ARS budget for FY13 (approx. 7.2%, $79M decrease from FY12). The cut is across the Board to each ARS administrative Area, but within each Area, at their discretion, program cuts may not be applied proportionately. NIFA also had an across the board cut, but AFRI actually had an increase.

For FY14, the elimination of the Scab Initiative is not for deficit reduction as the Administration proposed budget includes a $108 increase in funding for ARS over post-Sequester FY13. Some reasons given for the elimination of the USWBSI were that there is longer a serious threat, not part of the President's top priorities (although it addresses diseases and food safety, which are), and other ARS and NIFA funding is sufficient. While this is very discouraging, the President proposes and Congress disposes. Mike is cautiously optimistic that we can prevent this from happening through a very strong lobbying effort. Mike will be preparing a position paper with input from the Executive Committee and others. The lobbying effort will focus on two things: 1) restoring funding for the Scab Initiative for FY14, and include authorization for the Scab Initiative in the Farm Bill. The latter does not provide appropriation, but it does add weight to continue funding.

5. Updates from the NFO and EC

- Status of Current Agreements including FY13 Awards DVS
  No Cost Extensions (NCE): One year No Cost Extensions have been secured for all eligible agreements due to expire before the end of May in order to keep them active until the FY13 awards can be processed.
  Updated Research Plan & Budget for FY13: The original budget plan included holding back funds (approx. $200K) to deal with the projected budget cut. With the final budget figure received from ARS, another $56K is needed to cover the total cut (7.2%) to the USWBSI's FY13 budget. The EC approved reducing FY13 awards for several PIs who have a substantial balance remaining in their ARS agreements from FY12, and in some cases FY11, awards.
- Update on Breeders Database (BDb) – Continuing to make progress. Paul Murphy has taken the lead and has been working with Dave Mathews at Cornell. The BDb is essentially a modified version of the T3 database, tweaked to fit the USWBSI's needs. Dave Mathews is working on developing a set of tools for querying the database that is expected to be ready for testing in early July. The plan is to demo the BDb at the 2013 Forum.
- Update on NASS Survey – The USWBSI has commissioned of survey of growers across 17 states. Preliminary planning included a meeting held back in January where key individuals (USWBSI pathologists and two growers) met with NASS. A series of questions were developed including a few standard questions from NASS. NASS recommends that the survey should not exceed four pages, which the current version is at four and a half pages. Due to the delay finalizing the FY13

budget, we are about a month behind in the survey timeline (takes approximately 18 months). A pre-test will go (or has just gone) out to a small sample of growers. The results of the pretest will help determine the final questions in the survey, including reducing the length to four pages.

- Proposed changes to Policies & Procedures (P&P) – The EC recommended the following changes be incorporated into the Policies & Procedures. Changes are summarized below; final version of changes is attached (Addendum A).
  - *Amending P&P* – changed to EC overseeing the process for changing the P&P rather than a subcommittee of the SC.
    Motion: Motion made and seconded to accept the proposed changes to the Policy & Procedures as presented.
    Discussion: None
    Action: Motion carried.
  - *Ag. Exp. Station Associations' Representative to the SC* - Change from' electing' to 'appointing'.
    Motion: Motion made and seconded to accept the proposed change to the Policy & Procedures as presented.
    Discussion: None
    Action: Motion carried.
  - *New Process Amending the Action Plan* **–** Additional suggested language was added to the process for amending the Action Plan. David Schmale and Ruth Dill-Macky will draft additional language and vote will take place during 'New Items'.
    Motion: Motion made and seconded to accept the proposed changes to the Policy & Procedures as amended.
    Discussion: None
    Action: Motion carried.

6. Research Leaders (RL) present recommendation for FY14 Working Caps

Each Research Leader expended on reports distributed to SC prior to the meeting. PowerPoint Presentations are accessible under 'My Scab Documents>FY14-15 Working Caps - Supporting Documents' (must first login on Scabusa home page)

7. Discuss FY14 Request for Pre-Proposals (RF) and Review Process

Following the distribution of materials prior to and during the meeting, Dave Van Sanford reviewed the process and timeline to be followed for setting the FY14 Working Caps as well as the FY14 RFP Process (Call for and review of pre-proposals). The suggestion was made to add a target for when the review panels should convene to finalize their recommendation.

8. 2013 and 2014 National FHB Forums

- 2013 National FHB Forum – December 3-5, Milwaukee, WI
  - *Program Format* - Combination of talks, discussion groups, poster sessions, and flash and dash (F&D) sessions which will comprise of mini-presentations by Graduate Students/Early Career Professionals. Estimate approximately 12 mini (5 min for each presentation) presentations per F&D session. Each F&D sessions will be followed by a poster session.
  - *Schedule of Administrative Meetings*
    - EC and Review Panel/Research Leaders meet on Monday (12/2)
    - EC Executive Session – Tuesday morning (12/3), Wednesday evening (12/4), and following SC meeting (12/5)
    - SC meets on Thursday afternoon (12/5) following the close of the Forum
  - *National Wheat Improvement Committee* – meeting is on 12/6

- 2014 National FHB Forum – The EC has approved the dates and location for the 2014 Forum - December 7-9 in St. Louis, MO.

9. Small Discussion Groups

The Steering Committee broke up into four research area based groups, with the SC members pre-assigned to a specific group, to review the proposed changes to the action plan and review the pre-test questions for the grower survey to be conducted by NASS.

10. Reports from Small Group Discussions.

Action Plan – As the majority of the groups had some additional changes (including name change for the FSTU research area) to the proposed changes of the Action Plan, it was decided that these additional changes be incorporated into the proposed action plan revisions and distributed to the SC for a vote by email.

Review of Survey Questions – There were several suggested changes/additions for the survey, which can hopefully be incorporated prior to the first pre-test.

5. EC and NFO Update – Revisit Proposed changes to Action Plan (tabled to right before 'New Business').

New Process Amending the Action Plan **–** Additional suggested language was added to the process for amending the Action Plan. Final language is in Addendum A.

Motion: Motion made and seconded to accept the proposed changes to the Policy & Procedures as amended.

Discussion: None

Action: Motion carried.

11. New Business – None

Meeting Adjourned: 3:52 pm CDT

Submitted by:

Susan M. Canty

Susan M. Canty, Manager
USWBSI's Networking & Facilitation Office

ADDENDUM A

U.S. Wheat & Barley Scab Initiative

POLICIES AND PROCEDURES

Revised: 4/16/13

TABLE OF CONTENTS

I. USWBSI Policies and Procedures

A. The Policies & Procedures (P&P) were developed by the NFO in conjunction with the Executive Committee. They were first approved by the Steering Committee (SC) on 7-24-01.

B. Process for Amending Policies and Procedures.

1. The Executive Committee will review the Policies and Procedures (P&P) annually and recommend changes to the P&P to the Steering Committee.
2. The P&P may be amended up to one time per year at the SC's spring meeting or at the December meeting if no spring meeting is held. Suggested changes must be submitted to the Networking & Facilitation Office by April 1 or November 1 if no spring meeting held that year.
3. Any member of the Steering Committee may request changes to the P&P.
4. After April 1st, the Executive Committee will review all submitted suggested changes. If the Executive Committee agrees with suggested changes, the changes will be incorporated into the current P&P, and then submitted to the SC for final consideration.
5. Any non-policy changes (i.e. language changed to bring in line with current policy) to the P&P require only approval by the Executive Committee.
6. The Executive Committee will inform Steering Committee of all requested changes, including any that were not recommended to be incorporated into the Policies and Procedures.

II. USWBSI's Goal Statement

The goal of the U.S. Wheat and Barley Scab Initiative (USWBSI) is to develop as quickly as possible effective control measures that minimize the threat of Fusarium head blight (scab), including the reduction of mycotoxins, to the producers, processors, and consumers of wheat and barley.

III. USWBSI's Action Plan

A. A five-year Action Plan was developed in collaboration with USDA-ARS to set the research goals and priorities for ARS-managed funds that support the U.S. Wheat and Barley Scab Initiative. The development process began during the 2006 annual FHB Forum, and was approved by the Steering Committee in May 2007.

B. The expected outcomes of the Action Plan are improved research planning and accountability for USDA-ARS funding, greater collaboration among researchers, better communication with the Initiative's stakeholders and public at large, and more rapid attainment of the Initiative's primary goal (see II above).

C. The Action Plan is a dynamic document and therefore will continue to evolve and change as needed (see Appendix C for current version).

D. Process for Amending Action Plan

1. At the Forum prior to a new Call for Pre-Proposals, RAs, CPs, and affiliates will meet and be charged with providing proposed changes to the Action Plan to the Chair of the RA or CP.
2. Each RA and CP is responsible for reviewing and voting on the proposed changes to the Action Plan. The chair of each RA/CP will obtain a simple majority vote of the proposed changes to the Action Plan from the seated members of the RA/ CP prior to spring SC meeting. Groups that transcend RA or CP boundaries (e.g. VDHR) must be convened at the Forum to approve changes or the vote may occur via email prior to the spring SC meeting.

3. The NFO will then incorporate the proposed changes into the Action Plan document and circulate it to the relevant RA/CP committee members, researchers and stakeholders for further discussion and review at the spring planning meetings/conference calls.
4. Once groups are in agreement with the proposed changes they will be presented to the Steering Committee, preferably at its spring meeting, for final approval.

IV. Structure and Roles of USWBSI Committees and Administrative Office

A. Steering Committee (SC).

1. Membership

a) Length of Term – 4 years (except for Research Area and Coordinated Project Committee chairs/co-chairs whose term on the Steering Committee is tied to their term or position on these committees). Approximately one-third of the Steering Committee shall rotate off every year. Members may be re-elected. There is no limit on the number of consecutive terms that a member may serve.

b) Number of Members – 30-38

c) Committee Positions - Co-Chairs (Researcher and Grower or Industry Representative)

d) Committee Composition

The Steering Committee shall consist of Executive Committee members (9), Research Area and Coordinated Project Committee Chairs/Co-Chairs (10), and have at least one member, but no more than 5 (includes Executive Committee members), from each of the following areas:

- Wheat Millers
- Wheat Growers (at least 1 spring and 1 winter)
- Barley Growers
- Durum Growers
- Seed Industry
- Crop Protection Industry
- Public Plant Breeder – Wheat (at least 1 spring and 1 winter)
- Public Plant Breeder – Barley
- Pathology – Wheat (at least 1 spring and 1 winter)
- Pathology - Barley
- Food Safety/Toxicology
- Malting and Brewing Industry
- Pasta Industry
- Agricultural Experiment Stations (AES) – At least 1 rep from both the North Central (NCRA) and Southern (SAAESD) Regional Associations of Agricultural Experiment Stations Directors shall be appointed for a four year term. In the fall prior to an expiring term, the NFO will contact the relevant association and request they designate a representative to the steering committee (vote by SC is not required).

The following organizations each appoint one permanent member to the Steering Committee:

- Minnesota Barley Council
- National Association of Wheat Growers (NAWG)
- North Dakota Barley Council

e) Commodity Groups (CG)

(1) Each Steering Committee member will be designated (either by self-

appointment or by Executive Committee) to one of the following commodity groups;
- Barley
- Durum
- Spring Wheat
- Winter Wheat

(2) The sole purpose and responsibility of the commodity groups is to nominate their representative(s) for election to the Executive Committee.

2. Election of Members and Filling of Vacancies.
   a) Nomination process and election of Steering Committee members shall take place electronically in the fall of each even numbered year.
   b) Members of the Steering Committee will vote on nominees via e-mail prior to the Steering Committee Meeting held in conjunction with the annual Forum.
      (1) North Central and Southern Regional Agricultural Experiment Station Associations of Directors will nominate their representatives.
   c) Voting Procedure – Election to the Steering Committee will be determined on an individual basis (i.e. casting a vote for an individual nominee is the equivalent of casting an individual ballot). The election will be deemed valid and a nominee elected if the following criteria are met:
      (1) A quorum is achieved (votes received by more than 50% of the current Steering Committee members). Blank votes will be considered invalid.
      (2) If the total number of 'yes' votes received is greater than 50% of the sum of the total votes cast (simple majority).
      (3) Final outcome is subject to the maximum number of representatives per area and the maximum number of Steering Committee members as per the Policies and Procedures. In the event that the number of nominees exceeds the number of vacancies in any given area, nominee(s) will be appointed in accordance with the total number of 'Yes' votes received.
   d) If a Steering Committee member resigns mid-term, the Executive Committee has the authority to appoint a person to serve out the remainder of the term.
3. Meetings.
   a) The Steering Committee shall meet a minimum of twice a year, including one spring meeting and one meeting at the annual Forum.
   b) The USWBSI Co-Chairs shall chair Steering Committee meetings.
   c) Attendance by non-members is at the discretion of the Co-Chairs.
   d) The meeting in which the Steering Committee reviews and approves the recommended Budget Plan is a closed meeting (SC members only). However, the Co-chairs may request the Steering Committee waive this policy on an individual basis.
   e) The USDA-ARS Authorized Departmental Officer's Designated Representative (ADODR) has a standing invitation to participate in all USWBSI meetings.
4. Voting Procedures.
   a) Quorum.
      A quorum shall consist of more than 50% of the current members. This also pertains to voting by e-mail.
   b) Meetings.
      Any subject may be brought to the Steering Committee for consideration in the form of a motion. Once the motion has been made and seconded, it is

open for discussion. Members may ask for a mail/E-mail vote on any issue brought before the Steering Committee if there are any members not present during the meeting.

c) Voting Alternates.

Only two categories of Steering Committee members can designate a voting alternate if they are unable to attend the Steering Committee meeting:

- Organizational Representatives
- Research Area and Coordinated Project Committee Chairs (Alternate: Vice-Chair)

d) Mail/E-mail Voting.

(1) In addition to mail/E-mail votes called for at committee meetings, mail/E-mail votes may also be conducted in between committee meetings on issues put forward by the Co-Chairs or the Executive Committee.

(2) Every effort will be made to ensure all members receive information regarding the matter under consideration.

e) Results.

Voting outcome shall be determined by a simple majority of votes cast.

5. Responsibilities.

Along with providing direction and guidance to the Initiative, the Steering Committee is responsible for the following:

a) Review and approve research area program descriptions and research priorities.
b) Review and approve the process for the development of the annual research plan and budget recommendations, including setting the research category working caps.
c) Approve the general format for the Annual Forum.
d) Review and approve the Executive Committee's recommended Research Plan & Budget (RPB).
e) Review and approve the structure and/or composition of the Steering Committee, Executive Committee and Research Area and Coordinated Project Committees.
f) The Steering Committee authorizes the Executive Committee to act on its behalf.

(1) The Executive Committee must notify the Steering Committee promptly of its actions by e-mail.

(2) The Steering Committee can reverse any decision at the next Steering Committee meeting.

B. Executive Committee (EC).

1. Membership.

a) Committee Positions - Co-Chairs (Same as Steering Committee Co-Chairs).
b) Length of Term – 4 years. Approximately one-quarter of the Executive Committee shall rotate off each year. Members may be re-elected to serve consecutive terms.
c) Number of representatives: 9

Members shall consist of the following:

- Barley: two representatives
- Durum: one representative
- Spring Wheat: three representatives
- Winter Wheat: three representatives

d) Executive Committee members shall not serve concurrently as members of Research Area or Coordinated Project Committees.

2. Appointment of Members and Filling of Vacancies.
   a) Nomination process and appointment of Executive Committee members shall take place electronically in the fall of each even numbered year.
      (1) Nomination Process: One of the members of the Commodity Group (as designated under Section IV.A.1.e.) will be appointed by the Co-Chairs (one or both) to facilitate the nomination and appointment process of their representative for the EC. Members of the Commodity Group will consider nominees and select one for approval by the Steering Committee
      (2) Approval Process: A nominee is appointed if both of the following criteria are met:
         (a) A quorum is achieved (votes received by more than 50% of the current Steering Committee members). Blank votes will be considered invalid.
         (b) If the total number of 'yes' votes received is greater than 50% of the sum of the total votes cast (simple majority).
3. Meetings.

   Executive Committee will meet as needed.

4. Responsibilities.
   a) Review Research Area Program Description-Research Priorities developed by the Research Area Committees in cooperation with the Coordinated Project Committee Chairs.
   b) Review and approve annual Request for Pre-Proposals document developed by the Networking & Facilitation Office.
   c) Develop in conjunction with the Networking & Facilitation Office (NFO) the process for evaluating pre-proposals
   d) Develop annual research plan and budget based on review of pre-proposals and recommendation of review panels for consideration by Steering Committee.
   e) Planning of Annual Forum.
      (1) Select the location and dates for the Annual Forum.
      (2) Appoint Forum Organizing Committee to develop the program for the Annual Forum.
   f) Review and approve the budget for research-based workshops and planning meetings submitted by Research Area or Coordinated Project Committees (See Appendix C for Research-based Workshops and Planning Meetings Guidelines).
   g) Develop recommendation of appointments for Research Area and Coordinated Project committee positions (Chair/Vice-Chair or Co-chairs) to the Steering Committee for approval.
   h) Monitor terms of Research Area Committee members.
   i) Review and approve policy and procedures for the NFO.
   j) Review and approve annual calendar/timetable of Initiative's activities.
   k) Inform Steering Committee of all executive actions and decisions.
5. Voting Procedures.
   a) Quorum.

      A quorum shall consist of more than 50% of the current members. This also pertains to voting by e-mail.
   b) Meetings.

Any subject may be brought to the Executive Committee for consideration in the form of a motion. Once the motion has been made and seconded, it is open for discussion. Members may ask for a mail/E-mail vote on any issue brought before the Executive Committee if there are any members not present during the meeting.

c) Mail/E-mail Voting.
   (1) In addition to mail/E-mail votes called for at committee meetings, mail/E-mail votes may also be conducted in between committee meetings on issues put forward by the Co-Chairs or committee members.
   (2) Every effort will be made to ensure all members receive information regarding the matter under consideration.

d) Results.

Voting outcome shall be determined by a simple majority of votes cast.

C. Research Area Committees (RAC).

1. Membership.
   a) Committee Positions - Chair and Vice-Chair or Co-Chairs.
   b) Length of Term.
      (1) Chair – 2 years (An individual shall not serve two consecutive terms.)
      (2) Members – 4 years. Members may be reappointed.
      (3) Terms begin January 1 and end December 31
   c) Number of Members – 4 minimum.
   d) Committee Composition.
      (1) To the extent possible, members should represent different aspects of the research area.
      (2) No two members should represent a single institution.
      (3) At least one member should be someone who does not receive funding through the USWBSI, or at the very least, through the research area for which he/she is a committee member.
      (4) Review Panels – At least one external reviewer should be added to each Research Area Committee for the review of pre-proposals.
2. Election of Members and Filling of Vacancies.
   a) Elections of research area members will take place in the fall.
   b) Volunteers will be solicited via the Scab list server as well as other distribution lists in for consideration of appointment.
   c) The Steering Committee will vote on volunteers using the Borda Election Method. Steering Committee members (voters) rank the candidates as first, second, third, etc. The first choice of each voter gets a number of points one less than the total number of candidates. Each subsequent choice then gets one less point than the preceding choice, until the last choice get no points at all. The points from each voter are added together to determine the winner. Voting Steering Committee members must rank all candidates; truncation is not allowed.
   d) Committee positions (Chair/Vice-chair or Co-Chairs) shall be nominated by the Executive Committee and voted on by the Steering Committee.
      (1) Individuals being considered for committee positions must be current members of the Research Area Committee.
      (2) The Chair and Vice-Chair or Co-Chairs of a committee shall not be from the same institution.

e) Filling of Vacancies: If a Research Area Committee member resigns mid-term, the Executive Committee will appoint an individual to fill the vacant seat for the remainder of the term.

3. Responsibilities.
   a) Research Area Committee Members
      (1) Draft Program Descriptions and Research Priorities for the Request for Pre-Proposal process based on the Action Plan
      (2) In role of review panel member, review and provide recommendation for funding of pre-proposals to the Executive Committee.
   b) Research Area Committee Chairs
      (1) Act as liaison between the Executive Committee and/or the Networking & Facilitation Office and their respective committees.
      (2) Serve as members of the Steering Committee.
      (3) Work with their members to draft annual Research Area Program Description-Research Priorities based on the Action Plan.
      (4) Draft and submit Research Area Workshop proposals to the Executive Committee for consideration.
      (5) In role as Review Panel Chair:
         (a) Facilitate the review of pre-proposals submitted to their research area;
         (b) Develop recommendation of funding for consideration by the Executive Committee.
         (c) Provide comments/suggestions for proposed recipients and non-recipients to be included in the notification of funding.

D. Coordinated Project Committees (CPCs)
1. Membership.
   a) Committee Positions - Chair and Vice-Chair.
   b) Length of Term.
      (1) Chair – 2 years (An individual shall not serve two consecutive terms.)
      (2) Members – 4 years. Members may be reappointed.
      (3) Terms begin January 1 and end December 31
   c) Number of Members – 3 minimum.
   d) Committee Composition.
      (1) No two members should represent a single institution.
      (2) Review Panels – At least one external reviewer will be added to the Coordinated Project Committee for the review of a proposal (Year 1) submitted by another coordinated project committee.
2. Election of Members and Filling of Vacancies.
   a) Elections of committee members will take place in the fall.
   b) Nomination Process for Member Appointment.
      (1) Nominees for committee members will be selected by researchers and stakeholders connected with the coordinated project either by commodity or region.
      (2) The USWBSI Co-Chairs (one or both) will appoint a person from the commodity or region to facilitate the nomination process.
      (3) Selected nominees will then be submitted to the steering committee for final approval.
   c) Committee leadership positions (Chair/Vice-chair) shall be nominated by the Executive Committee and voted on by the Steering Committee.

(1) Individuals being considered for committee positions must be current members of the Coordinated Project Committee.
(2) The Chair and Vice-Chair of a committee shall not be from the same institution.

d) Filling of Vacancies: If a Coordinated Project Committee member resigns mid-term, the Executive Committee will appoint an individual to fill the vacant seat for the remainder of the term.

3. Responsibilities.
   a) Coordinated Project Committee Members
      (1) Develop coordinated project proposal by incorporating proposed research projects submitted to and reviewed by their committee.
      (2) Draft Summary of Progress based on detailed progress reports submitted by cooperating PIs for each proposed research project included in the funded coordinated project.
      (3) In role as member of a review panel, review coordinated project proposal submitted by another coordinated project committee.
   b) Coordinated Project Committee Chairs
      (1) Act as liaison between the Executive Committee and/or the Networking & Facilitation Office and their respective committees.
      (2) Serve as members of the Steering Committee.
      (3) Work with Research Area Committees to draft annual Research Area Program Description-Research Priorities based on the Action Plan.
      (4) Draft and submit Planning Meeting Proposals to the Executive Committee for consideration.
      (5) In role as Review Panel Chair:
         (a) Facilitate the review of coordinated project proposal submitted by another coordinated project committee;
         (b) Develop recommendation of funding for consideration by the Executive Committee; and
         (c) Provide comments/suggestions on proposed recipients and non-recipients to be included in the notification of funding.

E. Networking and Facilitation Office (NFO).
1. Purpose.
   The purpose of the Networking & Facilitation Office is to act as the administrative and communication headquarters for the USWBSI.
2. Personnel.
   a) Director
   b) Office Manager
3. Responsibilities.
   a) Facilitate Communication.
      (1) Administrative support for Steering Committee and Executive Committee.
         (a) Organize Steering Committee meetings and Executive committee conference calls.
         (b) Record and distribute minutes.
         (c) Inform Executive Committee of Networking & Facilitation Office activities.
         (d) Inform Steering Committee of Executive Committee actions, meetings, etc.

(e) Facilitate communication between Steering Committee, Executive Committee and Research Committees.
(f) Monitor terms for all USWBSI committees and facilitate nomination and election processes.

(2) Act as liaison between USWBSI and U.S. Department of Agriculture-Agricultural Research Service (USDA-ARS).
(3) Manage the Initiative's Web site.
(4) Oversee production and distribution of Scab Newsletters and press releases.
(5) Maintain list servers.
(6) Act as a rapid clearing-house of scab related questions.

b) Conference Management.
(1) Annual National Fusarium Head Blight Forum.
(a) Select conference location and lodging in city selected by the Steering Committee.
(b) Coordinate all facets of conference arrangements including:
(i) Pre-registration and conference check-in.
(ii) Coordinate layout for poster display.
(iii) Compile and produce forum proceedings.
(iv) Secure sponsor donations.

c) Request for Pre-Proposal Process.
(1) Draft Request for Pre-Proposals (RFP), incorporating feedback received from previous year's review panels, and submit the document to the Executive Committee for final approval.
(2) Distribute the Request for Pre-Proposal Application using various electronic mailing lists (see section V,C,1,b).
(3) Facilitate review process for pre-proposals.
(4) Notify applicants of funding recommendations.
(5) Forward USWBSI's annual Research Plan and Budget (i.e. grant proposals) to USDA-ARS.

d) Resource Management/Accountability Center.
(1) Maintain records on all pre-proposals, projects, and grants submitted and recommended for funding to USDA-ARS.
(2) Generate and process progress-reporting forms.
(3) Oversee production and management of the Initiative's Website including various databases pertaining to research and administrative aspects of the USWBSI.
(4) Maintain records of all committee activities and actions.
(5) Generate reports requested by committees.

V. Research Plan and Budget Process (RPBP)

A. Development of Program Descriptions and Research Priorities (PD-RP).

1. Research Area Committees, working in cooperation with the Coordinated Project Committees shall draft program descriptions and research priorities based on the Initiative's Action Plan. Drafts of the research priorities shall be posted on the Web for feedback from the Steering Committee, Executive Committee and the community at large. Drafts continue to evolve as input is acquired.
2. Final drafts are submitted to the Executive Committee and Steering Committee for approval at the spring Steering Committee meeting.

B. Development of the Request for Pre-Proposals (RFP).
   1. The Networking & Facilitation Office shall draft the Request for Pre-Proposals, incorporating feedback from previous year's review panels, and submit to the Executive Committee for final approval.
      a) Pre-proposals are confidential documents that include all information required to document the value of the project.
      b) The Request for Pre-Proposals shall be submitted to the Executive Committee for final approval.

C. Distribution and Advertisement of Request for Pre-Proposals.
   1. To the extent possible, electronic copies of the Request for Pre-Proposals shall be distributed to the following:
      a) Current and former USWBSI researchers.
         (1) Non-funded researchers who previously submitted pre-proposals.
         (2) Previous attendees of the National Fusarium Head Blight Forums.
      b) Electronic notices shall be sent to the following:
         (1) Scab list server
         (2) Agricultural Experiment Station Directors
         (3) Extension Service Directors
         (4) Administrative Heads
         (5) Academic Heads
         (6) USDA-ARS-National Program Staff (NPS)
         (7) GrainGenes list server
         (8) 1890 Land Grant Institutions
         (9) 1994 Land Grant Institutions
         (10) Hispanic Serving Institutions
      c) Electronic versions shall be posted on the Initiative's Web site.
      d) Hard copies will be distributed by request only.

D. Review Process.
   1. Setting of Working Caps (WC).
      a) The Steering Committee will be provided with relevant information from previous year's funding allocation.
      b) Steering Committee members will then submit their individual recommendation for percentage of allocation for each research area and coordinated project.
      c) Input will be summarized, and redistributed to the Steering Committee for reconsideration and individual readjustment to develop a final recommendation to the Executive Committee.
      d) A summary of the Steering Committee's recommendation will be forwarded to the Executive Committee along with other pertinent information.
      e) The Executive Committee will develop recommended working caps, and submit them to the Steering Committee for final approval.
   2. Processing and Review of Pre-Proposals.
      a) Research Area Based Pre-Proposals
         (1) Once pre-proposals are received by the Networking & Facilitation Office, they will be sorted by research area, and copies will be sent to the appropriate Review Panels, as well as the Executive Committee, along with review guidelines and working caps. (In cases where pre-proposals require review by more than one review panel, the Review Panel chairs shall work through the Networking & Facilitation Office to coordinate the review.)

(2) After the review panels have reviewed their assigned pre-proposals, the Chair shall collect their committee's review summaries. In conjunction with the Vice-Chair, an overall summary of reviewers' ratings will be compiled into a comprehensive funding recommendation and submitted to the Executive Committee for review. Review Panel chairs will then forward the original review summaries (individual and overall) to the Networking & Facilitation Office, prior to the annual forum.

b) Coordinated Project Pre-Proposals.

(1) Review of CP Pre-Proposal - Year 1

(a) Once CP pre-proposals are received by the Networking & Facilitation Office, they will reproduced and sent to the appropriate Review Panels, as well as the Executive Committee, along with review guidelines and working caps.

(b) After the review panel members have reviewed the pre-proposal, the Chair shall collect their committee's review summaries. In conjunction with the Vice-Chair, an overall summary of reviewers' ratings will be compiled into a comprehensive funding recommendation and submitted to the Executive Committee for review. Review Panel chairs will then forward the original review summaries (individual and overall) to the Networking & Facilitation Office, prior to the annual forum.

(2) Review of Revised Work Plans and Progress Report - Year 2: The Executive Committee will review the revised work plans and detailed progress reports to determine funding recommendation for year 2.

3. The Executive Committee shall meet just prior to the start of the annual Forum with each of the Review Panel Chairs and Vice-Chairs to discuss their panel's recommendations.

E. Funding Recommendation.

1. Once the Executive Committee has received the Review Panels' recommendation regarding submitted pre-proposals, the Executive Committee shall reconcile the recommendations with the available funds.
2. The Executive Committee shall then present a proposed funding allocation to the Steering Committee for recommendations and approval.
3. Once the Steering Committee approves the budget allocation, the Networking & Facilitation Office shall send written notification to all researchers who submitted a pre-proposal.
4. The Review Panel chairs shall provide comments and recommendations to be included in the letter of notification. The instructions for resubmitting final proposals shall be included for those researchers recommended for award funding to USDA-ARS. Final proposals are submitted to the Networking & Facilitation Office as aggregate single PI grants (i.e. may contain multiple projects).
5. The Networking & Facilitation Office will forward the grant proposals as a comprehensive recommendation to USDA-ARS.
   a) All Research Grant Agreements that are recommended by the USWBSI are for a one-year award.
   b) Grant proposals are confidential documents.
   c) PIs shall submit electronically one non-technical abstract for each USWBSI recommended project that will be made public through the Initiative's Web site.

F. Handling and Storage of Pre-Proposals.
1. Original copies of pre-proposals will be confidentially stored by the NFO for at least three years.
2. The Executive Committee may keep copies of pre-proposals for up to one year.
3. The Review Panels should destroy all copies of pre-proposals immediately following the final submission of all grant applications to USDA-ARS.

VI. Reporting of Progress

ARS contractually requires a Final Performance Report (FPR) for all Research Grant Agreements (RGA).

A. Purpose.
1. Accountability.
2. Real-time communication among scientists.

B. Process.
1. Principal Investigators (PIs) are required to submit Final Performance Reports for each single year Research Grant Agreement.
a) No-Cost Extensions (NCE)
(1) Principal Investigators who receive a No-Cost Extension shall submit a "Preliminary Final Performance Report" at the same time as all other Principal Investigators.
(2) Final Performance Reports shall be submitted when the No-Cost Extension ends.
2. The Networking & Facilitation Office, working with the Executive Committee and ARS, will generate the FPR forms. The Final Performance Reports will be sent to the Principal Investigators in May. Principal Investigators shall complete the report and return two signed copies and one electronic version to the Networking & Facilitation Office by mid-July. The Networking & Facilitation Office shall then forward one copy of each Final Performance Report in a single mailing to USDA-ARS.
3. USDA-ARS requires Final Performance Reports be accessible to the public. Therefore, the Final Performance Reports shall be made available through the Scab Website.

VII. Annual Forum

A. Date and Site Selection.
1. The Executive Committee will select Forum dates and the city in which it will be held.
2. Prior to finalizing the dates, feedback from the scab community will be solicited for possible conflicts with other events.

B. Development of Program.
1. The Steering Committee shall approve the general format at the spring Steering Committee meeting.
2. The Executive Committee will appoint a Forum Organizing Committee, which should include members from the research area and coordinated project committees, to develop the research sessions for the Forum.
3. Forum program should be finalized by mid-August.

APPENDIX A

Index of Commonly Used Abbreviations/Acronyms

ADODR - Authorized Departmental Officer's Designated Representative
AES – Agricultural Experiment Station
ARS – Agricultural Research Service
BAR-CP – Barley Coordinated Project
CG – Commodity Group
CP – Coordinated Project
CPC – Coordinated Project Committee
EC – Executive Committee
ESCOP – Experiment Station Committee on Organization and Policy (Agricultural Experiment Station)
FHB – Fusarium head blight or scab
FPR – Final Performance Report
FSTU – Food Safety, Toxicology and Utilization of Mycotoxin-Contaminated Grain (Research Area)
GDER – Gene Discovery and Engineering Resistance (Research Area)
HWW-CP – Hard Winter Wheat Coordinated Project
MGMT – FHB Management (Research Area)
NCE – No-Cost Extension
NCRA – North Central Regional Association of Agricultural Experiment Station Directors
NFO – Networking & Facilitation Office
NPS – National Program Staff
PBG – Pathogen Biology and Genetics (Research Area)
P&P – Policies and Procedures
PD-RP – Program Descriptions and Research Priorities
PI – Principal Investigator
RA – Research Area
RAC – Research Area Committee
PD-RP – Program Description and Research Priorities
RFP – Request for Pre-Proposals
RGA – Research Grant Agreements (ARS awards)
RRPB – Recommended Research Plan & Budget
RP – Review Panels
SAAESD – Southern Association of Agricultural Experiment Station Directors
SC – Steering Committee
USWBSI – U.S. Wheat & Barley Scab Initiative (or the ‘Scab Initiative’)
USDA – U.S. Department of Agriculture
VDHR – Variety Development & Host Resistance (Research Area)
NWW – Northern Winter Wheat Region (VDHR Coordinated Project)
SPR – Spring Wheat Region (VDHR Coordinated Project)
SWW – Southern Winter Wheat Region (VDHR Coordinated Project)
WC – Working Caps

APPENDIX B

USWBSI's Action Plan
Last revised: 6/5/13

FHB MANAGEMENT (MGMT)

Goal #1: Develop integrated management strategies for FHB and mycotoxins that are robust to conditions experienced in production fields of wheat and barley.

Milestones/Performance Expectations:

- Conduct experiments that evaluate the flexibility of the integrated management strategies in a wide range of production conditions and environments.
    - These experiments should: 1) consider the best available varieties with a range of FHB resistance for all wheat market classes and malting barley, 2) be conducted in multiple states and production regions, and 3) use the best available fungicides and application technology.
    - Specific areas of emphasis will include but are not limited to 1) developing fungicide recommendations that are more robust to conditions experienced in commercial production, and 2) evaluating the efficacy and economics of these strategies using multi-year, multi-location data.

Performance Measures: Summaries of results that will facilitate further evaluation and refinement of management strategies for FHB and mycotoxin in production fields.

Research Needs: Identify the best management methods for FHB/DON or Good Farming Practices (GFP) for FHB/DON management - through integrated management studies. Studies to measure integrated effects should include but are not limited to:

- Validating the integrated management strategies with next generation of wheat and barley varieties in multiple production environments.
- Developing economic analyses of effective integrated management strategies used alone and in combination (i.e. fungicide, biological control, cultivar, residue management).
- Evaluating flexibility of fungicide application timing within the context of the integrated management strategies. This may include but is not limited to evaluating the effectiveness of fungicides applied after anthesis to address whether slightly later, on-label applications are still profitable (e.g., when weather delays application)
- Deploying current FHB forecasting models: maintain or continue to add independent sources of weather; push commentaries to smart phones, and email.

Outputs:

- Improved or enhanced forecasting systems that help producers and their advisors evaluate the risk of disease based on environment, cultivar resistance and crop residues.
- FHB/DON management recommendations that are more flexible and robust to conditions experienced in production fields of wheat and barley.
- Document adoption of integrated management for FHB/DON on regional and national basis.

Resources: Multiple collaborative locations distributed across grain classes. A team approach will be used to reflect overlap across traditional research areas and regional/national scope. Teams will be composed of breeders, pathologists, economists and other scientists from other disciplines as needed.

Anticipated Impact: Producers will make decisions based on regionally validated science-based information.

FHB MANAGEMENT (MGMT) *(cont.)*

Goal #2: Help develop and validate the next generation of management and mitigation tools for FHB and mycotoxin control.

Milestones/Performance Expectations:

- Improved forecasting models of FHB epidemics and DON contamination.
- Test new fungicides and biological controls that have potential application as part of integrated management programs for FHB/DON.
- Investigate new ways to use current technologies that may improve flexibility of integrated management strategies or address specific knowledge gaps for these technologies.
- Acquire new data on harvest and post-harvest grain handling

Performance Measures: Evaluate the potential of new technologies for the management of FHB/DON.

Research Needs:

- Enhance forecasting capabilities:
    - Improved models predicting severe FHB and DON in wheat and barley.
    - Develop specialized models estimating the risk of DON in wheat.
- Improve performance of biological control agents for potential use in production fields. Multi-environment testing of new compounds (fungicide or biocontrol) for which preliminary data indicate high levels of effectiveness; confirm FHB/DON control levels at recommended label rates for new fungicides.
- Evaluate application timing of new fungicides or biological control agents that may increase flexibility of integrated management.
- Investigate factors that may compromise the efficacy of fungicide products including quantifying properties such as rain-fastness and systemic movement within plants.
- Determine if fungicides and biocontrol agents can be used to suppress the DON contamination of wheat and barley straw.
- Harvest and post-harvest grain handling: conduct experiments to identify practices that minimize DON and yield/test weight losses

Outputs:

- Increased accuracy of FHB and DON forecasts
- Wheat DON forecasting system is made available to stakeholders
- Improved understanding of factors influencing the efficacy of fungicide and biocontrol agents. New guidelines for post-harvest grain handling are made available

Resources: Multiple collaborative locations distributed across grain classes. A team approach will be used to reflect overlap across traditional research areas and regional/national scope. Teams will be composed of breeders, pathologists, and other scientists from other disciplines as needed.

Anticipated Impact: These projects provide the next generation of strategies that will be tested through larger multi-state projects on integrated management. These projects address specific knowledge gaps identified through interaction with wheat and barley producers.

FHB MANAGEMENT (MGMT) *(cont.)*

Goal #3: Develop a full understanding of specific factors influencing infection and toxin accumulation that can be used to develop the next generation of scab and DON risk assessment measures.

Milestones/Performance Expectations:

- Improved understanding of the: 1) conditions leading to high DON with low/no visual symptoms; 2) relative contributions of in-field vs. external inoculum sources; 3) sensitivity to triazole fungicides in natural populations of the pathogen in different cereal production regions and implications for efficacy of fungicidal control.
- Management recommendations are refined based on new information gained through these applied research projects.
- The FHB and DON risk forecasting models incorporate the results of these research projects.

Performance Measures: Information is acquired regarding factors essential for the next generation of FHB and DON risk assessment models, including: the role of post-flowering weather and late/secondary infections, the conditions leading to high DON with low/no visual symptoms, and relative contributions of in-field vs. external inoculum sources.

Research Needs:

- Evaluate the role of post-flowering weather on DON accumulation.
- Determine the potential contribution of late/secondary infections on DON accumulation including the importance of post-flowering inoculum density and the associations among inoculum density, weather, FHB, and DON accumulation.
- Further define the influence of weather and variety on infection efficiency between heading and grain maturity and how the timing of infection influences symptom development and DON accumulation.
- Evaluate the relative contributions of inoculum from in-field debris vs. airborne spores from nearby and distant sources; determine regional variability of the findings; and investigate ways to bring this information into disease forecasting models.
- Assess the sensitivity of *F. graminearum* population to triazole fungicides within different cereal production regions in the U.S. where there has been intensive use of these fungicides. These projects will likely involve laboratory assays for evaluating sensitivity within naturally occurring populations of the fungus.
- Documentation of *F. graminearum* populations that are resistant to triazole fungicides, and investigate the influence of fungicide resistance on product efficacy.

Outputs:

- Models describing associations among inoculum density/dose, inoculation timing, weather and variety on infection, fungal biomass and DON accumulation.
- Improved accuracy of FHB risk assessment models and development DON risk models.
- Regionally appropriate, specific recommendations for corn and small-grain debris management based on full understanding of relative contributions of inoculum from in-field debris vs. nearby and distant sources.
- Established "base line" for triazole sensitivity within the U.S. population of *F. graminearum*.

Resources: A multi-state collaborative effort involving researchers from all major U.S. wheat and barley-growing regions.

FHB MANAGEMENT (MGMT) *(cont.)*

Anticipated Impact: Risk forecasting and management recommendations available to growers are more useful because they reflect enhanced understanding of conditions throughout wheat development that affect FHB and DON levels.

Goal #4: Enhance communication and end-user education/outreach for an audience including, but not limited to, producers, agricultural advisors, research community, and grain processors.

Milestones/Performance Expectations:

- Resources and recommendations related to the integrated management of FHB/DON on the USWBSI and ScabSmart web sites.
- Information on FHB resistance of all contemporary varieties readily available to growers in an accurate, user-friendly manner.
- Improve and increase dissemination of scab information and management techniques through an interdisciplinary approach.

Performance Measures: Best FHB/DON management methods, validated by science-based research, are thoroughly publicized to producers, their advisors, and grain processors.

Research Needs:

- Continue to update and enhance the content of the ScabSmart web site.
- Make commentaries from the FHB forecasting site available USWBSI blog website and sent to users via mobile devices.
- Develop web-cast training modules on FHB biology and management that can be distributed via the Plant Management Network, ScabSmart or other similar outlets.
- Conduct surveys of growers to assess how they acquire information about scab and adoption of FHB management techniques, and to identify barriers to adoption.
- Develop tools that will help growers assess and understand the value of adopting scab management practices.

Outputs:

- Timely information about scab risk is reaching growers via FHB alerts received by mobile devices.
- Information on FHB management available via national websites and customized for distribution through extension programs in states with a history of severe FHB.

Resources: Multiple collaborative locations distributed across grain classes. A team approach will be used to reach across traditional research areas and regional/national scope. Teams will be composed of pathologists, crop consultants, breeders, economists and scientists from other disciplines as needed.

Anticipated Impact: Increased adoption of practices by producers and decision makers will result in FHB/DON reduction and lead to substantially reduced frequency of unacceptable DON levels in grain loads.

FOOD SAFETY, TOXICOLOGY AND UTILIZATION OF MYCOTOXIN-CONTAMINATED GRAIN (FSTU)

Goal #1: Provide analytical support for DON/trichothecene quantitation for Initiative's stakeholders.

Milestones/Performance Expectations:

- Maintain awareness of standardized sampling protocols adopted for regional (commercial field) and research testing for DON.
- Maximize coordination and efficiencies amongst labs with an effort towards matching lab utilization to potential impact to provide DON data in a timely manner.
- Provide accurate information and occurrence data regarding DON, ADONs and DON glucoside in a form accessible to the FHB research community

Performance Measure 1.1: Ensure awareness about optimal sampling, grinding and test protocols for mycotoxin analysis.

Research Needs: There is need to increase and maintain awareness about optimal sampling and grinding protocols for grain industry, milling industry and initiative researchers. This will minimize incorrect data and enhanced effort to reduce DON

Outputs:

- Session/meeting devoted to sampling /analytical methods will be provided as needed.
- Protocols will be included in USWBI web page
  - Links to protocols will be provided to initiative users.
  - Recommended methods will be updated/modified taking into account FGIS- and EU-recommended protocols.

Resources: Diagnostic lab directors

Anticipated Impact: Clarify stakeholder concerns over test accuracy and repeatability of data. Implementation of standardized sampling and grinding protocols can improve comparability/quality of data.

Performance Measure 1.2: Maximize capacity for the analysis of DON and other trichothecenes.

Research Needs: Initiative members need increased test capacity and turnaround time to make progress since the future focus will continue to be less DON.

Outputs:

- Diagnostic labs
  - Survey of initiative users for anticipated needs, and continued evaluation of new technology
  - Workshop(s)/continuing education devoted to sampling /analytical methods at initiative meeting(s) in order to optimize use of lab resources.
  - Coordinate use of labs to maximize USWBSI impact -
    - Solicit bulk discounts for initiative users.
    - Continued evaluation of new technologies.

FOOD SAFETY, TOXICOLOGY AND UTILIZATION OF MYCOTOXIN-CONTAMINATED GRAIN (FSTU) *(cont.)*

- Facilitate on-site rapid testing
    - Suggested rapid assay protocols (e.g. FGIS) will be included in USWBI web page. Links to protocols will be provided to initiative users.

Resources: Diagnostic lab directors.

Anticipated Impact: Increased testing will enable breeders to achieve goals of DON reduction sooner.

Performance Measure 1.3: Diagnostic labs will include measurement of ADONs, other trichothecenes and glycosidic forms in selected surveillance samples.

Research Needs: There is concern about change in *Fusarium* genotypes and masked (glycosidic) trichothecene forms but there are limited data on occurrence individual toxins other than DON. FDA survey data is very limited.

Outputs: An archive of data on occurrence of different trichothecenes and their relative ratios of these analytes.

Resources: Diagnostic lab directors.

Anticipated Impact: This data will assist discussion of "shifts" in observed mycotoxin profiles.

Goal #2: Provide requisite information on DON/trichothecene safety issues to producers, millers, researchers, risk assessors and regulators.

Milestones/Performance Expectations:

- Validate current FDA standard of DON ppm in flour and grain
- Scientific studies of DON and related tricothecenes that enable extrapolation from animals to humans.
- Presentation of scientific study data at meetings and in high impact journals
- Utilization of information to produce accessible outreach materials for the public

Performance Measure 2.1: Conduct research on adverse effects of consuming DON and related trichothecenes that allow extrapolation from animals to humans and inform regulators thus enabling science-based risk assessment. Key considerations are groups at high risk and biomarkers of exposure/toxicity.

Research Needs: EU has established DON regulatory standards that are much lower than U.S. and there is pressure on CODEX to follow suit. There is continued concern about change in *Fusarium* genotypes and mycotoxin profiles as well as the occurrence of masked forms of DON

Outputs:

- Publication of research/reviews in high impact journals that inform international risk assessors and regulators.

FOOD SAFETY, TOXICOLOGY AND UTILIZATION OF MYCOTOXIN-CONTAMINATED GRAIN (FSTU) *(cont.)*

- Participation in national/international research meetings/ forums/committees that inform risk assessors.
- Develop preliminary data for NIH-funded human epidemiology studies.

Resources: Food safety researchers

Anticipated impact: Risk assessors and regulators will use data to make sound scientifically valid decisions that ensure public health but minimize economic effects to wheat and barley industries.

Performance Measure 2.2*:* Summarize known toxicology information on DON/other trichothecenes, their risks and rationale for regulations.

Research Needs: There is lack of easily comprehensible information on DON and its risks. This creates confusion among producers, millers and Initiative scientists.

Outputs:

-Web pages with questions and answers about DON safety.
-Initiative-originated reviews/position paper(s).

Resources: Scab Web support facility, food safety researchers.

Anticipated Impact: Improved understanding/communication of the importance of the problem among the producers, millers, researchers and government.

GENE DISCOVERY AND ENGINEERING RESISTANCE (GDER)

Goal #1 – Gene Discovery: Increased efficiency of identification of candidate genes for resistance against FHB and reduced DON accumulation.

Milestones/Performance Expectations:

- Utilize high-throughput genomics approaches (e.g., next generation sequencing, metabolomics, functional genomics in model systems) to identify genes that confer increased FHB resistance and/or lower accumulation of DON.

Performance Measures: Identification of genes and transgenes that improve FHB resistance and/or reduce DON accumulation.

Research Needs:

- Rapid identification of wheat and barley genes essential for resistance to FHB and DON.
- Rapid identification of genes that confer susceptibility to FHB. If such genes are identified, incorporation of non-expressing alleles or silencing via transgenic approaches may provide a novel path to FHB resistance.
- Priority will be given to resistance strategies that can be implemented using wheat or barley DNA sequences.
- Rapid identification of transgenes that can be utilized to increase resistance to FHB and/or reduce DON accumulation.
- Rapid high capacity assays for discovery and validation of genes with function in FHB and DON resistance.

Outputs: Genes and transgenes that can be incorporated in new wheat and barley lines with improved FHB resistance and/or reduced DON accumulation.

Resources:

- USWBSI funding of gene discovery.
- New high throughput assays for genes functioning in FHB resistance and susceptibility and DON reduction.

Anticipated Impact:

- Additional genes available for breeding FHB and DON resistant barley and wheat.
- Proof of gene efficacy will speed up breeding with native resistance genes and provide options for incorporating resistance transgenes into commercial wheat and barley.

Goal #2 – Plant Transformation: Develop effective FHB resistance through transgenic strategies.

Milestones/Performance Expectations:

- Assess the activity of the candidate genes when expressed in wheat and barley.
- Once efficacy of transgenic lines is established, cross or transform the transgene loci/constructs into elite germplasm for use by breeders.

Performance Measure: Establishment of a central laboratory for the generation of transgenic plants and T1 seed stocks for Initiative funded research projects.

GENE DISCOVERY AND ENGINEERING RESISTANCE (GDER) *(cont.)*

Research Needs:

- Establish and support centralized transformation facility(s) for more efficient generation of transgenic plants and seed stocks for Initiative funded research projects. Establishment and optimization of wheat and barley transformation is expensive and requires much time and specialized skills. Support of one or a few transformation facilities would provide a great benefit to research into transgenic solutions for FHB.
- Develop transformation capacity in elite wheat and barley genotypes.
- Work with PBG to characterize the impact of transgenes on infection and DON accumulation.
- Preliminary data for efficacious transgenes must be provided for Initiative support.
- The Initiative should support centralized facilities for field testing transgenic wheat and barley.
- Development of tools for optimized gene expression in wheat and barley.
- More collaboration with breeders to incorporate validated transgenics into VDUN programs.

Outputs: Validated genes and/or transgenes conferring resistance to FHB and/or reduced levels of DON accumulation in wheat and/or barley.

Resources:

- USWBSI funding for research identifying and developing effective transgenic solutions for FHB resistance and reduced DON accumulation.
- New website with latest information (positive and negative) from USWBSI-funded research about the efficacy of transgenes for FHB resistance and/or DON reduction.
- This website would also give up-to-date information about the latest tools for effective expression of transgenes in wheat and barley in FHB resistance strategies (organ/tissue specific promoters, introns, 5’ and 3’UTRs etc.)

Anticipated Impact:

- Development of transgenic wheat and barley plants with FHB resistance and DON reduction that can be used to complement natural genetic resistance or as a standalone solution.
- More efficient use of individual lab time and resources.

PATHOGEN BIOLOGY AND GENETICS (PBG)

Goal #1: Characterize plant-fungal interactions in plant lines (including transgenic lines) being developed by USWBSI.

Milestones/Performance Expectations:

- Characterization of cultivar/strain interactions with respect to colonization, infection, mycotoxin production and inoculum potential on residues.
- Determine where and when DON is produced in different cultivars.

Performance Measure: Information of how plant infection occurs and DON accumulates in plants over time and how these processes vary between resistant and susceptible varieties, with consideration of the problem of high-DON, asymptomatic grain.

Research Needs:

- Understand when resistance impacts fungal invasion.
- Understand the infection process, including late infections, the influence of environment on infection, and the role of trichothecenes in the initial infection.
- Characterize the infection process in barley, in particular the role of lemma and palea as they relate to toxins in the mature grain.
- Understand the interaction between FHB resistance and resistance to DON accumulation
- Develop effective screens for identification of resistance other than Type II.
- Determine the effect of fungicide application on DON biosynthesis.
- Determine whether mechanical barriers in disease resistance (i.e. long awns) are effective.
- Characterize transgenic lines of wheat and barley.
- Understand the linkage between greenhouse testing and field testing.
- Characterize the mechanism of fungal resistance to DON accumulation.
- Novel methods for extending protection against the pathogen and toxin accumulation.

Outputs:

Short-Term:

- Detailed histology of infection and accumulation of DON over time in different cultivars.
- Standardized techniques for screening, sampling and testing varieties were developed based on knowledge of pathogen biology.
- Identification of infection patterns and accumulation of DON.

Long-term:

- Understanding of the biology of DON accumulation of asymptomatic wheat and the role of DON as a pathogenicity factor in barley.
- Collaboration with VDHR, GDER and MGMT to implement discoveries into control programs.

Resources: USWBSI funding for understanding the infection process and mycotoxin accumulation over time.

PATHOGEN BIOLOGY AND GENETICS (PBG) *(cont.)*

Anticipated Impact:

- Understanding of how asymptomatic grain with high DON develops.
- Understanding of how infection and grain colonization occurs.

Both of these will have impacts on breeding for resistance and will also impact development of more effective fungicide applications.

Goal #2: Develop new strategies for reducing impact of FHB disease and mycotoxin contamination in barley and wheat. Focus on pathogen genes and responses, including specific host target genes**.**

Milestones/Performance Expectations:

- Identify potential pathogen target genes/processes.

Performance Measure: Strategies for disease and mycotoxin management based on knowledge of pathogen fitness, biology, genome and genetics are developed. Potential pathogen target genes/processes are identified.

Research Needs:

- Discover genes for pathogenesis, trichothecene reduction, novel antifungal compounds, etc.
- Development of molecular approaches to modulate pathogen genes for disease control and mycotoxin reduction (e.g. blocking DON biosynthesis).
- Develop new strategies to reduce sporulation on potential inoculum sources of the pathogen (e.g., residues of corn).
- Understand the dynamics of trichothecene production during plant growth and grain development in both wheat and barley
- Implement knowledge of genes identified as essential to pathogenicity and collaborate with GDER for evaluation.
- Identify genes under selection in the pathogen necessary for survival/fitness/aggressiveness under field conditions.
- Identify enzymes to detoxify DON.

Outputs:

Short-term:

- Develop web-based resources for access to information on mutants created and their phenotypes.
- Determine patterns of pathogen gene expression and protein accumulation vital to disease and trichothecene accumulation.

Long-term:

- Identify genes potentially useful to reduce disease or mycotoxin contamination when introduced into transgenic plants.
- Develop new strategies for pathogen gene silencing.

PATHOGEN BIOLOGY AND GENETICS (PBG) *(cont.)*

Resources:

- Funding from USWBSI and competitive federal funding for gene discovery.
- Continued use of data obtained from USWBSI funds to procure other federal funding.

Anticipated Impact:

- Identification of genes to be used in the development of resistant, transgenic plants.
- Identification of novel means for controlling the scab pathogen based on gene discovery or other biochemical strategies.

VARIETY DEVELOPMENT AND HOST RESISTANCE (VDHR)

Goal #1: Increase acreage planted with varieties with improved FHB resistance to reduce DON in the US grain supply.

Milestones/Performance Expectations

- Where possible, determine the percentage of acreage planted to varieties with improved FHB resistance. This information will be collected annually and used to document the change of commercial acreage planted to wheat and barley with improved FHB resistance to document progress on reducing this disease.
- Document trends in DON level in newly released cultivars relative to susceptible checks.
- Develop and maintain a public access database with information on FHB reaction (DON, index, severity etc.) and agronomic performance of available wheat varieties and breeding lines that are likely to be released.
- Increase seed in preparation for commercial release of at least three new breeding lines with scab resistance each year in each class of wheat/barley and each region.

Performance Measures:

- Attempt to document a positive trend in acreage planted to cultivars with enhanced FHB resistance and reduced DON levels in delivered grain.
- Continued improvement of the FHB resistance of breeding lines being increased for commercial release and/or varieties released and targeted for FHB prone regions by USWBSI breeders.
- Establish a commercial cultivar database and document usage.

Research needs:

- Data base results from comprehensive evaluation of breeding lines being increased for release and current commercial cultivars for FHB reaction (DON, index, severity, etc.) and other important traits under appropriate management practices.
- Evaluation of cultivars with improved FHB resistance in best-management practices for control of DON in conjunction with MGMT.
- Mechanisms to determine acreage planted to FHB resistant varieties and to collect DON data from flour mills. Mechanism to co-analyze this data along with epidemiological data to determine trends.

Outputs:

- Grower access to comprehensive information on FHB resistance of adapted cultivars for so they can fully incorporate FHB resistance in their variety selection.
- Information on best management practices involving varieties with enhanced FHB resistance
- Documentation of impact of VDHR and associated USWBSI programs on DON in grain channels.

Resources:

- Multi-location regional nurseries and existing trials of commercial cultivars.
- Database and website management.
- Mechanism for funding large regional projects for multiple years with MGMT and other programs.

VARIETY DEVELOPMENT AND HOST RESISTANCE (VDHR) *(cont.)*

Anticipated Impacts:

- With access to an improved variety selection tool, growers will select varieties with improved FHB resistance and therefore acreage of such varieties will increase.
- A package of Best Management Practices involving new varieties with FHB resistance can be promoted and adapted by usage.
- More stable supply of high quality wheat and barley with reduced DON for end-users.

Goal #2: Increase efficiency of coordinated project breeding programs to develop and release FHB resistant varieties.

Milestones/Performance Expectations:

- Continue to increase the FHB resistance of entries submitted to the USWBSI sponsored FHB nurseries, in other regional performance nurseries, and among breeding lines that in preparation for release.
- Continue the cooperation among USWBSI sponsored breeding programs.
- Establish database to facilitate sharing of information and genetic resources among breeding programs; will include information from USWBSI breeders on:
  - crosses made to improve FHB resistance,
  - performance data from non-USWBSI funded trials (yield, quality, resistance to other diseases etc.) on lines with improved FHB resistance,
  - populations and plans for MAS,
  - sources of FHB resistance,
  - QTL for FHB resistance present in advanced lines, and
  - release status of lines with improved FHB resistance, More rapid release of improved cultivars with FHB resistance so growers have better choices.

Performance Measures:

- Establish database and data submission protocols from all USWBSI sponsored breeders (within 2 yrs.)
- Improved FHB resistance (DON, index, severity, etc.) of entries submitted to the USWBSI sponsored FHB nurseries and other regional nurseries.
- Number of breeding lines from USWBSI sponsored breeding programs with enhanced FHB resistance that are being increased for commercial release and/or have been released.

Research Needs:

- Increased capacity for field testing in mist-irrigated inoculated nurseries.
- Increased capacity for DON testing at breeder and analytical lab level.
- Increased capacity for MAS including backcrossing and haplotyping as appropriate.
- Facilitate sharing of breeding information on populations relevant to FHB improvement to enhance individual programs and germplasm exchange.

Outputs: More frequent release of FHB resistant varieties with high yield and other desirable attributes that insure widespread adoption by producers and end-users.

VARIETY DEVELOPMENT AND HOST RESISTANCE (VDHR) *(cont.)*

Resources:

- Genotyping labs
- Mist-irrigated inoculated nurseries
- DON testing labs
- Infrastructure of university sponsored breeding programs.
- Mechanism for funding large regional projects for multiple years.

Anticipated Impacts: Every grower in an FHB affected region will have an expanded and enhanced array of commercially competitive varieties with adequate FHB tolerance to select for growing on their farm. New varieties with improved FHB resistance will be released and available more frequently than they are now.

Goal #3: Develop new breeding technologies and germplasm to further enhance short term and long term improvement of FHB resistance and to efficiently introgress effective resistance genes into breeding germplasm.

Milestones/Performance Expectations:

- Identify basic research needs of the breeding programs in each region and class of wheat and barley. Coordinate activities to address agreed upon priorities.
- Documenting the progress of the mapping and introgression of resistance from all sources. Annually, breeders/geneticists in each market class contribute data on the progress of the introgression.
- Identification and incorporation of different types of FHB resistance into germplasm lines and varieties.
- Development and implement improved breeding and selection methods all FHB resistance sources and describing any associated markers; keep this site updated.

Performance Measures:

- Establishment of priorities for basic research (within 1 yr).
- Establish cooperative teams of researchers to undertake the strategic testing of putative sources of resistance, all proposed mapping, and subsequent introgression.
- Establishment of research teams and initiation and completion of research (within 1 yr)
- Identification of novel QTL and markers systems for the QTL (within 3 yrs).
- Validation of discovered genes (within 4 yrs).
- Initiation of efforts by breeders to use the new resistance genes (within 2 yrs).
- Performance of breeding lines with new sources of resistance in their pedigree.
- Establishment of database on sources of resistance, mapping and introgression efforts, and developed germplasm (within 1-2 yrs).
- Identification of new mechanisms of resistance and/or improved technologies to assay for the mechanisms (within 5 yrs).
- Update breeding methods based on current technology.

VARIETY DEVELOPMENT AND HOST RESISTANCE (VDHR) *(cont.)*

Research Needs:

- Improved technology to establish novelty of sources of FHB resistance and inventory the frequency of resistance alleles in current breeding programs.
- Coordination to develop teams to conduct basic research and initiate introgressions.
- Investigate and elucidate the genetic basis of different types of FHB resistance gene expression.
- Identify novel mechanisms of FHB resistance and ways to screen for them.
- Sharing of pre-breeding populations, germplasm and information for MAS.
- Enhanced cooperative phenotyping of mapping populations (more environments in fewer years).
- Use of molecular markers to pyramid resistance genes in suitable germplasm.
- Investigation of integrated methods to improve FHB resistance to commercially needed levels.
- Enhanced technology for accurate test for DON content.
- Uses of new genomic technologies (i.e. SNP genotyping using the wheat 9K platform and genotype by sequence) for efficiently mapping resistance QTL and for MAS in development of adapted germplasm and cultivars.

Outputs: Identification of novel genes for FHB resistance, development of improved germplasm with diverse resistance, and development of improved methods for improving FHB resistance.

Resources:

- Basic disease technology and capacity for assessing potential sources of FHB/DON resistance.
- Shared information on resistant sources, breeding population development, marker haplotypes, and mapping and introgression efforts.
- Regional coordination meetings / regional grants to facilitate establishment of priorities and collaboration.
- Mechanism for funding large regional projects for multiple years.
- High-throughput genotyping labs.
- Labs for DON analysis.
- Misted nurseries for FHB assessments.

Anticipated Impacts:

- Development of improved germplasm and breeding methodology (MAS, selection schemes, etc.) that will enhance the efficiency of breeding for FHB resistance.
- Improved understanding of the genetic basis of the mechanisms of FHB resistance.
- More collaborative, rapid, and efficient execution of basic research and incorporation of the results into variety development programs.

APPENDIX C

GUIDELINES FOR RESEARCH-BASED WORKSHOPS AND PLANNING MEETINGS

Last Revised: 4-17-08

In order to better facilitate the exchange of information, Research Area and Coordinated Project Committees are encouraged to develop workshops or planning meetings for their research area or coordinated project. There is a line item in the budget for the Networking and Facilitation Office (NFO) to provide financial support for said workshops or planning meetings.

Guidelines for Submitting Proposals:

- Workshop proposals are developed and submitted through the Research Area or Coordinated Project Committees for consideration by the Executive Committee.
- Proposals must be received by the NFO by the first Tuesday of March for consideration by the Executive Committee for the upcoming fiscal year (begins in early May).
- All proposals received by this deadline will be considered simultaneously by the Executive Committee. In the event that budget resources are not fully employed, proposals received after the deadline and approved by the EC will be considered by the EC in the order in which they are received.
- A maximum of three workshops or planning meetings will be eligible for financial support each fiscal year, although the EC has the authority to waive the maximum if resources are available.
- A research area or coordinated project committee can only submit one proposal per fiscal year.
- Proposals should contain the following:
    - Name(s) of Workshop or Planning Meeting Coordinator (not necessarily the Research Area Committee or Coordinated Project Committee chair)
    - Purpose/Description of Workshop
    - Relevance to the USWBSI's mission and Action Plan.
    - Detailed Budget

Workshop Participation:

- Executive Committee approved workshops or meetings should be announced through the Scab Listserver with a stated deadline for receipt of application by interested parties. Physical and financial resources may limit the number of participants.
- Interested parties will be encouraged to contact the workshop or meeting coordinator, but may also work through the NFO.
- An appropriate broad-based representation of scientists and stakeholders is encouraged.

Guidelines for Financial Support by the NFO

- Final allocation of resources will be decided by the NFO and the workshop coordinator as soon as possible after the application deadline.
- All participants will be notified prior to the workshop of the maximum amount of travel funds that will be available.
- Travel reimbursement will be managed through the NFO.

Sponsorship

Organizers are encouraged to seek corporate sponsorship for their workshops or meetings.

Final Report

The Research Area or Coordinated Project Chair, or the Workshop Coordinator, will submit a final report to the NFO following the workshop. Reports will be distributed to the Executive Committee and posted on the Initiative's Web site.