COMPILED SUMMARIES OF SUBGROUP CONFERENCE CALLS BETWEEN THE MARCH 14-15, 2016 AND THE JUNE 13-14, 2016 PLENARY SESSIONS OF THE USDA ADVISORY COMMITTEE ON BIOTECHNOLOGY AND 21ST CENTURY AGRICULTURE (AC21)

Advisory Committee on Biotechnology and 21st Century Agriculture (AC21)
AC21 Guidance subgroup meeting
April 19, 2016
Conference Call Summary

A telephone meeting of the Guidance ad hoc subgroup was held on April 19, 2016. The official members of the subgroup are Mary-Howell Martens, Paul Anderson, Gregory Jaffe, Alan Kemper, Darren Ihnen, Lynn Clarkson, and Angela Olsen. All members participated in the conference call except Mr. Anderson, Mr. Kemper and Mr. Ihnen, and AC21 member Leon Corzine also participated. Michael Schechtman, AC21 Executive Secretary and Designated Federal Official, convened the call.

Participants were asked their views of the revised guidance framework draft that had been provided to them by Dr. Schechtman on April 15, 2016. Members were of the opinion that it was in general a balanced, well-reasoned draft. It was noted that the draft was intended to serve both as a portion of the next report to be provided to the Secretary of Agriculture as well as an independent document that may be provided to farmers to help them manage their own production and interact with neighbors. As such, it was requested that it contain a reference to the full report to enable those who receive it as a separate document to gain access to the full report if desired. This could accommodate any need to get additional information on several topics only briefly addressed in the guidance document.

A participant noted that the bulleted list of suggested management considerations for meeting IP requirements omitted one important item, namely knowledge of the biology of your crop, and specifically its pollination biology. All agreed this is important and a bullet will be added.

For the remainder of the discussion on the guidance draft, participants were asked to respond to a series of questions included by Dr. Schechtman in the text relating to particular uses of words or inclusion of particular types of information. These questions were responded to in order. Briefly, they were addressed as follows:

- With regard to discussions of seed, one participant in an Email had asked the group to consider adding the words “Purity and” to modify “seed” or “quality of seed” in a number of places in the text.

- With regard to meeting IP requirements, one participant in an Email had asked the group to consider discussing community tools such as grower districts, pinning maps, etc. Dr. Schechtman had suggested in the most recent text circulated that because some of those approaches did not actually promote coexistence because they limited farmer choice, reference to them should be included solely via a footnote. Participants were in agreement.

- It had been suggested via Email that the section on Meeting IP Requirements reference the potential use of seed varieties that can prevent cross-pollination. On discussion, participants

agreed with Dr. Schechtman that there are not enough varieties available with this trait to justify mentioning them.

- There had been a suggestion in an Email comment regarding further explanation of the phrase "Although the precise management practices that may work best for your IP production may vary by **crop**…" (emphasis added). Participants felt that adding the bullet about knowing the biology of your own crop would address this need.

- With regard to the section specifically devoted to seed, there had been a suggestion to expand this section to provide additional information. On discussion, it was agreed that referring readers to the full paper, where there will be additional discussion, would satisfy any needs and keep this paper as brief and readable as possible.

- Under Other challenges and Considerations, there had been a suggestion that the paper provide an example of such crops for the reader, but Dr. Schechtman thought it desirable that the paper not single out one specific product. It was thought appropriate to provide the example of crops engineered to produce new pharmaceutical substances.

Two other points were made in discussions. First, the paper should indicate generally that the document is intended as a framework that can be further fleshed out and used and adapted to local conditions. Second, there was discussion of what links to reference materials should be provided. Dr. Schechtman agreed to review some suggested links provided earlier by Mr. Clarkson as well as materials available on the websites of several Land Grant Universities, and propose a set of references to be included, without editorializing about their content.

Dr. Schechtman also indicated that he would make all the suggested changes and sent it back to the subgroup in fairly short order.

The newly revised text, with the new modifications discussed in the call, is also included as an attachment to this meeting summary.

Factors to consider for farmers when you or your neighbor is growing an identity-preserved (IP) crop

Note: This document is intended as a framework of general factors for farmers to consider that can be adapted to local conditions, and as a source of useful reference materials. More information about some of these topics, particularly in regard to the Seeds and the Other Challenges and Considerations sections, can be found in the full report of USDA's Advisory Committee on Biotechnology and 21st Century Agriculture, entitled X, which is available online at http://www.usda.gov/wps/portal/usda/usdahome?navid=BIOTECH_AC21&navtype=RT&parentnav=BIOTECH .

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Opportunities

Secretary of Agriculture Tom Vilsack, in remarks to the United States Department of Agriculture's Advisory Committee on Biotechnology and 21st Century Agriculture (AC21), made these observations:

> …we have great diversity in American agriculture in terms of its size, in terms of its products, in terms of production methods and technology. And that's one cornerstone of the rural and agricultural economy in this country. Embracing diversity has helped, in my view, to make American agriculture resilient… We truly need diversity in agriculture. We need diversity in production methods, crops produced, and in the farming community itself. And failing to recognize and act on that fact, in my view, compromises agriculture's future, and I would argue the future of our country.

One key mechanism for increasing the diversity of agricultural production in the United States is through the production of identity-preserved crops. Identity preservation (IP) is a system that preserves the characteristics of a product throughout the supply chain, from seed to sale. The choice to grow IP crops is generally driven by marketplace needs. Farmers use IP to gain premiums when they market unique crops (such as seeds, certified organic crops, or a particular variety) in order to achieve an agreed-upon standard of quality and purity in their harvested product, as well as commit to specified production practices. Historically, in specialized production sectors, the growers and the rest of the value chain take responsibility for meeting any quality standards for the product's market demand, often through contractual arrangements.

IP crops can include, among other things:

- Crops intended for non-GE/GMO markets
- Seed intended for planting
- Certified organic crops
- Certain GE/GMO crops (e.g., those with new functional traits)
- Crops produced using specific varieties and providing specified characteristics under contract (e.g., blue corn segregated specifically to produce blue corn chips).

IP production offers opportunities for farmers to derive premiums for their products in return for following more specific management practices. Those management practices may often include a greater awareness of what your neighbors are growing and, sometimes, working with those neighbors so that everyone's production objectives can be met.

Producing the increasingly diverse set of crops for different markets depends on farmers working together to find solutions that jointly work for their production needs.

IP production and contracts

Much IP production is contracted beforehand by entities in the food, feed, and fiber supply chain, although certified organic products, which are identity-preserved, may enter the organic product stream without prior contracting. When contracts are used, they often indicate:

1. specifications for contract compliance as well as, sometimes, a discount schedule for imperfections and/or a bonus schedule for superior quality;
2. A description of the testing protocols and standards to be applied to determine whether contract specifications are met as well as the reasons deliveries would be rejected;
3. Buyers' rights to inspect the field or crop at any time;
4. Requirements for approval by company or 3rd party representatives;
5. Delivery on buyers' call, under specified conditions and timing.

It is important to consider your ability to meet these requirements prior to entering into an IP production contract.

Meeting IP requirements

Although the precise management practices that may work best for your IP production will vary by crop, region, and growing environment, a number of tools or considerations are generally relevant. These include:

- Understanding the biology of your crop and the particular characteristics of the variety you are growing, in particular its pollination behavior (e.g., whether it is self-pollinating or cross-pollinating);
- Knowing what your neighbors are planting and the potential implications of what they are planting on your management decisions (see section on coexistence below);
- Starting with seed appropriate for your IP needs (see seed section below) ;
- Having an intimate knowledge of local wild plants to identify possible cross-pollination with seed crops;
- Using crop rotation schemes to reduce pollen exposure from volunteer plants;
- Handling of crop to minimize, as much as practical, the potential for mixing during planting, harvesting or cleaning operations;
- Using staged planting times to temporally isolate your crop from unwanted pollen from sexually compatible crops;
- Identifying and selecting fields/plots for crops potentially affected by crops on neighboring farms to minimize, as much as is practical, the potential for pollen flow to an IP crop;
- Using physical isolation to minimize, as much as practical, the potential for cross-pollination (distances are largely based on each crop's biology and reproductive system, i.e., whether self- or cross- pollinated). This could include, for example, using buffer rows or conservation land;
- Careful tracking and recordkeeping of your crops;
- Cleaning and inspection of planters, harvesters and other equipment pre- and post-harvest;

- Using module markers in harvest (e.g., for seed cotton);
- Disposal of plant material as appropriate;
- Using cleaned or dedicated transportation vehicles, storage bins, conditioners and ginning facilities as appropriate;
- Managing how people, machines, and equipment move from field to field (e.g., if planting both IP and conventional crop, work in IP field first, then in conventional one);
- Visually inspecting and roguing of all genetic stocks on a continuous basis to remove off-types and weeds;
- Inspecting your fields multiple times and possibly enlisting third party inspection or verification;
- Applying post-harvest risk mitigation measures, such as not harvesting outside rows or selling outside rows on the commodity market, if cross-pollination has occurred after planting.

Seed--a critical component

Farmers need to ensure that they start with seed with the appropriate characteristics to yield crops meeting the specifications required by their market. Farmers should deal with reputable seed companies and understand the information provided on the seed tag as required by the Federal Seed Act. Varietal purity provides assurance of low presence of any unintended genetics.

Some specialty seed companies may also be willing to meet a farmer's specific quality requirements especially in regard to unintended GE/GMO presence. If a farmer will have specific seed needs, it is prudent to have conversations at least a year in advance, or preferably earlier, with seed companies to ensure that appropriate seed will be available in the form, function, and quantity that is required. IP farmers might also consider testing seed delivered to their farm before planting or, if they are producing under contract, might work with their contractor to assure that their starting seed is suitable to meet their production requirements.

Coexistence—working with your neighbors

It is helpful for today's farmer wishing to serve an IP market to have knowledge about his/her neighbors' crops, rotation plan and, sometimes, his/her input plan.[1] Good communication among farmers with neighboring fields as to the crops, rotation plans, farming protocols and the specific hybrids or varieties being produced has become a key to successful IP production in many instances, and can be an important tool for fostering coexistence among growers producing for diverse markets. Coexistence is a two-way street: it builds on the shared responsibility of farmers and requires collaboration and compromise on both sides of the fence line.

[1] In some areas of the country information about planting of crops that may be affected by neighboring crops may be provided via local pinning maps or web-based location services.

Farmers, and especially those producing IP crops, need to fully understand the requirements of their markets as well as the nature and dimensions of any buffers needed to achieve the specifications to satisfy that market.

Understanding how neighbors' crops might affect an IP farmer's ability to produce for his/her intended market will help the IP farmer plan appropriately to meet his/her production needs. All farmers can foster coexistence when they understand the potential geographic spread beyond their field borders of pollen, crop pests (e.g., insects, pathogens, nematodes, viruses, or weeds) and inputs being used on their own fields. Any farmer whose choices could potentially affect his/her neighbor's ability to market their crops should strive to minimize the potential for conflict. Often, but not always, coexistence problems can be eliminated or reduced and coexistence promoted by adjusting rotation plans, seed choices, planting times, or physical isolation, e.g., buffers.

When a farmer has information about what his/her neighbor is growing, it is possible to assess the likelihood for such potential problems. There are a few different situations to consider:

- Neighbors growing the same crop for buyers or markets having similar requirements: There is likely no coexistence issue and no need for either party to adjust behavior.
- Neighbors growing the same crop for buyers or markets with different requirements: There could be a potential coexistence issue that would justify significant horizontal, vertical or timing segregation.
- Neighbors growing different crops for buyers or markets with different requirements: There may be instances in which a potential coexistence issue might justify some segregation by both parties.

Here are a few practical things to think about:

- Can my neighbor and I work together on joint buffer areas or use other approaches for physical separation that could protect my crop and provide economic benefits for us both?
- Would it make sense for us to adjust our relative planting times to minimize potential impacts of our crops on each other?
- If my neighbor adjusts his/her plantings or practices to help me grow my IP crop, what can I do to help him/her more successfully produce their crop?

Other challenges and considerations

- Some new crop varieties intended for specific new uses may have the potential to affect the functional properties of neighboring crops. For example, some food crops may be engineered to produce novel pharmaceutical compounds and such crops could have the potential to affect the functionality or marketability of neighboring crops for food uses. Although the particulars are likely to depend on the specific circumstances, extra care and stewardship when growing these crops is likely to be required to minimize the potential for economic impacts on neighbors.

- New technologies are constantly evolving for the development of new crop varieties, and different countries may choose different approaches to regulate (or not to regulate) the products of particular technologies. Differential regulation of new products could lead to trade challenges and some new products may be difficult to identify or determine how they were produced.
- Testing is often required for IP products. Depending on what is being screened for and the tolerance levels specified, sophisticated and expensive tests may be necessary.
- Some production protocols can also require third party verification.

Finding additional information

Much additional information about IP production and about isolation and buffer distances appropriate for your crop and your environment can be found through your local extension service or Land Grant University. Some additional sources available at the time of issuance of this guidance are:

University of California at Davis guide to isolation distances: http://anrcatalog.ucanr.edu/pdf/8192.pdf

Existing U.S. Seed Industry Production Practices that Address Coexistence:
http://www.amseed.org/pdfs/issues/biotech/asta-coexistence-production-practices.pdf

Indiana Hybrid Corn Certification Standards (Commercial), including isolation distances:
http://www.indianacrop.org/ICIA/Media/ICIA/Certification-Standards/CORN-STANDARDS-2007.pdf

APHIS Minimum Separation Distances to be used for Confined Field Tests of Certain Genetically Engineered Plants. See link under:
https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/sa_guidance_documents

Organic risk management information, including isolation information for corn:
http://organicriskmanagement.umn.edu/ .

Advisory Committee on Biotechnology and 21st Century Agriculture (AC21)
AC21 Guidance subgroup meeting
May 24, 2016
Conference Call Summary

A telephone meeting of the Guidance ad hoc subgroup was held on May 24, 2016. The official members of the subgroup are Mary-Howell Martens, Paul Anderson, Gregory Jaffe, Alan Kemper, Darren Ihnen, Lynn Clarkson, and Angela Olsen. Participating members were Mr. Anderson, Mr. Jaffe, Mr. Clarkson, and Ms. Olsen. Michael Schechtman, AC21 Executive Secretary and Designated Federal Official, convened the call.

Participants were asked their views of the revised guidance framework draft that had been provided to them by Dr. Schechtman on May 2, 2016. All participants were of the view that the draft as it stood had achieved the right balance and tone, and had appropriate information. One participant noted that a few comments had been submitted that were largely typos to be corrected.

Dr. Schechtman noted that an additional set of comments from an AC21 member not on the subgroup had been received that raised only a few points, but that those points were more substantive than editorial. A participant reminded those on the call that there had been another set of submitted comments from another AC21 member not on the subgroup which also needed to be considered. With respect to the first set of comments, there had been a request to note in the "Opportunities" section there was a request that the description of IP management practices note that there may be regulatory or other constraints, and that third-party certifiers may be involved. This can be incorporated. There was also a comment for the IP production and Contracts section pointing out that some IP production is intended for the open IP market and operates using market-driven thresholds. Dr. Schechtman indicated that a reference to this would be added. The third substantive comment offered the view that the discussion in the section "Coexistence—Working With Your Neighbors" did not adequately call upon GE growers to do their part. Participants noted that the document had more of an IP grower focus, and this could be made more clear, and that additional language could be added that all farmers had a responsibility to respect their neighbors' production.

With respect to the other set of comments, participants felt that many were strictly editorial in nature, that many spoke of "obligations," "requirements" and "contamination," which were terms that all thought should not be included in the text in order to have buy-in on the document, both from AC21 members as well as from a broad cross-section of farmers, and that much of the added language dealt with topics that would be discussed in greater length in the larger report and which should be kept out of the Guidance portion. There was a general sense that incorporating many of these comments would disrupt the balance that had been achieved in the current draft. Participants expressed the desire that Dr. Schechtman review those comments and decide which, if any, of those comments would be included in a revised draft. Dr. Schechtman agreed to do so and provide a revised draft to subgroup members for a very quick view prior to sending it out to the full AC21.

Advisory Committee on Biotechnology and 21st Century Agriculture (AC21)

Models and Incentives subgroup meeting
Conference Call Summary
March 18, 2016

A telephone meeting of the Models and Incentives ad hoc subgroup was held on March 18, 2016. The official members of the subgroup are Marty Matlock, David Johnson, Jerry Slocum, Douglas Goehring, Isaura Andaluz, Laura Batcha, and Keith Kisling. All members participated in the conference call except for Ms. Andaluz and Ms. Batcha. Michael Schechtman, AC21 Executive Secretary and Designated Federal Official, convened the call.

Discussions commenced with consideration of the draft discussion model for coexistence provided by Commissioner Goehring prior to the last plenary session and how to incorporate other elements, e.g., from the proposed National Corn Growers Association coexistence policy or from the meeting approach used locally by conservation districts, into it. Commissioner Goehring offered to do so and to provide additional descriptive text in line with the kinds of materials provided in his State Pollinator Protection (MP3) plan for review by other subgroup members. He noted that in his role as Commissioner in North Dakota, he represents all the diverse producers in his State. Other participants agreed with his suggestion, and Dr. Schechtman indicated that he would need to check with other subgroup members who were not on the phone that this plan was acceptable. One other subgroup member, Laura Batcha, had indicated via Email that she would join the call a few minutes late, but was never able to join.)

There was further discussion of what would be included in text. It was noted that MP3 plans include discussion of issues, target audiences, and context for why the pollinator issue has arisen. In the case of the local coexistence discussion model document, the corresponding topics would already be included elsewhere in the larger AC21 report. The discussion model would instead focus on mitigation strategies for producers, along with some dialogue attached and some brief explanations.

It was noted that the draft already provided by Commissioner Goehring used the term "Best Management Strategies" in a couple of places, and this was felt to be too prescriptive, so it should be replaced with "Mitigation Strategies." Participants agreed that the discussion model was intended to point to entirely voluntary activities.

There was discussion of the intended targets for the discussion model, and a non-exclusive list was briefly discussed: producers, agronomic applicators, crop consultants, agricultural associations, commodity councils, trade associations.; USDA's local Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS) officials, agricultural marketing agents, extension, Land Grant Universities, and State Departments of Agriculture. It was noted that a different blend of participants might be needed in each State and locality.

To indicate USDA support for local coexistence efforts, an idea, that the Secretary of Agriculture should signal should indicate that local FSA and NRCS officials could be made available to offer assistance when requested at the local level, was discussed. This might be useful in some venues but not others.

A participant pointed out that to have effective conversations about coexistence, it would be necessary to involve not only agricultural producers, but also the landowners of the farms on which they work. It was noted that a few years earlier, with the Farm Bill's Conservation Security Program, landowners needed to sign off before a farm could participate in the program. Similarly, if NRCS were providing funding for dual-use conservation buffers (e.g., tree buffers), there would need to be landowner permission for the buffers to be put in. There could be some question as to who would receive funding versus who might need to do the work. It was recommended that landowners be included in target audiences, but that the issues of who gets funding should be left out of the model.

A participant noted that the discussion model makes no reference to seed purity. Another participant noted that the topic is to be discussed in the overall AC21 report, and there is already a general recognition that without adequate seed purity identity-preserved production is an impossible task. It was felt that the discussion model would need to provide a brief bit of context on the issue.

As a means for providing an explanation of what the discussions would be about, it was suggested that the explanation be that the model would offer strategies for mitigating risk to a farmer and to neighbors.

Commissioner Goehring offered to provide the expanded version of the draft discussion model to Dr. Schechtman prior to May 2, so that Dr. Schechtman could circulate it to subgroup members before his next official travel.

Advisory Committee on Biotechnology and 21st Century Agriculture (AC21)

Models and Incentives subgroup meeting
Conference Call Summary
May 31, 2016

A telephone meeting of the Models and Incentives ad hoc subgroup was held on March 18, 2016. The official members of the subgroup are Marty Matlock, David Johnson, Jerry Slocum, Douglas Goehring, Isaura Andaluz, Laura Batcha, and Keith Kisling. All members participated in the conference call except for Dr. Matlock. Michael Schechtman, AC21 Executive Secretary and Designated Federal Official, convened the call.

Dr. Schechtman opened the discussion by thanking Commissioner Goehring for his work in developing a draft coexistence model vis-à-vis local discussions for the subgroup to consider. (That draft, the subject of discussion for the call, is attached to this summary). He asked subgroup members for their views on what Commissioner Goehring had provided. In response to an initial request from a participant, Dr. Schechtman outlined the current charge and how the work of the different subgroups was expected to fit into the expected document which would result.

One participant made several observations. She started by similarly thanking the Commissioner. She noted that she understood the value of framing local dialogue in a broad way that could bring all farmers to the table, and she respected the idea that the author knew what would be needed to do so. But she feared that the draft obscured the charge around unintended GE presence. She also observed that the draft had set up areas of consideration but in her view left out the meat on engaging the actual conversation. She suggested that some of this material could come over from the guidance document to make this document more active and help to spell out how to get local conversations going. Finally, she noted that some topic raised in the document are confusing in that it is not clear of the purpose or the data substantiating some of the materials included, noting as an example the topic of tillage.

Another participant agreed with the previous participants comments. She raised the question of whether farmers who save seed and try to maintain the purity and identity of their seed should be considered identity preserved (IP) producers. She also suggested that the document should specifically note that organic production is not IP production. Another participant noted that seed saving is usually accomplished by opting to harvest the seed to be saved from the center of a field, but the practice is different from actual IP production, which is usually under contractual specifications.

Commissioner Goehring acknowledged that the draft he provided did not include much detail on gene flow issues. He indicated that he had tried to pitch the draft for an audience without much understanding of understand gene flow in a narrative form. In response to an earlier comment, he

added that farmers are challenged with respect to tillage on issues of water quality and soil loss, and that the issue affects all producers.

A participant questioned why other practices, such as cover cropping were not included, and the scientific basis for including some topics and not others. She recommended that Dr. Schechtman, in editing and re-drafting the materials, should more explicitly focus some discussion on gene flow and why it is an issue. Commissioner Goehring acknowledged that an expanded document could be developed once the appropriate audience got engaged.

A participant suggested that the document might be re-framed more along the lines of the North Dakota MP3 Pollinator Protection Plan, noting the challenges faced by different growers along with some content on best management practices from the Guidance Document. The framing would discuss each sector of agriculture and the challenges it faces, while highlighting the themes of responsibility, choice, and respect. She cautioned that the document should not give the misimpression that each farmer resides exclusively in one production "camp." More and more, this is not the case: some, for example, may want to get into IP production but are currently growing GE crops. The revised document, she suggested should spread out the incentives and responsibilities.

Another participant complimented the work as a nice first draft. He appreciated the concept of framing the discussions around farmer choice, in varieties, seed, and production methods. He added that he did not think it was appropriate to lump all conventional agriculture with GE production, considering commodities like oats and wheat without commercial GE counterparts at present. He voiced support for the proposed re-framing suggested by the previous speaker. He added that re-framing around enhancing choice will help to bring people together rather than divide them. Two other participants agreed with these comments.

A participant cautioned about offering prescribed methods rather than topics for discussion, noting that different management methods may be appropriate in different regions, and also that producing a giant document would also be unhelpful.

Dr. Schechtman offered that, based on what he had heard, the document might be re-framed with the following elements:

- Challenges faced by diff types of production
- Opportunities for all farmers
- Themes of responsibility and respect
- More focus on the issue of gene flow
- More from the other document about what conversations between neighbors might be like
- More context to explain why they're relevant to this discussion
- Stress that the purpose of the document is to enhance communications, and by doing that provide opportunities and help solve problems.

A participant suggested that if there was to be a discussion of particular agricultural activities as the current draft includes, the list should be broadened to include cover cropping and the use of hedgerows. The framing should discuss the challenges for stakeholders and challenges for adopting different choices, segue to the value of convening local discussions, then the process of convening, then on to conveners and resources to aid the process.

Dr. Schechtman asked participants if they would be comfortable with his attempting to make a fairly comprehensive redraft and providing it to the full committee at the upcoming plenary session without their review of the document prior to the meeting. All participants on the call indicated that they thought such an approach would be acceptable.

Dr. Schechtman noted that he would also try to come up with a list of potential titles for the revised document. Some thoughts noted for elements of a title were "A field guide to…" or "Considerations for…" and "Challenges and choices…"

Coexistence Strategy Model

Introduction

Insuring that a variety of production methods and systems are available to producers will provide the best opportunity to utilize land, one of our most precious and limited resources existing in the world today. Organic, Identity Preserved (IP) and Conventional crops [including Genetically Engineered (GE)] are all forms of production choices that are used to meet the demands of a growing population. As all of these production methods are sometimes being used in the same areas, enhancing communication and gaining a better understanding of producer's challenges may enhance our ability to cultivate side by side.

Understanding the inherent risk in agriculture is key to minimizing impacts. This Coexistence Strategy Model seeks to convey information on mitigation strategies and provides suggested land management activities that reduce impact or alleviate risk to stakeholders involved. Each sector of agriculture faces its own unique challenges, recognizing and understanding the challenges and benefits with each production method will assist in the development of relationships between producers.

Agricultural mitigation strategies developed in this document are not applicable to all areas or all producers. The goal of this document is for each individual or group to find a customizable approach that what will work for their region and operation. Recognizing that topography, climate conditions, commodities produced, and agriculture activities all have a bearing on risk associated with producing crops. As with most voluntary documents, understanding the intrinsic risk and enhanced neighbor to neighbor communication is the key to a successful outcome.

This document provides information for agriculture producers, agronomists, applicators, crop consultants, agricultural associations, commodity councils, trade associations, marketing agencies, agents, brokers, extension educators, land grant universities and state departments of agriculture as framework for personal and local conversations.

Considerations and Challenges for All Production types

Organic and IP production practices and techniques provide assurances to the processor and consumer on the authenticity of the product they are purchasing. Conventional agricultural production has a different form of documentation and personal records for their practices. While each operation may appear significantly different on the surface, a closer look will find many similarities between these practices.

Considerations for Certified Organic Production

Organic producers must meet standards set forth by the USDA in order to be certified as organic http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=3f34f4c22f9aa8e6d9864cc2683cea02&tpl=/ecfrbrowse/Title07/7cfr205_main_02.tpl. The challenges faced by organic producers include the control of pests including pathogens, insects and weeds while maintaining the integrity of their product. It starts with seed selection, it will involve planning and preparation from seeding to harvesting to processing.

Organic fields cannot be rotated with conventional fields as there must be a three year history in any organic field where no prohibited substances, as outlined in the USDA guidelines can occur. Organic growers must use approved products and methods to maintain certification.

Identity Preservation (IP) and Seed Production

IP and seed production refers to a system of cultivation, handling, and marketing practices that maintain the integrity and purity of agricultural commodities. IP is a system of standards, records, and auditing that must be in place throughout the entire crop production, harvesting, handling, and marketing process much like producers in the organic program.

Two areas in which IP production is commonly used are in the production of seeds and commodities for niche markets (e.g. food grade soybeans and blue corn). Seed producers may enter into IP contracts to ensure the desired characteristics of the seed are preserved. They often establish buffers to protect their crop from cross pollination.

Considerations for Conventional Production

Conventional producers generally have much more flexibility and have access to many different technologies allowing them to better manage for environmental conditions. Producers adopt many different practices and systems to be as efficient and effective as possible when producing food, feed and fiber. Producers may choose the variety of seed (may include GE) based on regional growing conditions and challenges that take into account annual precipitation, disease, insects, tillage practices, fertility requirements, and length of growing season. Other considerations are the management of invasive weed species, crop rotations and soil types

Discussion Topics

Environmental Factors

Topography characteristics such as slope can cause variations in soil quality and moisture. Slope can affect yield and influence the soils ability to retain moisture equally across a field. Steep slopes effect plant growth by potentially reducing or increasing the amount of sunlight, wind velocity and the type of soil present on the gradient. This condition can also speed up the rate of erosion and runoff resulting in reduced soil quality while moving soil and material to other parts of a field or adjacent land. Areas with less topographical variation generally do not have much variability.

Prevailing winds can move pests, pathogens, pollen and topsoil from one field to the next. Understanding the direction of prevailing winds can assist a producer in mitigating risk and taking steps to use buffers to minimize impact.

Insects and Diseases- Temperature and humidity can create the right environmental conditions where rapid reproduction of insects and diseases can harm or impact plants in any growth stage. Treatment will depend on economic factors relating to pest levels and the production system in use. Limitations exist depending on what approved products or control methods are available and economically feasible.

Cross Pollination can be a challenge for some agricultural producers in some production systems. Prevailing winds, temperature and humidity can create environments where pollen remains viable longer. Although some crops are self-pollinating and pollen moves only a few feet, others shed pollen to pollinate like plants and in some cases pollen can travel great distances before it is rendered inactive.

Buffers can be utilized to maintain the integrity and purity of agricultural commodities. Buffers can be natural or man-made they can be trees, shrubs, grass strips, crops or a break in cultivation. They do not prevent, but they limit exposure or risk of cross pollination, disease and insect movement.

Agricultural activities

No-till, Strip till, Minimum, and Conventional tillage practices

No till practices are a method where producers grow crops year to year without turning or disturbing the soil. This practice conserves moisture in the soil profile, greatly reducing the amount of erosion and subsequently the transfer of material, weed seeds and soil pathogens. Some production systems cannot feasibly utilize no till or strip till practices.

Strip till is also a conservation tillage practice that combines some benefits from conventional tillage and no-till practices. Instead of disturbing the entire field it protects the soil by only disturbing the portion of the soil in a row that will contain seed. This method also has some of the benefits associated with conventional tillage such as soil drying and warming.

Minimum tillage is a conservation method with the goal of minimum soil manipulation necessary for the production of a given commodity. It is a method that does not turn the soil

over, but generally only disturbs the top 4-5 inches. It is contrary to intensive tillage, which changes the soil structure using a plough.

Conventional tillage is a practice generally used for the purpose of preparing a seed bed, managing residue, and the mechanical control of weeds. Although many farmers try to limit the amount of passes over a field to accomplish the desired outcome of prepping a seed bed and managing residue some farm operations may make several passes with tillage equipment or plough the soil. This practice of multiple passes could be considered intensive or aggressive tillage. These situations may pulverize the soil into fine particles leaving little residue or structure to the soil exposing it to the elements, such as wind and water, which could result in the movement of soil containing weed seeds and soil pathogens from field to field.

Application Fertility can come in different forms such as commercial fertilizers (e.g. urea, MAP, potash) or other nutrient sources such as manure or compost. Timing is critical for pest and weed management as well as fertilizer and manure applications. Fall, spring and split applications are dependent on soil types, plant growth stage, precipitation, and atmospheric conditions which can influence the effectiveness of the application.

Cutting and Mowing are mechanical means of controlling noxious and invasive weeds. Timing is crucial, it should be done while plants are in vegetative stage before seed set occurs stopping seeds from being moved by wind and water from the field.

Crop Rotation enhances soil health because various plants have different nutritional requirements and thus use diverse nutrients in the soil. There are some synergistic effects from crop rotations that can be beneficial to producers. Rotation of crops also assists in the disruption of disease cycles by removing the host plants for insects and pathogens.

Storage-Consider the need for separate storage and challenges faced with finding adequate storage. Organic, IP and seed producers' products need to be segregated from other production methods. Storage facilities that will be housing these products are generally cleaned and all product, insects and diseases are removed from the area. The sanitation of these facilities will aid in preserving the quality of each stored commodity.

Contractual Obligations often include seed variety, seed purity and threshold levels. These may be found with in IP or organic contracts. Contracts generally are entered into before planting, guaranteeing a price for the grower. These contracts are voluntary for producers, and it is the producer's responsibility to meet the requirements of those contracts. Contracts bring clarity to the demands that must be met to fulfil the terms of the contract, this could include growing practices, test weight, protein, moisture, damage, foreign material, point and time of delivery and the compensation if contract parameters are met.

Advisory Committee on Biotechnology and 21st Century Agriculture (AC21)

Venues and Conveners subgroup meeting
Conference Call Summary
April 21, 2016

A telephone meeting of the Venues and Conveners *ad hoc* subgroup was held on April 21, 2016. The official members of the subgroup are Latresia Wilson, Leon Corzine, Josette Lewis, Barry Bushue, Melissa Hughes, and Chuck Benbrook. All members participated in the conference call except for Dr. Benbrook. Michael Schechtman, AC21 Executive Secretary and Designated Federal Official, convened the call.

Dr. Schechtman indicated that the earlier work of the subgroup had been completed and that now the subgroup would turn to brainstorming on one issue in its charge, namely how USDA might help support local coexistence efforts, knowing that no USDA sources of funding had yet been identified.
One participant wondered whether States, via some language inserted by USDA regarding block grants for specialty crops might be encouraged to use some portion of those funds for this purpose. It was not certain, however, whether IP varieties of commodity crops would meet the allowed definition of specialty crop. A participant noted that those grants are used primarily for marketing and for establishing protocols for increased production. He worried that making such a change would put pressure on others not involved in specialty crops to apply for funding under the block grants. He suggested that if this is possible and if such language were added, it should be presented as an option, not a mandatory use for a portion of the funds.

Other participants wondered whether there were any other possibilities for providing funding from the Agricultural Marketing Service for convening local meetings. A participant wondered if funding could come through support for extension scientists who hold other regular meetings. Another participant noted that a variety of local meetings already take place related to water protection, credits for pesticide licensing application, Natural Resource Conservation Service activities, local soil and water Conservation Districts, etc., and a useful role for USDA could be to make sure that those convening such meetings are provided with the relevant AC21 information so that there might be a segment of those meetings in which local officials might choose to discuss coexistence.

A participant suggested that if the Federal government were to put together a toolkit including relevant guidance documents, and perhaps a list of Federal experts who might be drawn upon by locals if they sought additional information, might be useful. Another participant offered the view that holding meetings focused exclusively on coexistence wouldn't get adequate attendance in his region, but there would be better attendance if coexistence were discussed in conjunction with other topics—plus holding the discussions in conjunction with other topics would cost less. Several participants expressed the view that attaching coexistence discussions to Soil and Water Conservation work was probably not a good fit.

Dr. Schechtman noted that it had been mentioned at the plenary session that the Secretary should write a letter in response to the report highlighting the importance of the AC21's efforts for coexistence, and that in another subgroup meeting the suggestion had arisen that the letter could also offer to make local USDA officials available to help in local coexistence efforts upon request. He inquired about subgroup members' views on the latter idea. A participant offered the view that the key feature of USDA's contribution to local coexistence efforts was the development of resources and packaging of USDA's existing resources to promote awareness and of its leverage to make those resources widely available. Another participant was lukewarm about an offer to make government coexistence "experts" available in the countryside. He questioned who coexistence experts might be, and suggested that USDA's promotion of a toolbox would be a more useful idea. The prior participant suggested that the Secretary's statement should simply read that is working internally to put its human resources behind this effort as needed. That would enable local actors to work with local NRCS or FSA offices who would then cooperate with them to provide any information needed.

A participant offered the view that there are adequate resources to accomplish what would be required, and the issue will not be one of money, but rather one of making sure local stakeholders have the appropriate information. He too was a little skeptical of enlisting "experts" and did not feel that USDA would need to spend money to provide experts. Another participant, however, expressed some discouragement at the lack of resources for implementing the recommendations.

A participant noted the subgroup's previous activities in listing a diverse set of organizations that could be involved in local coexistence discussions and wondered how to make sure that those organizations have an awareness of the AC21 report and have a toolkit to undertake the activities. She noted that Sustainable Agriculture Research and Education (SARE) program and wondered if they could they take such activities on. She suggested that money is out there for various groups for related activities that might be tapped into once those groups are aware of this set of recommendations. Another participant specifically suggested that USDA target the potential participant list in a roll-out emerging from the response to the AC21 report, and let those organizations know that USDA thinks they could be potential players in this arena.

A participant noted that if resources exist, it puts the effort at a disadvantage by saying at the outset that USDA has no money to support the efforts. She noted that USDA has been supporting public-private partnerships and wondered whether there might be ways to have USDA support private efforts in this area. Another participant offered the view that if the Secretary's letter were to indicate that USDA has put some resources behind these efforts, the effort would likely be more effective.

Another participant expressed reluctance for this to become a USDA funding priority, based on the important existing priorities that might be displaced. Some other participants disagreed. A participant offered the view that this issue may vary regionally, and that apart from offering toolkits, the activities would likely not have a major USDA fingerprint. Instead, he suggested, they would mostly be driven by industry and contractors, and the need for such meetings would vary across the country. In some places, the topic might simply be a segment of an existing meeting. He added that getting USDA too far out in front of this issue might not actually help to enhance coexistence. Another participant suggested

that local efforts would be spotty without an umbrella or guidance from USDA. Will be spotty unless USDA guidance.

Dr. Schechtman inquired whether participants thought this was an issue everywhere. Participants noted that in some States it was a more pressing issue than others, and some participants felt that coexistence is generally working pretty well. Even so, continuing to enhance coexistence is a desirable end. One participant suggested that it will in general be a local issue that will focus on introduction of a new products, which will act as a trigger to start discussions. He offered the view that "answers" coming from Washington, DC are not well-received, and it is better when USDA simply identifies an issue as important. Another participant suggested that what USDA should offer would not be a prescription, just a willingness to leverage its resources to provide a toolkit and let local agencies and stakeholders know about these activities. Another participant noted that all these issues will need to be worked out locally, discussing contractual obligations and demands for new products, and raising awareness for everybody, IP proponents and other community members.

Dr. Schechtman indicated that he had enough information for this segment and this portion of the subgroup's work was likely finished. He indicated that he would let subgroup members know if there was need for a second session prior to the next plenary meeting.