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# Sustaining Rural Communities: Balancing Agriculture, Development and Environmental Protection

## Palatka Introduction

Photo by Melody Ray-Culp

Session five of the NRLI class VIII was held in the Palatka / Hastings area, and focused on balancing agricultural production, urban growth, and environmental protection in northeast Florida (Clay, Flagler, and St Johns counties). Northeast Florida is experiencing some of the most rapid land use changes in the state. The area is home to one of the most impaired rivers in the country, and environmental regulations for farmers are becoming more stringent. Water quality in the area is also affected by stormwater runoff from developed areas, and research and outreach efforts are underway to increase the use of Low Impact Development technologies. Many farmers in the region are looking to alternative crops to ensure sustained viability of their farming operations, and some Community Supported Agriculture (CSA) organizations are beginning to emerge. Partnerships between private industry, agriculture, local government and university research and extension professionals have been built and have resulted in several active projects designed to address these issues. This session provided an overview of some of these partnerships and exposed the Fellows to the perspectives of local farmers and the strategies they are implementing to respond to changing economic and environmental conditions in this region

## Setting the Stage

### AGRICULTURE IN HASTINGS

By Bruce Delaney

Davis Dinkins (St John's County Extension Director) opened the session. Mr. Dinkins started with a description of the history of agriculture in the Hastings area. Around 1890, Thomas Hastings established a Prairie Garden farm at what was to become Hastings. Using greenhouses, Hastings supplied vegetables for the hotels constructed by Henry Flagler, American tycoon, real estate owner, and Rockefeller partner in Standard Oil, who was building hotels and developing a railroad system linking Florida

with the northern U.S. at that time. At some point, Flagler extended his Florida East Coast Railroad to Prairie Garden and called the station Hastings Station. The extension of the railway permitted shipment of potatoes to northern markets and development of the potato industry in the Hastings area. By 1901, the Hastings area shipped 43,000 bushels of Irish potatoes and 23,000 bushels of sweet potatoes and had become the "Potato Capital of Florida".<sup>1</sup>

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Currently, crops in the area include potato, cabbage, squash, cucumbers, and sod. There are also agriculture-related industries, such as fertilizer production. Though still significant, vegetable production has declined in the recent years. There are only about 30 producers remaining in the area, and the area devoted to agricultural production reduced by about 40% within the last 10 years. Among the main reasons for the decline are urban growth in the area, which drives the price of land up, international competition, which drives the price for produce down, as well as environmental regulations that also increase input costs. Similar trend of conversion of agricultural lands to residential is observed in other parts of the state. It was stated that in the state as a whole, about 30% of agriculture



Photo by Melody Ray-Culp  
**David Dinkins discusses agriculture in the Hastings area with the NRLI**

(domestic food production) is in the path of development.

## IMPORTANCE

Why is it important to keep agricultural production in the area? First, along with other nature-based industries, agriculture brings significant income to the state and local budgets. For horticulture production only, economic impact in the Tri-County Agricultural Area (TCAA, Clay, Flagler, and St Johns Counties) is approximately \$170 million per year.. Total economic impact of all agricultural industries (forestry, horticulture, and other) in the TCAA is about \$3 billion dollars. Secondly, reduction of domestic agricultural production increases the country's dependence on imported food, which can jeopardize national security. Thirdly, for the local budgets, agriculture brings more revenues after accounting for the costs of community service, than the urban sector does. (See cost of community service study conducted by American Farmland Trust).<sup>2</sup>

## WHAT CAN BE DONE

What can be done to sustain agricultural production in the area? To increase profits, farmers should diversify their production (find alternative crops) and target new markets. For example, production of sorghum for biofuel energy market is seen as a possible way to increase profits of farmers. Agritourism, when visitors come to enjoy peaceful and scenic agricultural areas, may be another possibility to boost agricultural profits.

## WATER QUALITY ISSUES

Mr. Dinkins also highlighted water quality problems in the St Johns River Basin (which includes all / part of the counties in the TCAA). Public attention to the pollution problem in the St Johns River was drawn in late-summer and fall of 2005, when toxic blue-green algae (*Microcystis aeruginosa*) covered much of the river. The algae blooms appeared to be attributed to a rare combination of meteorological (temperature and precipitation) and ecological (preceding bloom of a nitrogen-fixing algae, *Cylindrospermopsis*) condi-

tions. However, excessive nutrient loading from urban and agricultural sources also contributed to the problem.<sup>3</sup>

To address the problem of nutrient loading, the Florida Department of Environmental Protection (FDEP) adopted a Total Maximum Daily Load (TMDL) for nutrients in the Lower St. Johns River in August 2003 (i.e., even before the toxic algae bloom).<sup>4</sup>

Mr. Dinkins referred to the analysis based on the WAM<sup>5</sup> model, which shows that conversion of agricultural lands to urban areas, in general, results in increase in fertilizer nutrient loading to the river.<sup>6</sup>

Research and education strategies are needed to support agricultural production in the area while addressing environmental concerns. The Florida Partnership for Water, Agriculture & Community Sustainability in Hastings was created by a coalition of local farmers, business leaders, county commissioners, UF scientists and representatives of SJRWMD, FDEP, FDACS, city and county governments in Flagler, Putnam, and St Johns Counties at the end of 2004. The objective of the center is to address challenges posed by urban growth in northeast Florida by increasing profitability of agricultural and other natural resources industries, and promoting environmental stewardship. The center uses experimental facilities ("living displays") to show visitors low-impact development (LID) practices, Florida-friendly landscapes, and production of alternative agricultural crops.<sup>7</sup>

## WATER QUALITY AND STATE POLICIES

Next, Mark Clark built upon Mr. Dinkins' discussion of water quality problems in the SJR Basin and related state policies. The Federal Clean Water Act of 1972 requires states to assign a designated use to every water body within the state's jurisdiction. Florida uses 4 designated uses (referred to as classes):

- ◇ Class I - Potable Water Supplies (applied to water bodies used for drinking water supply);
- ◇ Class II - Shellfish Propagation or Harvesting (applied usually to coastal waters used for shellfish harvesting);
- ◇ Class III - Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife; an
- ◇ Class IV - Agricultural Water Supplies (generally, applied to agricultural areas around Lake Okeechobee).



Photo by Melody Ray-Culp

**Mark Clark talks with the Fellows about water quality issues in the St. Johns River Basin and state and federal water quality policies.**

For each designated use, specific water quality criteria (standards) are established (see rules 62-302.500 and 62-302.530 F.A.C). The criteria can be numeric (e.g., limit on pollution concentration), or narrative (e.g., protection of aquatic life).

Federal regulations also require states to biannually evaluate water bodies within each state against relevant water quality standards.

# Group Dynamics

## Setting the Stage

*Continued from previous page.*

For water bodies that do not meet water quality standards, monitoring is conducted, and then, based on the monitoring results, a Total Maximum Daily Load (TMDL) plan is developed. TMDL sets the maximum amount of pollution that a water body can receive (within certain time period, usually, a year) and still meet water quality standards. This maximum pollution amount is allocated between pollution source categories. That is, as a part of TMDL, limits are determined by the amount of pollution that each pollution source category can discharge into a water body. This limit is referred to as Load Allocation for agriculture and other nonpoint sources, and Waste Load Allocation for industrial and municipal point sources. After a TMDL is adopted, an implementation plan is developed, called a Basin Management Action Plan (BMAP). A BMAP is developed by FDEP, in collaboration with FDACS, WMD, and local stakeholders. BMAP describes pollution reduction measures for different categories of pollution sources. BMAP also describes implementation costs for such measures, as well as possible policy mechanisms to support (provide incentives for) BMAP implementation. BMAPs also contain a periodic evaluation schedule of the progress achieved, as well as possible corrective measures if BMAP measures have not achieved expected outcomes. Once a BMAP is adopted, a BMAP implementation stage begins.

Dr. Clarke put specific emphasis on pollution control in urban areas. Urban storm water regulation is also a part of TMDL and BMAP. The Florida Water Resources Act (FWRA) of 1972 specifies that waters in the state, and hence, storm water management, are the responsibility of FDEP. However, FDEP delegates storm water management to the Water Management Districts.

## Focus Groups and Survey Design

Dr. Laila Racevskis introduced survey design and focus group study methods. Then, NRLI fellows discussed a survey designed by Florida Sea Grant's Director and Associate Director for Research. The survey is a part of the strategic planning process of the Florida Sea Grant College Program. The objective of the survey study is to solicit input from key stakeholders about the relative importance of various coastal environmental issues. The results of the survey will help set the five-year Sea Grant's program priorities. As a part of the discussion, NRLI fellows were divided into six groups of three. Each group had about 15 minutes to discuss the survey and select their top five issues from the list presented in the survey. Groups wrote their selected issues on separate Post-It Notes and posted them on a wall for all the fellows to view. The Post-It Notes were re-arranged into like-categories. Four broad categories were identified: 1) Improved water quality; 2) Multi-cultural marine education; 3) Public engagement and development of existing communities; and 4) Preservation of critical environmental areas, management of invasive species, and preservation of land / open spaces

## What Do We Know About How Groups Make Decisions?

*Led By Jon Dain*

The next activity focused on group discussion and was led by Jon Dain. Two critical questions were discussed: What complicates group decision-making and how do you set up effective groups? The session was based on material from the book Facilitator's Guide to Participatory Decision Making.<sup>9</sup>

Using hand outs, Jon had the group distinguish between participatory and conventional groups. The question was then asked, how do you lead a conventional group into becoming a participatory group?

A set of schematic drawings was used to illustrate differences in decision making in conventional versus participatory groups. The objective of any facilitator or leader is to bring a group from an introduction of a new topic or issue to a decision in a straightforward way, so that the opinions of the group members converge. However, usually after an introduction of a new idea, opinions of group members go off tangent. Hence, the objective of a facilitator is to lead a group to the phase of convergent thinking after the phase of divergent thinking (Fig. 1).

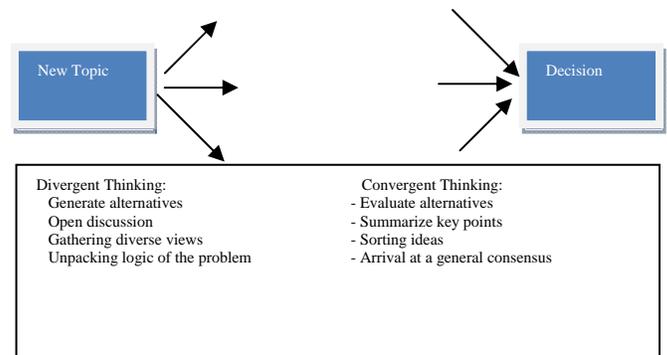


Figure 1. "Ideal" group discussion process.

Jon concluded the session by discussing the concept of "the groan zone". It is important to recognize that any decision-making process will go through this "groan zone" of not listening, confusion, frustration, and anger. The role of a facilitator is to recognize that a group has entered a groan zone, and to find ways to lead the group out of the zone to the final solution

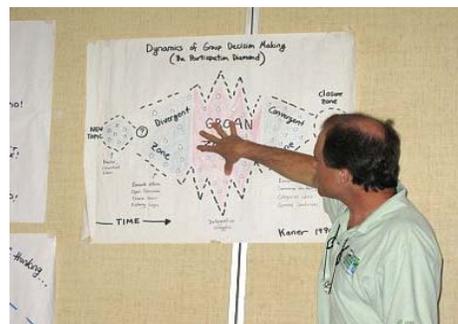


Photo by Melody Ray-Culp

**Jon Dain goes over the concept of the "groan zone". He emphasized that the role of the facilitator is to recognize when a group has entered the "groan zone" and find ways out of it to the final solution..**

# Hastings Farms Field Trip



Photo by Laila Racevskis

Joe Sowards, IFAS Extension Agent talks with the Fellows outside the Hastings Research and Demonstration Center during a tour of the facility.

## FLORIDA PARTNERSHIP FOR WATER, AGRICULTURE, AND COMMUNITY SUSTAINABILITY

On Friday, NRLI fellows started the day with a trip to the Hastings IFAS Center. Dr. Chad Hutchinson gave a presentation about potato production in the TCAA and the role of the Florida Partnership for Water, Agriculture, and Community Sustainability (referred to as Hasting center below). The center was created through a legislative appropriation with a focus on urban - agricultural interface issues and a collaborative partnership with local partners. The motto Dr. Hutchinson used to describe the mission of the Hasting Center is "taking the University to the people". Current programming efforts at the center include:

- ◇ Variety development (more than 1500 potato selections per year are analyzed at the center; the focus is on developing new varieties that would appeal to consumers);
- ◇ Nutrient management (focus is on reducing environmental impacts of agricultural production)
- ◇ Alternative fumigation

The Hastings center consists of two offices in the area. The Hastings downtown facility includes an on-site demonstration site with 29 hydrology independent cells to conduct production experiments. NRLI fellows explored the demonstration plots, most of which contained drought tolerant turf alternatives to sod, ground covers and bushes. Possible blueberry production was also discussed with Hastings faculty and staff.



Photo by Melody Ray

Jane Provanca enjoys a bag of UTZ potato chips during the visit to Tater Farms. UTZ potato chips are produced from the potatoes grown on Tater Farms.

## TATER FARMS

The field trip continued with visits to three farms. The first farm visited was Tater Farm, where fellows met the farm's owner, Mr. Frank C. Johns, Jr, and the manager, Mr. Eric York

## SMITH AND JOHNS, INC.

Next, NRLI fellows visited Smith and Johns, Inc., and spoke with the owner, Mr. Wayne D. Smith, and his son. Similar to Mr. Johns, Mr. Smith used to produce potatoes on 100% of his land. However, recently, he has been experimenting with other crops, such as peanut, cotton, and sod. Mr. Smith also leases part of his land for vegetable production.

## FOREST GROVE FERNERIES

The third farm visited by NRLI fellows was Forest Grove Ferneries specializing in cut foliage production. NRLI fellows met with the farm owner, Mr. John Newbold.

The economic squeeze felt by the farmers that the Fellows visited on the field trip was apparent.

## Potato Trivia

1. The potato is a relative of tobacco and the tomato.
2. Up until the late 18th century, the French believed that potatoes caused leprosy.
3. The potato is the fourth most important crop in the world after wheat, rice and corn.
4. Marie Antionette was know to wear potato blossoms as a hair decoration.
5. Potatoes are 80% water and 20% solid.
6. Potatoes and lettuce are the two most popular fresh vegetables in the U.S.
7. in 1952, Mr. Potato Head was born, and was also the first toy to be advertised on Television.
8. During the Alaskan Klondike gold rush, (1897-1998) potatoes were practically worth their weight in gold. Potatoes were so valued for their vitamin C content that miners traded gold for potatoes.



Photo by Jane Provanca

Fellows tour the Forest Grove Ferneries. L to R: Melody Ray-Culp, Chrissy Hensel, John Newbold, owner, and Peter Johnson

# Stakeholder Panel



Photo by Melody Ray-Culp

**Stakeholder Panel (left to right): Bill Hamilton, Cyndi Stevenson, Sara Owen, Michael Woodward, Pam Livingston, Chad Hutchison, and Larry Tilton.**

On Friday afternoon, the stakeholder panel highlighted issues around TMDL / BMAP development and the adoption process in the basin. Stakeholder panel participants included:

- ◇ Mr. Larry Tilton, farmer specializing in timber, silviculture, cattle, and row crops. Mr. Tilton was born in Putnam County; he has been involved in the timber business all his life.
- ◇ Dr. Chad Hutchinson, UF – IFAS, Hastings Center.
- ◇ Mrs. Pam Livingston, SJRWMD, management program.
- ◇ Mr. Michael Woodward, law firm, Keyser / Woodward; Mr. Woodward specialized in land use law
- ◇ Mrs. Sara Owen, Planning Advocate, Florida Wildlife Federation. Mrs. Owen leads the North-East office of FWF
- ◇ Mrs. Cyndi Stevenson, St Johns County commissioner. She is originally from Volusia County; and she is a northeast Florida resident since 1981.
- ◇ Mr. Bill Hamilton, retail nursery owner. He is an owner of Southern Horticulture, production and retail business. His focus is sustainable approaches to landscaping.

Ms Jennison Kipp, UF-PREC, facilitated the stakeholder panel. What followed was discussion of the pressures as well as opportunities on agriculture in the Hastings area. Pressures result from development, trade policies, prices of fuel and chemicals, and the availability of water for irrigation. Opportunities include the growing markets for organic and/or locally grown food products. Some producers may see development as both a pressure and as an opportunity.

## Dynamics and Patterns of Group Behavior

*Session led by Marta Hartmann and Jon Dain*

On Saturday, NRLI fellows focused on group dynamics and patterns of group behavior. To better illustrate the concept, nine volunteers were identified. They sat in a circle in the center of the room, imitating a decision-making group. Each volunteer received a short description of the role that (s)he would play during the hypothetical group discussion. The decision that the group needed to make was to select the sole focus of research and extension activities for the Hastings Center. The alternatives that the group considered were agriculture versus urban / LID. The other NRLI fellows received the task to observe the dynamics in the decision group and to identify the role that each group member was playing. The “observers” received a list of possible roles, such as “making sure that everybody expressed their opinions”, “being aggressive”, “blocking the discussion”, and others. After a few minutes of discussion in the group, the volunteers exchanged their

roles, and the “game” started again. After three rounds of the “game”, the NRLI group as a whole discussed the behavioral patterns that were identified. Three main behavioral patterns that prevent groups from reaching a decision were named: “ambitious” (“I know the right decision”), “blocker” (“I do not want to discuss this”), and “joker” (who make unrelated jokes during the discussion).

Next, Jon Dain identified the following two roles of group members that help groups reach decisions:

- ◇ Task Maintenance
- ◇ Group Maintenance

Jon Dain emphasized that if group members fail to perform one/both of these two roles, the group would fall apart and never reach a decision. The function of a group leader / facilitator is to check if one role is missing, and then try to fill in for the missing role.

# Feedback and Debrief

## NRLI Project Team

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## Report Layout

Brenda Lee

### FEEDBACK—

Carol Lippincott and Kevin Brown provided the NRLI Team with feedback for the session.

### DEBRIEF—

During the debrief session, Kevin Hennessy and Chrissy Hensel divided NRLI fellows into four groups. Each group was given the task to summarize lessons learned during the session by discussing one of the four topics: key issues for the session; negotiation strategies learned; key stakeholders identified; and practical concepts acquired. The key issues identified by one of the groups included:

- ◇ Statewide communication
- ◇ Research
- ◇ TMDL / BMAP
- ◇ Agricultural buy-in
- ◇ Determinants of responsibility

Another group identified the following strategies that can be used in negotiation process:

- ◇ Meetings (following the practice used by SJRWMD in TMDL / BMAP development)
- ◇ Operating a demonstration facility (example – Hastings Center)
- ◇ Legislation
- ◇ Agricultural advocacy and/or representation (i.e., voluntary participation in decision- or policy-making by agricultural producers)
- ◇ BMP incentives
- ◇ Avoidance
- ◇ Cooperation

An enhanced understanding of Group Dynamics as well as the value of participatory vs. conventional groups were among the valuable lessons of this NRLI session.



Photo by Melody Ray-Culp  
**Jennison Kipp, Peter Johnson and Carol Lippincott work together on the debriefing exercise.**

## References cited

<sup>1</sup>From History Of The Town Of Hastings <http://www.hastings-fl.com/hastingshistory.html>

<sup>2</sup>Cost of Community Services (COCS) studies are a case study approach used to determine the average fiscal contribution of existing local land uses. ... COCS studies are a snapshot in time of costs versus revenues for each type of land use. " [http://www.farmlandinfo.org/documents/27757/FS\\_COCS\\_11-02.pdf](http://www.farmlandinfo.org/documents/27757/FS_COCS_11-02.pdf)

<sup>3</sup>Teresa Monson. The Battle Against Algae. StreamLines, Winter 2005, <http://sjr.state.fl.us/streamlines/2005winter/index.html>

<sup>4</sup>FDEP. Lower St. Johns River Basin TMDL. <http://www.dep.state.fl.us/northeast/stjohns/TMDL/tmdl.htm>

<sup>5</sup>The Watershed Assessment Model (WAM) has been used to simulate flow and water quality constituents for several Florida watersheds in support of Florida's TMDL program and other watershed restoration projects. ... WAM was used to simulate daily flows and constituents of interest, such as, nitrogen, phosphorus, total suspended solids, and BOD, ... as well as providing detailed spatial GIS maps of source loads throughout the watersheds. Florida watersheds for which WAM has been used include: Lower St. Johns River, Myakka River, North Lake Okeechobee, Suwannee River, Aucilla River, and Caloosahatchee River" cited from the abstract for: A. B. Botcher, B. M. Jacobson, and J. G. Hiscock. 2003. Characterizing Flow and Nutrient Load from TMDL Development in Florida Using WAM. Pp. 027-034 in Total Maximum Daily Load (TMDL) Environmental Regulations—II Proceedings of the 8-12 November 2003 Conference (Albuquerque, New Mexico USA). American Society of Agricultural and Biological Engineers. <http://asae.frymulti.com/abstract.asp?aid=15534&t=2>

<sup>6</sup>Sarah Graddy. 2007. Florida Partnership for Water, Agriculture & Community Sustainability: Sustainable Solutions. <http://hastings.ifas.ufl.edu/overview.shtml>

<sup>7</sup>FDEP. Surface Water Quality Classifications. <http://www.dep.state.fl.us/water/wqssp/classes.htm> ; Historically, there was also Class V - Navigation, Utility and Industrial Use. However, currently, there is no water body designated as Class V

<sup>8</sup>Munoz-Arboleda F., R. Mylavarapu, C. Hutchinson, and K. Portier. 2008. Nitrate-Nitrogen Concentrations in the Perched Ground Water under Seepage-Irrigated Potato Cropping Systems. doi:10.2134/jeq2006.0545 . J Environ Qual 2008 37: 387-394

<sup>9</sup>Kaner, S., L. Lind, C. Toldi, S. Fisk, and D. Berger. The Facilitator's Guide to Participatory Decision-Making. 1996. (New

