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Memorandum

Date: April 15, 2002
To: The Florida-Glades Crop Care, Inc. RAMP Advisory Committee
From: H. Charles Mellinger
Re: **Minutes of February 7, 2002 RAMP AC Meeting**

Enclosed are the minutes from our excellent Advisory Committee meeting held February 7, 2002, in Jupiter, Florida. The minutes are preceded by "Major Points and Action Items". Please place these minutes in your RAMP 3-ring binder behind the purple tab labeled "6".

I had hoped to send these earlier but in the interim several noteworthy situations have occurred.

1. We continue to collect excellent georeferenced data on nematode populations in tomato and pepper fields that we're confident will have a direct bearing on treatment decision making. Also we continue to collect georeferenced silverleaf whitefly and leafminer migration data that impacts area-wide management and thus raises provocative questions for grower coordination and cooperation.
2. A RAMP Team of five met in Washington, DC, with the National Resistance Management Committee for insecticides, fungicides and herbicides of CropLife America (previously the American Crop Protection Association) on March 28. This group consists of senior scientists from world-wide crop protection companies which deal with the resistance management topic of their products' use in agriculture. We had an amazingly fruitful and eye opening half day exchange. We are in the process of preparing to send you the summary of this entire resistance management meeting but the most striking observation for me was the disconnect between the marketing and sales personnel on the ground promoting the products and the companies' "ivory-towered" scientists in the labs and greenhouses deciphering and labeling resistance management statements for their products. Our summary should be to you shortly.

We also will keep you apprised of other RAMP news as it develops. We sincerely thank you for your continued participation. As always, feel free to contact me regarding any RAMP related thoughts.

**Minutes and Summary of Major Points:
Florida-Glades Crop Care, Inc. RAMP Advisory Committee Meeting
February 7, 2002**

Major Points and Action Items

I. Phase out of Methyl Bromide

The message from our Advisory Committee (AC) was that the phase out of methyl bromide (MBr) is and will continue to cause major changes in pest pressure in intensive vegetable production systems in Florida, with possibly significant implications for pesticide use and risks. GCC RAMP-funded research should seek to minimize the disruption in bioIPM systems as the phase out proceeds. The AC also believed that water quality issues will result in problems with several of the MBr alternatives.

- GCC will monitor changes in tomato and pepper cropping systems in the post-MBr-era in order to document changes in pest pressure and complexes, beneficial insects, and pesticide use/costs/risks.
- GCC should work toward development of measurement systems capable of credibly documenting and monitoring the efficacy, and environmental impacts as growers move toward bioIPM systems lacking access to chemicals impacted by the Food Quality Protection Act (FQPA).

II. Potential for a Florida Ecolabel Program

The discussion of initiating an ecolabel program in Florida identified several constraints unique to the way produce is packed and marketed in the Florida vegetable industry. The AC suggested that citrus be explored initially as a potential Protected Harvest (www.protectedharvest.org) crop.

- The GCC RAMP team, with assistance from AC members, will make an assessment of the marketing infrastructure and marketing processes for the four key project commodities: tomato, pepper, citrus, and potato (especially the process of the repackers with tomatoes) with the goal of

establishing “goodness of fit” with a Protected Harvest-like ecolabel program.

Several AC members suggested that the RAMP Project team should explore ways to piggyback our RAMP/Protected Harvest message onto the “Fresh From Florida” label and initiative.

- AC members Craig Evans and Reggie Brown agreed to raise this possibility in upcoming meetings on the “Florida Fresh” initiative.
- The GCC RAMP Team will seek an opportunity to present a concept paper outlining what might be accomplished, and steps required to implement such a concept, to officials in The Florida Department of Citrus (FDOC) responsible for governance of the “Florida Fresh” label.

III. Resistance Management

It was the sense of the AC that the growers’ capacity to manage resistance was not keeping up with the selection pressure associated with necessary pesticide use patterns. They agreed the problem was growing more acute.

The AC explored in depth who should be responsible for resistance management and concluded that it has become a community-wide, area-wide responsibility. In light of the AC concerns and recommendations:

- The GCC RAMP Team will document the necessity for purposes of resistance management of the continued, albeit restricted use of chemicals subject to FQPA review and potential new label restrictions.
- Data will be gathered and publicized regarding how the industry has changed over the last ten years in reducing the FQPA targeted pesticides, highlighting the role resistance – and the need to manage resistance – has played in changing pesticide use patterns.
- Various communication lists will be used to put the word out that the Florida-GCC RAMP Team would like to know who is collecting data on resistance management for any Florida pest or pesticide. AC members promised to use their inhouse publications and communication vehicles to broadcast this request widely.
- The RAMP Project Team will look for an opportunity to help Florida make the case to the federal EPA that Section 18 emergency exemptions should be granted solely for the purpose of managing resistance, especially in cases where there is clear evidence that the emergence of resistance will quickly and inevitably lead to increased reliance on high-risk pesticides.

Meeting Minutes

This first meeting of the Florida-GCC RAMP Project Advisory Committee was held at the Jupiter Beach Hotel, February 7, 2002. Attendees included Dr. Jim White, Craig Evans, Dr. John Capinera, Reggie Brown, Gerry Odell, Dr. Charlie Mellinger, Madeline Mellinger, Dr. Jerry Brust, Galen Frantz, and Dr. Chuck Benbrook. Absent members were Wade Purvis and Eric Draper.

Dr. Charles Mellinger opened the meeting by describing how Glades Crop Care, Inc. (GCC) came to be involved in the Florida-Wisconsin Biointensive IPM Vegetable Project. Because of the diverse backgrounds of Advisory Committee Members, each was asked to provide background on their agricultural related activities in Florida agriculture (see member bios for an overview).

All members of the Advisory Committee agree that GCC has the capability, because of its strong, long-standing relationship with a number of client-growers, to “push the envelope” of IPM. RAMP Project objectives should include advancing biointensive IPM practices, tactics, and systems both on farms operated by GCC clients as well as beyond GCC’s client base. Through RAMP, GCC will be reaching out to the entire Florida agricultural industry, and indeed commercial vegetable growers in other States and even internationally. The FLA-WISC RAMP Project wants to create bridges to the rest of the grower and agricultural communities in order to create a forum through which goals for bioIPM adoption, gaining rewards for progress along the IPM continuum, and pesticide risk reduction can be set. The challenge for the FLA-RAMP Advisory Committee is to assist in achieving these goals.

I. Priority Setting by the Committee

A main issue of the committee was the consequence of the methyl bromide (MBr) phase out. Recent experience has convinced some growers that Telone is not a suitable replacement for MBr, in large part because of its more narrow spectrum of activity. Some of their main concerns with Telone as the “replacement” for MBr included no help with weed control, worker safety concerns, timing of applications, and water contamination with the alternatives.

The Advisory Committee (AC) believes that the ground water issues associated with significant regional use of Telone will endanger the loss of the product. We learned that weed control is a big and pressing issue, as it is in California, with the phase out of MBr. This reality puts herbicide and weed management back into the forefront position and also heightens the importance of renewed focus on herbicide resistance management (given that most registered herbicides are active at a single site). The AC also felt that in Florida, potential water quality degradation would be the environmental concern driving regulatory

responses as pesticide use patterns change post-MBr phase out. The AC was very concerned that any issues the RAMP Project looked into would include water quality.

The AC thought a good starting point might be to look at four crop priorities: tomato, pepper, citrus and potato. The goal would be to monitor changes in at least two tomato and pepper cropping systems in the post-MBr era in order to fully document changes in pest pressure and complexes, beneficial insects and microbial biocontrol processes, and pesticide use/costs/risks.

In citrus production systems, GCC should focus on the impacts of rust mite management in the event of the loss of Agrimek to resistance. In potatoes, the focus should be on the possible loss of aldicarb (Temik) and OP soil insecticides. A major question is how can GCC credibly document and monitor the financial costs and the environmental impacts of systems without MBr, Agrimek and aldicarb?

II. Ecolabel and Protected Harvest

Charlie Mellinger presented the basic principles of the Wisconsin Potato Collaboration/Protected Harvest relationship. The AC was not sure if the time was right for a comparable ecolabel program in Florida. A major concern was that many growers sell their tomatoes and peppers to repackers, companies that co-mingle produce from several growers and then sell cleaned, sorted, and packaged produce to various distributors and buyers, often in brand-name packaging. Once on the premises of these repackers/shippers, the identity of the produce is lost. Accordingly, both growers and repackers/shippers would have to be certified, and there would need to be enough financial incentive for repackers to invest in the capacity to segregate ecolabel grown fruit from other fruit, and to document chain of custody.

Other concerns were discussed involving the management and reuse of boxes. For economic reasons, boxes may be used several times and the origin of the produce in the box has little to do with what the box says. Boxes from a repacker move into channels of trade with a particular label – a Safeway Stores house brand, for example – and then are recycled back to any number of repackers/shippers, perhaps in a different region. Ecolabeled boxes would have to be managed differently and more tightly controlled.

A good suggestion by the AC was to consider using citrus as a potential Protected Harvest ecolabel scenario. Additional comments were that we could piggyback our message onto the “Fresh From Florida” label. This effort would help all the vegetable industry if and as people came to identify the label “Fresh From Florida” as also representing clean, safe, wholesome food and farming systems. Establishment of a credible ecolabel linked to “food safety” and “water quality” messages would provide a valuable new PR dimension to efforts to promote the Florida Vegetable industry.

The GCC RAMP Team will make an assessment of the marketing infrastructure and process for the four commodities we are to examine. We must understand the issues of repacking, and costs of a potential ecolabel. We need to survey the commodities during this next year to understand what may work for what commodity. We know that the eco-label will not work everywhere or for each commodity. We will re-evaluate this topic after some data gathering. The AC thought that the RAMP Project could provide the data that would help support the idea that Florida produce is safe and healthful. This would be a very positive aspect for the entire vegetable industry and one the group thought would be a good result of our RAMP effort.

III. Resistance Management

AC discussion centered initially on the problems and difficulties growers face in managing the day-to-day resistance management “forest fires”. A range of tactics and possible solutions were discussed, as well as what growers need to more effectively manage resistance. The AC felt that production agriculture could not afford to lose any weapons (chemicals) in the tool chest, since the rotation of chemicals and families of chemistry is the most widely and readily adopted resistance management tactic.

The AC felt that most people in the vegetable industry would agree to use pesticides critical to resistance management in ways that prevent resistance. The AC felt that any further loss of pesticides would place in serious jeopardy the ongoing ability to manage resistance to key chemicals including the nicotinoids (i.e., Admire and Platinum), strobilurins (i.e., Quadris), spinosad, and Agrimek. Several examples were discussed of growers-IPM specialists just barely keeping key products efficacious in the current or just-completed cropping season.

The major impact of thrips management on bioIPM systems and insecticide use was highlighted. If/when thrips get out of control, growers will need to maintain a toolbox containing reactionary chemicals in at least three families of chemistry – and ideally including pesticides that do not trigger other problems nor raise costs. Examples cited were no rotation partners for Spintor for control of melon thrips and western flower thrips control is achieved with a Spintor and Monitor rotation, with Monitor high on the FQPA hit list. The question arose, but was not answerable: What do we rotate spinosad with if the EPA drops the Monitor registration for tomato?

The need to retain for limited uses some high-risk organophosphates was discussed at length in the context of resistance management. It was reported by Chuck Benbrook that comparable needs and challenges have arisen in the Wisconsin Collaboration project. Wisconsin potato growers face pressing, acute resistance management needs that sometimes conflict with core risk reduction

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goals, both relative to Colorado potato beetle and blight disease management. Several pesticides that pose risks per-acre-treated that are generally greater than considered acceptable, are allowed for limited use in the program's new standards, but only when applications are made as part of a recommended resistance management program.

The Wisconsin Collaboration places such great emphasis on the importance of resistance management to preserve the efficacy of several recently registered, reduced risk pesticides, that it has chosen to allow limited use of chemicals otherwise subject to phase outs, but only when necessary to prevent resistance to safer, newer chemistry. The Florida AC discussed whether and how a similar strategic approach might be developed in Florida, but no resolution or clear plan was agreed upon. It was agreed the need for enhanced resistance management plans is critical for the strobilurin fungicides and for pesticides used to manage whiteflies. The AC suggested additional IPM training might be necessary if anyone wanted to use chemicals deemed "high risk" and/or "high need" relative to either the emergence of resistance or the need to manage resistance.

To successfully manage resistance, the GCC RAMP Team will document the necessity of the continued but restricted use of chemicals likely to be impacted as the FQPA implementation process moves forward. The AC agreed that this would be a very useful and essential goal of RAMP and one that would help reduce the chances of resistance.

Our RAMP project also could gather data and publicize how the industry has changed over the last ten years in reducing the FQPA targeted pesticides. It would also be important and educational to document how the emergence of resistance – and steps to prevent resistance – have driven changes in pesticide use patterns and IPM systems over time!

The AC discussed at length how resistance management has evolved into a community-wide, area-wide responsibility. Several instances were noted where poor management and/or financial problems created situations in certain fields that were extremely negative relative to the needs and interests of surrounding growers who were "doing the right thing" relative to resistance management. This recognition led to a discussion of what steps the ag community as a whole should take to more aggressively manage resistance on an area-wide basis.

Another important role for the RAMP project was the suggestion to compile information on who is monitoring the emergence of resistance in the field, in real-time, especially in Florida. Such an inventory, along with methods, is a needed first step to determine the adequacy of current resistance monitoring efforts. Findings will obviously be very useful in identifying what further steps are needed and who should be responsible for carrying them out. The AC suggested that the GCC RAMP Team use various communication lists and mechanisms to identify people

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and organizations collecting data on resistance management for any Florida pest or pesticide. This survey should be part of an overall assessment by the GCC Team of resistance management “state of the art”, a first step in a process that should produce a set of recommendations to overcome gaps in the capacity of the Florida agricultural industry to stay on top of resistance management challenges.

A big concern of the AC and RAMP Project Team is that the EPA will not grant a Section 18 for the purpose of resistance management. If there is a product that works, they will not grant another product for rotation, even if evidence suggests resistance is both inevitable and imminent. The RAMP project will bring this oversight to the attention of national policy makers.

Another factor must be taken into account in assessing resistance management needs and the performance of pest management systems. Because of market pressure, (especially high prices) growers may have to extend the picking season of certain crops (tomato and pepper). This then can lead to an increased use of pesticide applications that may exacerbate selection pressure and increase the toxicity units for that field and crop.

The following is a summation of the Advisory Committee’s thoughts at the end of our day long meeting about the Florida GCC RAMP Project:

Jim White: We [Entomos] are ready to offer any/all of our products for RAMP trials. Jim finds the potential use of GPS/GIS in our work exciting, and something that is needed by the industry.

Craig Evans is excited about the opportunity, daunted by the challenge. Feels the RAMP Project is ambitious, but very useful. Craig will act as a facilitator/liaison to disseminate information. He would like to use the data we generate from RAMP activities and add it to the information that the Agriculture Institute already has. He feels there is real opportunity to leverage progress benefiting the entire industry, consumers, and the environment.

John Capinera wants to help get the story of our data collection efforts, as well as what the overall RAMP project is trying to achieve, out to the university and ag communities. He would be willing to help “crunch numbers” when the time comes. He will try and facilitate any linkages with the University system.

Reggie Brown: He feels the RAMP project is headed in the right direction and is a very good cause that he supports. He will do whatever he can to help the RAMP Project be successful.

Gerry Odell is very interested in the whole project and looks forward to working with us in figuring out how to assess development of resistance to key pesticides. Gerry says he can provide information to the RAMP Project developed

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within Gargiulo. Although the research is done on a proprietary basis, it is really done because it is information they need to know; is not done as a tool against any competitor.