

GMO Guidelines Project

SECOND GMO GUIDELINES PROJECT WORKSHOP IN BRASILIA, BRAZIL

Saturday 14th June 2003 to Wednesday 18th June 2003

1. *Goals of workshop*
2. *Focus events in cotton in Brazil*
3. *Staging*
4. *Draft workshop program*
5. *Participants list*

Brazil Workshop Goals

The goals of the Brazil Workshop are

- 1) to further develop the generic drafts of the GMO Guidelines project, by applying them to the case study of Bt cotton and other transgenic cottons in Brazil
- 2) to develop draft guidelines for Bt cotton in Brazil.

Particular attention will be focused on the issue of staging (see below).

Focal Events in Cotton

The focal events for discussion at the Brazil Workshop are:

1. Mon531 (aka Bollgard, Ingard). Produced by transformation of *Coker 312* (which is not a commercial variety) with a chimeric *cry1Ac* using *Agrobacterium*. The selected transformant of *Coker 312* was developed into *Delta Pine 50B (DP50B)*. This event occurs in US, Australian and Brazilian cotton backgrounds.
2. Event 15985 (aka Bollgard II). Produced by biolistic transformation of *DP50B* with *cry2Ab*. The selected transformant of *DP50B* (a poorly performing variety) was developed into another Delta Pine variety (aka *DP50BG II* or *DP50BX*). This event occurs in US, Australian and Brazilian cotton backgrounds.

In addition, we should recognize that there is a VIP3A event being developed by Syngenta, and several undescribed events with Cry toxins active against boll weevil (Coleoptera) being developed in Brazil.

More information on cotton events and cotton production in Brazil is available in the Brazil background report.

Staging

One of the main goals of the Brazil workshop is to consider when during the development of a transgenic plant each of the scientific issues in each of the Sections and subsections should be addressed to allow efficient development of a transgenic organism and provide timely information for the assessment and management of environmental risk. If certain risk-related information were collected too early in the development process, it could delay development without reducing risk. Conversely, if risk-related information were collected too late, it could be too late to facilitate development of an effective, low-risk transgenic organism.

The development of any transgenic organism will follow a sequence of stages, each of which lead to a key decision in the development process. Because these Guidelines are not decision-making guidelines, we do not focus on the decision process; the Guidelines do not provide yes or no answers for making decisions. Instead, we focus on the scientific information that would be useful for decision-makers to be able to make a science-based decision. The goal then is to specify the stage during which the scientific risk information should be collected.

We consider the development process to follow the following stages, leading to a key decision or set of decisions (Table 1). Workshop participants should propose additional stages and decision points as the need becomes clear during the Workshop.



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Stage 1. Design of plant transformation. This includes factors such as plant species, target gene sequence, plasmid structure, transgene structure, use of markers, etc. Any of these criteria could influence the way environmental risk assessment will be conducted.

Stage 2. Focusing on a small set of transformation events. During transformation perhaps hundreds of transformation events are created. An essential step in developing a transgenic product is to focus on a small set of transformation events prior to conducting extensive testing on any one of them. This will involve lab-based screening procedures, initial product testing, genetic characterization, etc., and each of these could affect the subsequent environmental risk or risk assessment.

Stage 3. Characterizing the small set of events in the laboratory. Additional lab-based and greenhouse-based testing procedures will be needed to characterize the small set of events to determine which merit testing in the field; these procedures could affect subsequent environmental risk or risk assessment. In addition, product testing in greenhouse and other contained environments will be important for the initial steps of a risk assessment of any transgenic organism that will be developed.

Stage 4. Small-scale field testing. Field-based screening procedures, product testing, breeding protocols, etc., will play a role in the selection of the best event(s) to concentrate further development; these procedures could affect subsequent risk assessment. In addition, small-scale field trials coupled with additional laboratory trials will be important for risk assessment.

Stage 5. Large-scale field trials. Variety testing and screening, etc., will concentrate development on a set of potentially commercial varieties containing the transgene; these procedures could affect subsequent risk assessment. In addition, all work needed for risk assessment must be completed during this stage. Development of monitoring tools should also be completed during this stage.

Stage 6. Commercial use. Implementing risk management must occur during the beginning of this stage. In addition, monitoring must be implemented and refined, and a process to adapt management should be implemented.

Table 1. Summary of the key stages, subsequent decisions, and consequent actions involved in the development of a transgenic organism for commercial use.

Stage	Leads to Decision	Leads to Action
1. Design of plant transformation	Decisions on how to conduct transformation	Transformation conducted
2. Focusing on a few transformation events based on laboratory assays	Decisions to focus on a few events	Discarding many events and continuing work on only a few
3. Characterizing focal events in laboratory	Whether to conduct small-scale field tests	Conducting field tests
4. Small-scale field testing	Whether to conduct large-scale field tests	Conducting large-scale trials
5. Large-scale field trials	Whether to allow commercial use	Commercial use
6. Commercial use		



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In the paragraphs below we outline the present extent each Section of the Guidelines has provided staging in the assessment process, and suggest what each section can do to develop the Guidelines so that staging becomes a transparent part of the process.

Problem Formulation and Options Assessment. This section does not explicitly relate its various steps to these development stages, but a close reading of the section outline would reveal that some steps need to be completed early in the development of a transgenic crop plant, while others can wait until later in the process. It will be important for the group to make the timing of these steps more explicit.

Transgene Expression and Locus Structure. This section identifies some design recommendations, which would occur in stage 1 (design of plant transformation). However, all of the other recommended tests for characterizing expression and locus structure have not been explicitly assigned to any stage. In some cases, logic will narrow the possible options. For example, detailed expression data from the field cannot be done during stages 1-3, but the group should suggest which of stages 4-6 it should be done.

Non-target and Biodiversity Effects. The Guidelines for non-target and biodiversity effects are presently focused on assessment protocols to be conducted during Stage 3, although some protocols for Stage 4 have also been proposed. The various subgroups should clarify which assessment protocols should belong to Stage 3, and if any of these should belong to Stages 1 or 2. In addition, the subgroups should suggest assessment protocols that must occur after Stage 3. Is the distinction between Stages 4 and 5 useful for non-target testing? If time permits, subgroups can consider the protocols that should occur during Stage 6.

Gene Flow and Its Consequences. The Guidelines for gene flow and its consequences are presently focused on field data associated with the transgenic plant and its ancestor. The group should determine if any information and protocols should be a part of Stage 3, and if so, which parts. For example, what parts of the ancestor characterization should be done during or before Stage 3? In addition, for those protocols that should be done during Stages 4 or 5, is it useful to distinguish for the purposes of risk assessment between these two stages? If time permits, the group can consider which risk assessment protocols should be done during Stage 6.

Resistance Risk and Management. The Guidelines for resistance risk and management presently focus on Stages 3-6, without distinguishing Stages 4 and 5. The resistance group should decide if there is any need to distinguish Stages 4 and 5 or to structure any other staging into the assessment of resistance risk and development of resistance management. Most importantly, the group should clarify which parts of the assessment should occur during Stage 3 (presently nearly everything is done during this Stage), and which parts can be postponed to later Stages. In addition, the group has made suggestions for Stage 1. Such suggestions need to be further developed and justified.



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General program for workshop

Friday 13th June

18:00 Meeting of project coordinators and non-target section subgroup coordinators

19:00 Meeting of section and subgroup coordinators and dinner.

Saturday 14th June

10:00 Welcome and opening (Deise Capalbo & Eliana Fontes)

10:10 Short introduction to GMO Guidelines Project (AH & DA)

10:30 The Kenya experience (Ellie Osir)

11:00 Presentation of Brazil report

11:30 Program of Brazil workshop (AH & DA & Eliana Fontes)

11:50 Sections and subgroups identify groups and meeting rooms.

12:00 Group photograph

12:30 LUNCH

13:30 Sections and subgroups make introductions. Each group assigns rapporteurs to write notes.

13:30-17:30 Section sessions (see below)

18:00 onwards Welcome cocktail and buffet

Sunday 15th June 2003

9:00 – 12:30 Section / subgroup work

12:30 – 13:30 LUNCH

13:30 – 17:30 Section / subgroup work

Monday 16th June

9:00 – 12:30 Section / subgroup work

12:30 – 13:30 LUNCH

13:30 – 15:30 Section / subgroup work

16:00 Brasilia tour.

19:00 DINNER at restaurant near hotel.

Tuesday 17th June

9:00 – 12:00 Preparation of Public Day presentations / writing up of workshop report.

12:00 – 13:00 LUNCH

14:00 – 17:00 Run through of section presentations (in English) to whole workshop / further preparation / translation of presentation into Portuguese.

Wednesday 18th June Public Day (presentations in Portuguese)



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Draft section and subsection programs (subject to change as discussions progress)

Section I: Problem Formulation and Options Assessment

Saturday afternoon

Introductions and Agenda Review

History of PFOA in the Context of the GMO Guidelines Project

Summary of Kenya Workshop

Workshop Objectives:

- Review and develop general PFOA guidelines
- Design Brazilian specific proposals for PFOA

Key Tasks and Discussion Points:

- Review the PFOA questions and process

Sunday and Monday

We may need to visit with the other sections at certain points in our discussion.

- Continue Review of the PFOA questions and process
- Make explicit the methods for technology comparison
- Define the appropriate staging of a PFOA?
- Make suggestions for dealing with uncertainty (unidentified and identified knowledge gaps). What protocols and process stages can be designed to respond to new information and enhance the flexibility of the PFOA?
- Focus on designing information management and research protocols to support a scientifically driven process
- Clarify procedures for identifying and involving a broad range of multi-stakeholder participants
- Make explicit the links to other sections of the risk assessment, as well as links to appropriate decision making, regulatory and/or legal institutions within Brazil.

Summarize Main Points for the PFOA Section Report

Develop skeleton for the PFOA Presentation

Section II: Transgene expression and locus structure

Saturday June 14 pm Section II strategy meeting and review of Section II

Sunday June 15 all day Discuss and revise Section II

Monday June 16 am Complete Section II discussion
 pm Preparation for public day presentation
 Preparation of Section II report



GMO Guidelines Project

Draft section and subsection programs (subject to change as discussions progress)
Section III: Non-target and biodiversity impacts

Subgroup 1, Herbivores:

Saturday

- 13:30 Introductions of participants
- 14:00 Review Agenda and clarify process and milestones
- 14:30 Commence discussions
- 17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Using the non-target herbivore species selection matrix, the subgroup should produce a consensus list with rank 1, 2 and 3; assign rank 1 to only 3-5 species. These rank 1 species will receive additional consideration during the Workshop.
- 2) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a species. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 3) Choose one of these rank 1 species to use as an example during the remainder of the Workshop.
- 4) Revise and improve the species selection matrix.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying non-target herbivore species for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise should be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day:

- 1) Using the exposure assessment matrix, conduct a detailed exposure assessment of the rank 1 species, and identify possible pre-release experiments that need to be conducted on these species to complete an exposure assessment.
- 2) Using the single species selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that exposure was or was not occurring.
- 3) Using the single species selected previously, develop hypotheses on the type and likelihood of adverse effect, taking into account the potential exposure. Use these hypotheses to design experiments with appropriate spatial and temporal scales, replication, and relevant controls.
- 4) Determine if the exposure assessment matrix was a useful tool for identifying necessary pre-release tests.
- 5) For each of the experimental protocols, determine the GMO development stage at which it should be completed. (see intro document for explanation of stages).
- 6) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestone
- 2) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.
- 3) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.



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Subgroup 2, Predators:

Saturday

- 13:30 Introductions of participants
- 14:00 Review Agenda and clarify process and milestones
- 14:30 Commence discussions
- 17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Using the non-target predator species selection matrix, the subgroup should produce a consensus list of rank 1, 2 and 3 predator species; assign rank 1 to only 3-5 species. These rank 1 species will receive additional consideration during the Workshop.
- 2) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a species. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 3) Choose one of these rank 1 species to use as an example during the remainder of the Workshop.
- 4) Revise and improve the species selection matrix.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying non-target herbivore species for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day:

- 1) Using the exposure assessment matrix, conduct a detailed exposure assessment on the rank 1 species, and identify possible pre-release experiments that need to be conducted on these species to complete an exposure assessment.
- 2) Using the single species selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that exposure was or was not occurring.
- 3) Determine if the exposure assessment matrix was a useful tool for identifying necessary pre-release tests.
- 4) Using the single species selected previously, develop hypotheses on the type and likelihood of adverse effect, taking into account the potential exposure. Use these hypotheses to design experiments in the laboratory with appropriate spatial and temporal scales, replication, and relevant controls.
- 5) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) For each experimental protocol, determine the GMO development stage at which it should be completed. (see intro document for explanation of stages).
- 3) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.
- 4) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 3) Complete a draft of Brazil report
- 4) Complete public presentation.



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Subgroup 3, Parasitoids:

Saturday

- 13:30 Introductions of participants
- 14:00 Review Agenda and clarify process and milestones
- 14:30 Commence discussions
- 17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Using the non-target parasitoid species selection matrix, the subgroup should produce a consensus list of rank 1, 2 and 3 parasitoid species, assigning only 3-5 species to rank 1. These rank 1 species will receive additional consideration during the Workshop.
- 2) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a species. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 3) Choose one of these rank 1 species to use as an example during the remainder of the Workshop.
- 4) Revise and improve the species selection matrix.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying non-target herbivore species for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise should be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day:

- 1) Using the exposure assessment matrix, conduct a detailed exposure assessment on the rank 1 species, and identify possible pre-release experiments that need to be conducted on these species to complete an exposure assessment.
- 2) Using the single species selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that exposure was or was not occurring.
- 3) Determine if the exposure assessment matrix was a useful tool for identifying necessary pre-release tests.
- 4) Using the single species selected previously, develop hypotheses on the type and likelihood of adverse effect, taking into account the potential exposure. Use these hypotheses to design experiments in the laboratory with appropriate spatial and temporal scales, replication, and relevant controls.
- 5) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) For each experimental protocol, determine the GMO development stage at which it should be completed (see intro document for explanation of stages).
- 3) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.
- 4) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.



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Subgroup 4, Pollinators pollen feeders /species of conservation concern /species of cultural significance:

Saturday

- 13:30 Introductions of participants
- 14:00 Review Agenda and clarify process and milestones
- 14:30 Commence discussions
- 17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Revise and improve the non-target pollinator/ pollen feeder species selection matrix.
- 2) Using the new and improved non-target pollinator/ pollen feeder species selection matrix, the subgroup should produce a consensus list with rank 1, 2 and 3, assigning rank 1 to only 3 species. These rank 1 species will receive additional consideration during the Workshop.
- 3) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a species. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 4) Choose one of these rank 1 species to use as an example during the remainder of the Workshop.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying non-target herbivore species for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise should be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day (if the interest and expertise is in the subgroup, milestones 6-8 can be accomplished by splitting the subgroup into two parts):

- 1) Using the exposure assessment matrix, conduct a detailed exposure assessment on the rank 1 species, and identify possible pre-release experiments that need to be conducted on these species to complete an exposure assessment.
- 2) Develop an exposure assessment matrix, based on the detailed assessments of rank 1 species.
- 3) Using the single species selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that exposure was or was not occurring.
- 4) Using the single species selected previously, develop hypotheses on the type and likelihood of adverse effect, taking into account the potential exposure. Use these hypotheses to design experiments with appropriate spatial and temporal scales, replication, and relevant controls.
- 5) Determine the stage in development of the GMO that each of the experimental protocols should be completed.
- 6) Develop a process by which risk assessment can focus on specific concerns associated with species of conservation concern and species of cultural significance.
- 7) Identify concerns and issues amenable to risk assessment.
- 8) Develop systematic and scientific tools, such as selection matrices and assessment protocols, by which the identified concerns and issues associated with species of conservation concern and species of cultural significance can be assessed.
- 9) Determine rough outline and writing assignments for written report.

Monday

Milestone to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.



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- 3) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.

Subgroup 5, Soil:

Saturday

- 13:30 Introductions of participants
- 14:00 Review Agenda and clarify process and milestones
- 14:30 Commence discussions
- 17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Using the soil functions selection matrix, the subgroup should produce a consensus list with rank 1, 2 and 3, assigning rank 1 to only 2-3 functions. These rank 1 functions will receive additional consideration during the Workshop.
- 2) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a function. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 3) Choose one of these rank 1 functions to use as an example during the remainder of the Workshop.
- 4) Revise and improve the soil functions selection matrix.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying soil functions for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day:

- 1) Conduct a detailed assessment of possible pathways by which the rank 1 functions could possibly be affected by the GMO. Summarize this assessment in an "effects pathways" matrix.
- 2) Using the single function selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that a potential effect or effect pathway was or was not likely to occur.
- 3) Determine if the effects pathway matrix was a useful tool for identifying necessary pre-release tests.
- 4) Using the single function selected previously, and considering hypotheses about the type and likelihood of adverse effect, design experiment protocols with appropriate spatial and temporal scales, replication, and relevant controls to provide definitive scientific evidence of the magnitude of the effect.
- 5) Determine the stage in development of the GMO that each of the experimental protocols should be completed.
- 6) Develop a species selection matrix for soil macro-invertebrates.
- 7) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.



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- 3) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.

Subgroup 6, Weeds:

Saturday

- 13:30 Introductions of participants
14:00 Review Agenda and clarify process and milestones
14:30 Commence discussions
17:30 Recess for the day

Milestones to accomplish by the end of the day:

- 1) Revise and improve the weed species selection matrix.
- 2) Using the new and improved weed species selection matrix, the subgroup should produce a consensus list with rank 1, 2 and 3, assigning rank 1 to only 3-5 species. These rank 1 species will receive additional consideration during the Workshop.
- 3) Implement a procedure to evaluate how information gaps in the matrix could affect the rank of a species. (This is one way we conduct a 'risk averse' strategy in conducting risk assessment.)
- 4) Choose one of these rank 1 species to use as an example during the remainder of the Workshop.
- 5) Determine if the new and improved species selection matrix was a useful tool for identifying non-target herbivore species for risk assessment.
- 6) Determine at which GMO development stage the matrix exercise be completed (see intro document for explanation of stages).

Sunday

Milestones to accomplish by the end of the day:

- 1) Conduct a detailed assessment of possible pathways by which the rank 1 species could possibly be affected by the GMO. Summarize this assessment in an "effects pathways" matrix.
- 2) Using the single species selected previously, develop specific pre-release testing protocols that would provide definitive scientific evidence that a potential effect or effect pathway was or was not likely to occur.
- 3) Determine if the effects pathway matrix was a useful tool for identifying necessary pre-release tests.
- 4) Using the single species selected previously, and considering hypotheses on the type and likelihood of adverse effect, design experiment protocols with appropriate spatial and temporal scales, replication, and relevant controls to provide definitive scientific evidence of the magnitude of the effect.
- 5) Determine the stage in development of the GMO that each of the experimental protocols should be completed. (see intro document for explanation of stages).
- 6) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.
- 3) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.



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Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.

Subgroup 7, Staging protocols:

Sunday

Participants for this subgroup will be identified by Sunday morning, and will come from the other Non-target subgroups

13:30 Convene. Introductions, clarification of agenda and milestones

14:00 Summary of how staging is being developed in each of the subgroups

17:30 Recess for the day.

Milestones to accomplish by the end of the day:

- 1) Develop criteria by which experimental protocols associated with non-target risk assessment can be staged during the development of a GMO. I.e., what are the scientific principles we need to use to determine an orderly and timely approach to risk assessment?
- 2) Determine what information from protocols done early in the GMO development process should trigger subsequent assessment protocols later in the development process.
- 3) If possible the criteria and information should be sufficiently general that they would apply across all of the non-target subsections, and sufficiently specific that they can be unambiguously applied. If this is not possible, how should the non-target sections be divided to accomplish this end?
- 4) Determine rough outline and writing assignments for written report.

Monday

Milestones to accomplish by the end of the day:

- 1) Complete any unfinished milestones
- 2) Complete rough draft of Brazil report, including identifying significant gaps in knowledge.
- 3) Complete rough draft of public presentation – subsection presentation will be no more than 10 minutes, including discussion.

Tuesday

Milestones to accomplish by lunch:

- 1) Complete a draft of Brazil report
- 2) Complete public presentation.

Section IV: Gene flow and its consequences

Saturday 14th June afternoon

13:30-15:30 Introductions to other scientists in the group, goals of the workshop and guidelines approach. Begin to fill in matrices that represent sections 1 and 2 of gene flow guidelines, addressing factors that affect the likelihood of transgene flow and transgene spread.

16:00 – 17:30 Organize concerns raised while filling out matrices into 'Testing Stages'. What hazards need to be tested in the laboratory, what can only be tested in the field etc. Interaction of the triangle of descriptive field data (e.g. baseline data on ecological communities and their key interactions in



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each region and cropping system) - lab/greenhouse tests - field experiments (plots, cages etc to field scale). Select delegation for Testing Stages subgroup.

Sunday 15th June

9:00 – 9:20 Review yesterday's progress and today's tasks

9:20 – 10:30 As a group, develop meaningful matrix to address section 3 of the gene flow guidelines, agronomic and ecological effects of transgene spread and establishment. Assign priorities among concerns raised. (Right now, I imagine priorities will include minimizing genetic impacts on landraces and wild populations, monitoring weediness of wild populations post release, and considering regional differences for gene flow risk/benefit.)

11:00 – 12:30 Possible meeting with other section(s), to clarify and develop section of guidelines that deals with risks to environment and agricultural practices. Otherwise, discuss "what's missing" within the group.

13:30 – 15:30 Reassess priorities for Brazil report and divide into subgroups to begin outlining report sections.

16:00 – 17:30 Continue working in subgroups.

17:30 Check in with whole group to gauge progress, concerns

Monday 16th June

Gene flow section report

Section V: Pest resistance management

Saturday afternoon

- Introductions and agenda review
- Overview of the Kenya workshop resistance section
- Understand the Brazilian cotton production and IPM systems
- Rank resistance risk of cotton pests in Brazil
- Prepare information for 'testing stages'

Sunday

- Possibility for resistance management
- Possibility for monitoring and response plans
- Potential exposure and potential likelihood of adverse effect
- Frequency of resistance

Monday

- Proactive resistance management plan
- Monitoring and response plans
- Review of the risk assessment decision tree for GM cotton

