

# Guidelines to Authors of Recovery Plans for the National Plant Disease Recovery System (NPDRS)

These guidelines are designed to provide a basis for internal consistency between plans, ensure that critical subjects are considered for each plan, and make sure the reader can easily find items of interest. However, we do not want to stifle the creativity of the recovery plan authors. The authors may have good reason to add subject areas that are not outlined here or to remove, combine or rearrange guideline subject areas that are requested here. We want to remain flexible in order to produce recovery plans that have the best fit for each disease. We do ask that the authors try to adhere to these guidelines whenever possible.

All guideline questions should be addressed. Information such as 'no chemical control measures exist' and 'no barriers to trade' are valuable. As an example, see the HLB recovery plan.

## General Guidelines

- This is not an academic review. Try to write for a non-scientific audience – when possible, avoid jargon.
- The target audience is USDA decision-makers, followed by research proposal review panels, NPDN, and other extension and educational entities.
- Only one disease should be dealt with by each recovery plan.
- Recovery plans should be 12 to 20 pages long, concise and targeted.
- Education and outreach are an important part of every plan.
- Whenever possible, cite statements in the text. Limit references to 20 publications concentrating on review articles and recent publications. Wherever possible, use a web link to other relevant sources of information.
- "Pathway Analyses" by the Center for Crop Biosecurity deal with many recovery plan diseases and cover similar subjects. They are available for use.
- USDA NPDRS Office seek review of plan by expert(s) not on writing committee
- Annual review of plan by chair and/or designee of USDA NPDRS Office

## Title page

- The title should begin with "Recovery Plan" and end with the disease and causal organism.
- Next, the date of completion or update should be listed. The recovery plan should be updated when new information that impacts the plan becomes available.
- List a table of contents with sections listed in the order of the following sections in this paper. The body of the recovery plan should have Roman numerals associated with each section.
- A footnote at the bottom of the title page should explain the program. Use the following language:

This recovery plan is one of several disease-specific documents produced as part of the National Plant Disease Recovery System (NPDRS) called for in Homeland Security

Presidential Directive Number 9 (HSPD-9). The purpose of the NPDRS is to insure that the tools, infrastructure, communication networks, and capacity required to mitigate the impact of high consequence plant disease outbreaks are such that a reasonable level of crop production is maintained.

Each disease-specific plan is intended to provide a brief primer on the disease, assess the status of critical recovery components, and identify disease management research, extension, and education needs. These documents are not intended to be stand-alone documents that address all of the many and varied aspects of plant disease outbreak and all of the decisions that must be made and actions taken to achieve effective response and recovery. They are, however, documents that will help USDA guide further efforts directed toward plant disease recovery.

## Executive Summary

In one page or less:

- Statement of what constitutes recovery and how to achieve it with this disease
- Limitations of current disease preparations and recommended needs
- Economic importance of disease and crop affected (specific \$ range, if possible)
- Concise summary of other recovery plan highlights
- List of recommended action items (with responsible parties denoted)

## Contributors and Reviewers

It is strongly recommended that the contributors to the report include a wide range of scientists that represent all segments of the plant pathology community especially those experienced with the disease or crop involved. Candidates can be found on the APS membership directory or the authorship of recent articles on the disease in question. In order to obtain contributions from key individuals in USDA, it is recommended that the individuals in **Appendix A** be invited to participate in the development of the recovery plan. The basic format is given in the HLB example and should include:

- Restatement of disease and its causal agent
- Contributors listed by states then federal agencies
- Reviewers such as the American Phytopathological Society

## I. Introduction

This section should introduce the disease giving some basic background information, including:

- Nomenclature of disease and pathogen
- Brief history of disease
- Range of pathogen worldwide
- Host range of pathogen
- Other introductory information pertinent to the recovery plan

## II. Symptoms

A description of disease symptoms and the inclusion of color photographs is basic to this section. Comments on how symptom expression affects recovery plans should be included here. Other key points to consider are:

- Symptoms of alternate hosts of the pathogen that may serve as recurring sources of inoculum
- Pictorial life cycle of pathogen with pictures of pathogen and vectors

### III. Spread

The spread of the pathogen in time and space is critical to the recovery plan. A discussion of the long distance and short distance spread of the pathogen should be a basic part of this section. Some questions that need answering are:

- How does pathogen spread affect quarantine regulations?
- Do vectors play a role in spread?
- What factors control spread?
- How can spread be mitigated?

### IV. Monitoring and Detection

This section should be a description of current activities, abilities, and needs as regards monitoring and detection, especially as it affects quarantine.

- What are our current capabilities as regards diagnosis, ~~and~~ detection, and forensic attribution? What detection tools are available (primers, etc.)? Are improvements needed?
- Describe the National Plant Diagnostic Network (NPDN) and how it functions concerning this disease. Is there a Cooperative Agricultural Pest Survey (CAPS) for this disease and if so, how does it function? Describe any state surveys. Can these surveys be improved?
- List SOPs used in diagnosis especially those certified under CAPS. Mention any plans to develop SOPs.

### V. Response

The planned immediate response to the entrance of exotic plant diseases is a mandated activity of USDA APHIS PPO in accordance with the Plant Protection Act of 2000. This section is devoted to a description of the planned response for this disease. USDA APHIS personnel should be able to outline this section. Of course, suggestions or recommendations concerning the planned response are welcome.

### VI. USDA Pathogen Permits

Instructions are given on how to obtain and use pathogen permits for pathogen cultures and suspect infected plant material. These permits are mandated by the Plant Protection Act of 2000 and The Agricultural Bioterrorism Protection Act of 2002. USDA APHIS personnel should be able to outline this section. Special consideration should also be given to the role these requirements play in research and breeding efforts.

### VII. Economic Impact and Compensation

An economic justification for developing a recovery plan for this disease is the purpose of this section. Following that should be an explanation of the compensation growers can expect if losses are realized before recovery takes hold. Include these items:

- Economic value of crop affected (acreage and dollar value in states where grown)
- Portion crop that could be affected
- Impact of disease on crop yield and the cost of production
- Economic impact on producers, industries affected, regional and U.S. economy, ~~and international trade~~ including effect on export markets
- Sociological impacts on communities and other risk issues
- Compensation expected to farmers (USDA RMA can supply this information)

### VIII. Mitigation and Disease Management

This is a key section that outlines all the management methods that are available for mitigation. Any method that is efficacious should be listed, but special emphasis needs to be given to recommended management methods. Those that should be considered are:

- Prevention – e.g. clean nursery stock
- Epidemiological/risk models – e.g. soybean rust fungicide decision based on growth stage and pathogen dispersal
- Vector management – e.g. chemical or biological
- Biological control
- Cultural control – e.g. planting methods, weed control, pruning methods
- Education – e.g. cooperative extension
- Eradication
- Exclusion – e.g. quarantines
- Germplasm – e.g. resistant varieties; especially those contained in the U.S. National Plant Germplasm System; this is specifically called for in Homeland Security Presidential Directive Number 9 (HSPD-9) and must be addressed
- Chemical
- Integration of mitigation and disease management strategies – This final section should provide guidance to the reader on the recommended IPM strategy to mitigate this disease

## **IX. Infrastructure and Experts**

It is important to highlight the network that exists to deal with this disease. We want to indicate the facilities that are working on this disease and the types of research that are ongoing. Keep these points in mind.

- Industry's role and activities should be covered.
- Mention should be made of the USDA/CSREES Current Research Information System website at <http://cris.csrees.usda.gov/>. This site holds a concise description of nearly all the public research on plant disease in the U.S.
- Develop a listing of experts on the recovery plan disease that can be consulted. This listing of 5-10 scientists should include an indication of their expertise, association, address, and contact numbers. Consult the HLB recovery plan for examples. Please obtain the approval of potential experts.
- Where is the expertise for detecting and monitoring this disease? Please list or set up and organizational chart and indicate roles and capacity to engage in detection.
- Split needs into short and long term categories.
- Describe communication capabilities of current system and how it should change.

## **X. Research, Extension, and Education Priorities**

This is an opportunity to indicate where research and extension dollars need to be concentrated in the future. Every plan should list the extension and education needs for successful disease management because the behavior of producers is critical to successful disease management. Please consult a variety of recovery plans to see how different authors have dealt with this subject. If possible, estimate the time required for deliverables; many authors have separated priorities into short and long term. Directly or indirectly mention the three basic priority areas:

- Research priorities
- Extension priorities
- Education priorities

## **References**

List up to 20 references that are cited in the recovery plan. Try to concentrate on review articles or recent literature that impacts some phase of the recovery plan. This section is an important gateway into the scientific literature on this disease. For suggested format see the HLB recovery plan.

### **Web Resources**

List 5-10 authoritative web sites that discuss this disease. This section should contribute to details on the subjects discussed in the recovery plan, providing current and accurate information. An explanatory note of the source would be useful.

Revised April 2, 2007

## Appendix A.

It is recommended that the following people (mostly USDA scientists) be invited to join all recovery plan workgroups for the National Plant Disease Recovery System (NPDRS). Included is a short description of how they can contribute.

Dave Bell, USDA Risk Management Agency/Kansas City, MO, 816-926-2397, [dave.bell@rma.usda.gov](mailto:dave.bell@rma.usda.gov) – Expert on insurance compensation

Rick Bennett, USDA Agricultural Research Service (ARS)/Beltsville, MD, 301-504-6915, [rbennett@ars.usda.gov](mailto:rbennett@ars.usda.gov) – ARS leader on plant disease research priorities

Ted Boratynski, USDA Animal Plant Health Inspection Service (APHIS)/El Centro, CA, 760-344-1152, [theodore.n.boratynski@usda.gov](mailto:theodore.n.boratynski@usda.gov) – Expert on exotic pests of quarantine significance

Russ Bulluck, USDA APHIS/Raleigh, NC, 919-855-7646, [russ.bulluck@aphis.usda.gov](mailto:russ.bulluck@aphis.usda.gov) – Expert on USDA response plans, select agents, and quarantine plant diseases

Gwendolyn Burnett, USDA APHIS/Riverdale, MD, 301-734-5334, [Gwendolyn.L.Burnett@aphis.usda.gov](mailto:Gwendolyn.L.Burnett@aphis.usda.gov) – Administers APHIS permits for pathogens and represents the Select Agent Program

Kitty Cardwell, USDA Cooperative State Research, Education, and Extension Service (CSREES)/Washington, DC, 202-401-1790, [kcardwell@csrees.usda.gov](mailto:kcardwell@csrees.usda.gov) – Administers USDA grant programs that are driven by research and extension priorities

Tara Chand-goyal, EPA Biological & Economic Analysis Division/Washington, DC, 703-308-8257, [chandgoyal.tara@epa.gov](mailto:chandgoyal.tara@epa.gov) – Plant pathologist at EPA who evaluates select agents

Stan Daberkow, USDA Economic Research Service (ERS)/Washington, DC, 202-694-5535, [daberkow@ers.usda.gov](mailto:daberkow@ers.usda.gov) – Economist who analyzes economics of select agents such as soybean rust and other invasive species

Marty Draper, USDA CSREES/Washington, DC, 202-401-1990, [mdraper@csrees.usda.gov](mailto:mdraper@csrees.usda.gov) – Administers USDA grant programs that are driven by research and extension priorities

Joel Floyd, USDA APHIS/Riverdale, MD, 301-734-4396, [Joel.P.Floyd@aphis.usda.gov](mailto:Joel.P.Floyd@aphis.usda.gov) – Expert on USDA response plans, select agents, and quarantine plant diseases

Kent Smith, USDA ARS/Washington, DC, 202-720-3186, [kent.smith@ars.usda.gov](mailto:kent.smith@ars.usda.gov) – Provides support to workgroups and advice on program design and resources