NEEDS-ASSESSMENT

The Maryland Center
for Agro-Ecology, Inc.

Conducted by
American Farmland Trust
Maryland Farm Bureau
Alliance for the Chesapeake Bay

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The consensus of interviews and round-table discussions, which were based on a series of questions, yielded the **low profitability of the agriculture industry** as the primary challenge to natural resource based industries. The continued viability of farms was seen as connected to forestry because so much of the resource base for forestry exists on farms, linking the future of both industries. The other important challenges mentioned tied into economic conditions either as a perceived cause of problems or as a symptom of the core issue. They included: **development pressure** with its incompatible land uses and effects on land values, **regulations** and their relationship to competitiveness, and the uncertainty and anxiety surrounding **environmental concerns** exacerbated by an unsatisfactory deliberative process.

The **lack of a shared vision** of the role of agriculture and forestry in Maryland's future was often expressed when discussing how to deal with these issues at the state level. It was repeatedly pointed out that **Maryland's "Smart Growth" agenda fails to include attention to these industries** which are responsible for providing much of the open space, stable rural economies, and environmental protections in the state. **Agriculture and forestry are left out of the state's economic development strategy**, as well, despite their far-reaching implications for every part of the state. Local governments play a role, as well, by not considering the industries in their economic development agendas and planning and zoning decisions. In the non-governmental sector, environmental organizations were challenged to learn more about the industries whose practices they seek to change and industry organizations to become more actively involved in developing solutions.

Advice given by the interviewees and the participants in the round table discussions about the role of the Center in the issues is extensive. In the body of the report the suggested actions and strategies are condensed and grouped by four categories: **institutional approach, outreach and education, research and information gathering, and policy initiatives.**

A review of literature on the state of agriculture and the environment nationally suggests that the problems expressed by the people consulted here in Maryland are part of a national phenomenon of a disconnect among all the forces acting on the producers of our food. Perhaps Maryland is feeling it so acutely because of the combination of population, weather, and environmental sensitivity factors in recent years.

RECOMMENDATIONS

In designing and conducting this needs-assessment for the Maryland Center for Agro-Ecology, we were cognizant of two points. First, that **the subject of agriculture and the environment in Maryland is presently fraught with tension,** in large part, because of a relatively recent, significant shift from a voluntary to a regulatory approach to nutrient management in the state. Second, that **Maryland is home to a multitude of agencies, research institutions and non-profit organizations** dealing with many different aspects of agriculture, forestry and the environment. We encountered a host of good people with sometimes disparate and strongly held opinions. Across the range of interests we listened to, however, trends did emerge from the many answers to our questions. These trends, and our reaction to them, underpin our recommended strategies and actions.

Concern about the low profitability of agriculture was the oft-repeated key challenge to Maryland agriculture. Indeed, progress in other areas such as land protection and environmental impacts may be close to an impasse because of the relationship of each to profitability. Like a three-legged stool – it may be about to tip over because the balance has been lost. **Agriculture and forestry as preferred land uses should be a unifying concept.** The Center will need to keep in mind that not all parties understand or are in agreement with this pivotal point. As such, keeping track of the big picture– the economic survival of the industries to enable other goals of stable rural economies, 'Smart Growth', land conservation, and continued improvement of environmental protections – will be crucial in the work of the Center. Four themes emerged that reflect on the functioning of the Center itself.

- The need for **neutrality, independence and reliability** on the part of a new Center.
- **Care with language** will be paramount in all of the Center's dealings.
- **Inclusiveness** of a broad range of interests is essential to its credibility.
- **Action** will speak louder than words.

PUBLIC POLICY

GOAL: *To affect public policy by improving the factual context for decision-making, primarily through information-gathering, communication, and facilitation of dialogue.*

- Take the lead as the facilitator of a statewide vision for agriculture and forestry in Maryland.
- Work to fully integrate agriculture and forestry into the state's economic development strategy and actions as well as Maryland's 'Smart Growth' agenda.
- Educate and engage state and local decision-makers in the issues.
- Assist in the development of leaders.
- Broaden non-traditional partnerships to foster innovative approaches to problems.

INFORMATION GATHERING

GOAL: *To continually bring complete scientific and economic data to technical, policy and regulatory discussions.*

- Distill and synthesize the current state of research from all sources.
- Create scientific and economic research advisory committees.
- Scientific and technical studies should be undertaken where gaps appear.
- Initiate important economic studies.
- Conduct or sponsor policy evaluations.

COMMUNICATIONS

GOAL: *To serve as a reminder of the 'big picture' while increasing the accessibility of information and research and improving the quality and breadth of the dialogue.*

- Create an education format about the Center.
- Develop and conduct an education agenda (forum series) on *emerging* issues.
- Create an education program specifically for environmental organization staff and members.
- Disseminate economic and scientific research findings broadly.
- Reach out to the mainstream press.
- Find ways to educate the general public.

ORGANIZATION

GOAL: *To create an organization based on a commitment of all board members to clear underlying principles that allow them to function effectively, in spite of differences.*

- Conduct a strategic planning process.
- Consider changing the name of the Center.
- Develop a process for vetting projects. Consider several tracks; one for policy and economic issues, another for technical aspects and practices.
- Identify a common agenda

CONCLUSION

This needs-assessment is the starting point of a strategic planning process that the Board of the Center needs to initiate as its first project. The opinions and hopes of many people about agriculture, forestry and the environment in Maryland and about the role of the Center have been collected here. A good deal of information about centers with similar missions around the country in contained here as well as a compendium of organizations, programs, task forces and regulations dealing with these issues in Maryland. We hope that it offers a baseline for reference as the Center decides what it will become.

A review of similar centers elsewhere does not reveal to us a 'wholesale' model for the Maryland Center. There are important strengths in different programs. Maryland may be experiencing a confluence of extraordinary circumstances – keen and widespread environmental sensitivity due to the presence of the Chesapeake Bay, pressure to develop in almost all parts of the state, and real stress in the agricultural community due to both of these plus weather conditions and commodity prices. All of these circumstances are imbued with a sense of urgency. Combined, they suggest to us that Maryland's Center needs to take the broadest possible approach to the natural resource based industries and not limit itself to being only an adjunct to an academic institution or to a label of 'sustainable agriculture' which seems to be vaguely defined and poorly understood in the larger community.

Finally, Maryland is home to a multitude of organizations, agencies, associations and programs dealing with various aspects of agriculture, forestry, land conservation and the environment. It is essential that the Center find its 'niche' in that organizational landscape. We believe that the interview process yielded a surprising degree of agreement on the critical functions in need of attention. Hopefully, this entire needs-assessment provides resources and guidance for the Center's strategic planning process.

INTRODUCTION

The Maryland Center for Agro-Ecology, Inc. is a Maryland non-profit 501(c)(3) corporation formed by a diverse coalition of agricultural, environmental, business, law, academic and legislative leaders in Maryland. The Board of Directors of this new coalition is united by a common interest in preserving the Chesapeake Bay and Maryland's farms, forests, and other open spaces and for enhancing the competitiveness of Maryland's agriculture and natural resource based industries.

The creation of the new Maryland Center for Agro-Ecology was announced in January 2000 with a press conference and the signing of a Memorandum of Understanding between the Center and the College of Agriculture and Natural Resources at the University of Maryland. The University will provide initial funding to launch the Center on its mission.

Led by its 16 member Board with the Honorable Harry R. Hughes as President, the Center's purposes are to:

- Encourage cooperative land preservation and Smart Growth initiatives that are jointly supported by the environmental community and the agriculture, forestry and other natural resource-based industries, which collectively utilize more than half of Maryland's 6.2 million acres;

- Enhance constructive debate and the adoption of science-based public policy by increasing support for targeted interdisciplinary research that develops economically viable and environmentally conscious agricultural, forestry and natural resources practices;

- Increase statewide public appreciation of the aesthetic and economic value of farms and forestlands via forums, workshops, symposia, and other broad-based educational and outreach programs.

Soon after the founding of the Center was announced, a consultant team, led by American Farmland Trust, with the Maryland Farm Bureau and the Alliance for the Chesapeake Bay was engaged to assess the needs of the Center. The purpose of this report is to bring as much information and advice together for consideration by the Board of Directors as they define the Center's place in the organizational and institutional landscape of Maryland, structure themselves and their processes, and decide on initial projects.

The Center will be housed in Queenstown at the Wye Research and Education Center of the University of Maryland. In April 2000 Russ Brimsfield was named Executive Director of the Maryland Center for Agro-Ecology, Inc. A list of the Board of Directors and their affiliations follows on the next page.

BOARD OF DIRECTORS

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BACKGROUND
Agriculture, Forestry and the Environment in Maryland

Maryland is at the forefront in a number of areas. It is becoming a national leader in statewide 'Smart Growth' policies and its agricultural and natural resource land preservation programs are national models. In addition, the environmental awareness of its citizens is high, due, in large part to several decades of focus by the EPA and numerous environmental organizations on the health of the Chesapeake Bay. Maryland is also experiencing steady population increases due to economic prosperity at many levels. The rate of land consumption is outpacing even the rate of population increase. And the combination of the two is rapidly increasing the number of vehicle miles traveled in the state. The effect of this growth threatens to undo much of the environmental progress made in efforts to clean-up the Chesapeake Bay. Meanwhile, the agriculture and forestry industries are trying to cope with fragmentation due to development of their respective resource bases. Maryland agriculture is suffering from low commodity prices and several years of drought as well the effect of globalization of its markets, while absorbing a recent shift to a regulatory rather than voluntary approach to nutrient management.

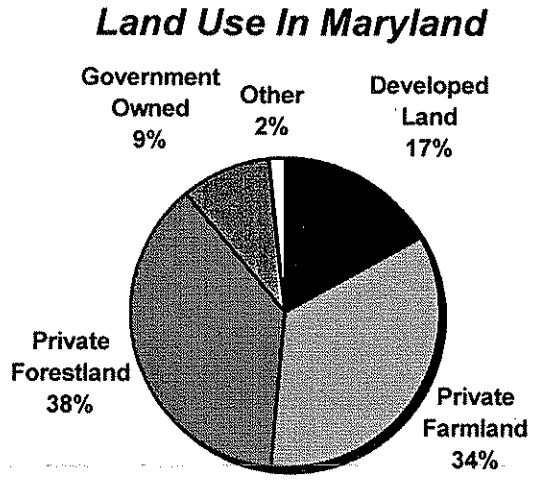
Trends in Population and Development

Maryland is home to about 5.2 million people. It is ranked 19th in the nation in population and has the 6th highest population density of 529 people per square mile statewide. A prosperous economy in Maryland has seen steady population increases over the last twenty years of an average of 50,000 people a year. That population increase has largely been accommodated by conversion of forest and farmland. Even with declining household sizes, the rate of land consumption is outpacing the rate of population increase. The amount of developed land in Maryland increased by almost 50% (over 300,000 acres converted) in the last two decades while population grew by 32%. Nearly all the land developed was converted from farm and forestland. About 80% of the land area that was developed in that time period was in the form of low-density (greater than one acre per dwelling unit) residential development. One of the effects of the amount of low-density development taking place in Maryland is an alarming increase in vehicle miles traveled. Between 1970 and 1997, vehicle miles traveled increased at four times the rate of population growth.

Land Protection Accomplishments

Maryland has been protecting privately owned farms and forests at the state level for longer than any other state. After several decades of losing three acres to development for every acre protected by conservation easements or fee purchases, the gap is beginning to narrow. Program Open Space (POS) in the Department of Natural Resources purchases land in fee for purposes of active and passive recreation, environmental protection and wildlife habitat. Since 1968 POS has purchased over 200,000 acres. By far, the most successful program for protecting land from development while keeping it on the tax rolls

is the Maryland Agricultural Land Preservation Program (MALPP) in the Department of Agricultute. Since 1980 this voluntary easement purchase program has bought and extinguished the development rights on 166,500 farmed and forested acres in all parts of the state. Another 176,000 acres are temporarily protected in five-year agricultural 'districts' while those landowners bid to sell easements to the state. Maryland is also home to one of the most successful programs for the donation of conservation easements. The quasi-public Maryland Environmental Trust (supported by DNR) has been the recipient of donated easements on 62,700 acres in order to secure it for its environmental benefit. Landowners then have the potential to receive property, income, and estate tax benefits. Numerous counties in Maryland embarked on their own farmland protection efforts using purchase of development rights, donated easements through local land trusts, and transfer of development rights. These efforts total approximately 106,500 additional acres in permanent protection. A newer program is the Forest Conservation Act which requires forestland to be protected or mitigated on-site or off when land is developed. Enforced by the individual counties, since 1992 it has protected or planted 26,000 forested acres as part of the development process. The latest land protection effort by the state is the Rural Legacy Program run by DNR. It attempts to protect land with multiple resource values in concentrated blocks throughout the state. Initiated in 1997 as the key rural and open space component of Governor Glendening's 'Smart Growth' initiative for Maryland, it is a competitive grants program for groups of sponsoring organizations and/or local governments to purchase conservation easements (and sometimes land in fee). Among other things, it attempts to expand and connect blocks of land protected by other programs and means. To date, funding has been awarded to 25 Rural Legacy 'areas', relatively small geographically defined portions of counties. The funding awarded to date ($82 million) could potentially protect approximately 38,500 acres. As of June 2000, 11 easements and 2 fee purchases representing 1,411 acres had been approved by the Board of Public Works.



Privately-owned farm and forestland make-up the vast majority of the land area in Maryland.

Agriculture

Much of the following is excerpted from a paper entitled Trends in Maryland Agriculture by Jim Hanson of the Maryland Cooperative Extension Service.

Maryland can be seen as 'America in Miniature' because of the geographical diversity in the state from the Atlantic Ocean to the Appalachian Mountains. For agriculture, this means a variety of types of agriculture by region of the state. In general, the Eastern Shore has poultry and grain crops, Southern Maryland tobacco, Western Maryland has tree fruits, all counties that border Pennsylvania have dairy, and farmers within a two hour drive of Baltimore and Washington raise fresh vegetables and nursery crops. Because of this, changes in crop and livestock production patterns are not evenly distributed across the state and can have keener regional effects than statewide ones.

The Maryland agricultural industry, including food processing, distribution and sales, contributes more than $11 billion in revenue annually, making it the state's largest commercial industry. The industry employs 350,000 Marylanders or 14% of the state's workforce.

According to Dr. Hansen, Maryland agriculture since the early 1980's can be summarized in the following five points:

- "There have been significant losses in farms and farmland. Since the average farm size has remained constant through this time period, loss in farms is directly correlated with loss in farmland. Maryland has lost one farmer and 144 acres every 33 hours since 1980. Surviving farmers have improved their performance by increasing their profitability and value of sales per acre. The smaller group of farmers today produce a higher level of total farm income (adjusted for inflation) than that produced by the larger group of farmers in the early 1980s.

- Broilers are and continue to be very important to Maryland agriculture. Not only are broiler sales the largest component of Maryland agriculture; grain and soybean producers benefit from the large quantities of feed consumes in that industry. The livestock industry (dairy and beef cows, pigs and sheep) is also important, but increasingly farmers use livestock as supplemental sources of income for their farms, rather than as primary sources. There are now more horses in Maryland than dairy cows, pigs, or sheep.

- The fastest growing industry in Maryland agriculture is the greenhouse/nursery industry. Currently, it is the second largest contributor to cash sales behind broilers. In general, high value agriculture enterprises have increased. Growth areas include fresh vegetable production, greenhouse/nursery, and broiler production. Increasingly, farmers are marketing their products directly to the urban populations between Richmond and Philadelphia. In contrast to U.S. agriculture, exports play a limited role in the success of Maryland agriculture.

- Fertilizer use per acre has decreased. Cover crop acreage has decreased, but small grain acreage, which has increased, could be used to accomplish many of the environmental amenities associated with cover crops – when properly managed. Maryland continues to be a leader in preserving farmland.

- Rapid population growth creates opportunities and problems for Maryland farmers. Given the relative size of the non-farm population, the agricultural community needs to proactively seek partnership with that group to develop a common vision for our state that enhances rural communities, increases agricultural incomes and protects natural resources."

Maryland top-ranked agriculture enterprises (% of cash sales)

1979-81 (3 year avg.)		1995-97 (3 year avg.)	
1 - Broilers	31%	1 - Broilers	34%
2 - Dairy	22%	2 - GH/Nursery	16%
3 - Grains/Oil	20%	3 - Grains/Oil	15%
4 - Meat	9%	4 - Dairy	13%
5 - GH/Nursery	4%	5 - Vegetables	5%

1995-97 other: Meat - 5%; Eggs - 4%; Misc. Livestock - 4%; Tobacco - 1%; Hay - 1%
Source: Maryland Agricultural Statistics Service

Forestry

Forested lands in Maryland also provide a multitude of environmental, aesthetic and economic benefits. They provide wildlife habitat, clean air and recreational opportunities. They help protect water quality by filtering nutrients from land activities. Harvesting trees provides economic benefit to landowners throughout the state and supports the State's forest products industry.

Approximately 2.7 million acres or 42% of the State is now forested. In the past 20 years we have seen steady decreases in the amount of forestland. According to the Maryland Forest Service, between 1985 and 1995, 100,000 acres were lost to development. Nearly all (90%) of the forest land in Maryland is owned by 130,000 private individuals rather than by the government or by the forest products industry. The average wood lot size statewide is less than 10 acres.

"Many of these 130,000 individual landowners throughout the State, at some time in their stewardship of the land, will want to realize some financial gain from their land" explains Jim Mallow, DNR State Forester. "If we have a healthy and diverse forest industry, there is a good chance these landowners can earn money from selling their trees. More importantly, if these landowners know they can reap an economic benefit from their land, then they are less likely to clear it for development. Managed forests, even when trees are harvested, remain forests."

According to a recent economic impact study conducted for DNR and the Eastern Shore Resource Conservation & Development Council, forestry and wood products make up a $2 billion industry in Maryland with timber harvesting contributing $230 million. All regions of the state support some level of forestry and wood manufacturing. However, sectors tend to be regionally concentrated: timber management and harvesting in the eastern shore counties, primary wood manufacturing in the western region and secondary wood manufacturing in the central region. The industry employs almost 14,000 people throughout the state and contributes $750 million in value-added economic activity. *(A copy of the entire study is attached in the appendix of this report.)*

At the State level, authority over forest practices resides in the Maryland Forest Service in the Department of Natural Resources. They are dealing with a variety of issues facing Maryland forests ranging from its role in the state's land use policies, how to maintain and enhance a biologically diverse forest base, how to prevent further fragmentation of the resource, and how to navigate the debate regarding economics versus environmental protection.

In 1998, Governor Glendening created the Maryland Forestry Task Force by Executive Order to do a "comprehensive assessment of the issues impacting Maryland's forest landowners and the forest products industry" and to make recommendations. The interim report of the Task Force, which is attached in the appendix of this report, contains recommendations around two themes: 1) actions to encourage retention and management of privately-owned forest lands, and 2) action to promote the economic viability of Maryland's forest products industry. Also in the appendix is a list of agencies, organizations and programs concerning Maryland forests.

The Environment

In its report "The State of the Chesapeake Bay" the EPA's Chesapeake Bay Program lists the Bay's top challenges or 'stressors' to be 1) nutrients 2) toxic chemicals 3) air pollution and 4) landscape changes. The Chesapeake Bay's worst problems are caused by the overabundance of the nutrients nitrogen and phosphorus, which can come from air, land and water. Excess nutrients cause algae blooms that are rapid uncontrolled growth of microscopic plants in the water. Algae blooms block sunlight causing underwater Bay grasses to die. When algae die and decompose they use up oxygen needed by other plants and animals living in the water. Excess nutrients are supplied through point and non-point sources. Point sources deliver nutrients through industrial sites and wastewater treatment plants. Non-point sources deliver nutrients from a broad area across the watershed. These include stormwater from city streets and impervious surfaces in urban and suburban areas, from suburban lawns and golf courses, from farmland, and from automobile emissions falling onto land and water.

The most important goal set by the Chesapeake Bay Program is the 40% reduction of the controllable loads of nitrogen and phosphorus entering the Bay by 2000. In 1997, after reevaluation, the Bay Program concluded that the phosphorus goal would be met, but that the nitrogen goal would fall short reduction efforts were accelerated. Between 1985 and 1997, phosphorus loads delivered to the Bay from all tributaries declined six million

pounds per year. In that same time period nitrogen loads delivered to the Bay declined 32 million pounds per year. An additional 40 million pounds need to be reduced.

Nutrient loadings from point sources are being reduced at industrial and municipal facilities through a variety of actions. The most promising technology to increase nutrient reductions from these sources is call biological nutrient removal (BNR). From 1985 to 1997 five million pounds of phosphorus were eliminated, largely due to a ban on phosphate detergents, as well as upgrades to wastewater treatment plants and implementation of effluent standards. During the same time period, nitrogen loads were reduced by about 16 million pounds from point sources again due to upgrades and use of BNR's. On the other hand, nitrogen loads from septic systems are expected to increase as population increases because so much of the residential development is occurring at low densities. Should the percentage of the population using septic increase as predicted the benefits of nitrogen load reduction from investments in new technologies at existing public wastewater facilities may not be maximized.

Nutrient loadings from non-point sources are being reduced and prevented through implementation of best management practices (BMPs). Agricultural BMPs include vegetated buffer strips, conservation tillage, strip cropping, diversions and waterways, nutrient management and stream bank fencing. Animal waste management practices include manure storage structures, runoff controls from barnyards, guttering and nutrient management. These systems address the handling, storage, transport and utilization of animal waste as fertilizer on cropland. Urban practices include erosion and sediment controls in developed areas. These are applied to industrial, commercial and residential facility construction sites by regulations with local design and enforcement responsibility and to management of lawns and open spaces. Local governments are required to control erosion from stormwater through the NPDS permitting process.

All three states in the Chesapeake watershed – Maryland, Virginia, and Pennsylvania - with successful agricultural nutrient management certification and education outreach programs in place by 1997 makes this region one of the most successful voluntary efforts in the country. Since 1987 Maryland has had a nutrient management certification and outreach program in place to develop plans for individual farm operations to minimize the amount of nutrients – animal waste and chemical fertilizer – being used on farmland. Based on EPA modelling, the state set a goal of having 1.2 million acres (60%) of farmland operating under voluntary nutrient management plans by the year 2000. This goal was reached by December 1999. Nevertheless, mandatory nutrient management laws were passed in Maryland in 1997 and have yet to take full effect.

The past success in controlling nutrients entering the Bay watershed is threatened by the continuing conversion of open lands into low-density residential and commercial development, according to the Chesapeake Bay Program. In its Environmental Indicators, 1999 report they state that "current patterns of land use and resource consumption threaten to undermine 25 years of environmental progress. We are offsetting air and water pollution gains, increasing flooding potential and losing more forests, farmlands, wetlands and sensitive ecosystems".

THE NEEDS-ASSESSMENT PROCESS

Interviews

The purpose of the one-on-one interviews was to draw on the collective wisdom of some of the many thoughtful individuals who work with issues of agriculture and/or the environment in Maryland on a daily basis. As we tried to hone in on the 'niche' role for the new Center for Agro-Ecology, it seemed an efficient way to identify the pressing needs surrounding these issues as well as any gaps in the efforts to date. The comments were recorded in a database and are summarized in the Findings section of this report. The interviews as well as the round table discussions greatly influenced the recommendations of this needs assessment.

Seventy three in-person interviews were conducted during March, April and May 2000 by staff of the American Farmland Trust and the Alliance for the Chesapeake Bay. The confidential interviews were guided by a list of twelve questions contained in Appendix A. The questions were developed by both organizations along with the Maryland Farm Bureau. Interviews were sought with a broad representation of organizations, agencies, interest groups, education institutions, and elected officials. We succeeded in interviewing all sixteen board members of the Maryland Center for Agro-Ecology, representatives of seventeen local and state government agencies, seventeen natural resource industry (agriculture and forestry) groups and interests, twelve environmental activist or land preservation organizations, four elected officials, and six academics. A complete list of organizations and agencies represented is included in Appendix A along with a list of the interview questions.

Round Table Discussions

Three round table discussions were conducted in early May to elicit input from additional people. Their purpose was also to get the 'group think' on some key questions. We wanted to compare their comments with what we were hearing in the individual interviews to see if trends were emerging about what a new organization might add to the work of many already engaged in the problems and solutions. The groups we met with were the Maryland Commission on Agriculture, a joint meeting of LEAD Maryland (Agricultural Leadership Program) and the Water Resources Leadership Initiative (WRLI), and a joint meeting of three Eastern Shore Tributary Strategy Teams. The notes from those discussions are included in Appendix A and the thoughts and ideas expressed are included in the Findings section.

Literature Review

A review of academic literature was conducted by the Center for Agriculture and the Environment at the University of Northern Illinois which is affiliated with American Farmland Trust. The following questions were used to guide the search.

Similar Organizations. What are the existing state, regional, and national centers that are concerned with economic viability and environmental sustainability of the agriculture and forestry industries? What is the mission of each of these centers? How do they function? How long have they existed? What have they accomplished? How successful have they been in meeting their stated mission?

State of the Research. Review of the agricultural economics, agricultural, forestry and ecology literature. What is the state of research on the relationship between agriculture and environment, with a special emphasis on Maryland? What is the state of research on the viability of agriculture, with a special emphasis on Maryland? What agricultural and forestry practices are related to the Center's mission in Maryland?

State of Implementation. What is the state of agricultural and forestry policy research and implementation (for example, farmland preservation programs, economic incentives, regulations), with a particular emphasis on Maryland?

A summary of the literature review is contained in the Findings section of this report. The resulting literature references are contained in the appendix. In partial answer to the question about implementation, a compendium of Maryland organizations, task forces, programs, and regulations related to agriculture, forestry and the environment can also be found in the final appendix of this report.

FINDINGS

What We Heard from Individuals and Groups

The following is a summary of what interviewees and groups who participated in the round-table discussions told us in response to the interview questions, combined here around six central points.

HISTORICAL PERSPECTIVE

- ***How has Maryland agriculture and forestry changed in the past twenty years in response to environmental concerns? What spurred these changes?***

The often-cited response to this question was that greater awareness of the connection between activities on the land and water quality underpinned most of the changes to agriculture and forestry in the last two decades. For the agriculture and forestry communities this meant the relationship between production and environmental management. Concern for the Chesapeake Bay and the Chesapeake Bay Program was cited as the chief cause of this shift.

Until the early 1970's most environmental protection work was that done by the Soil Conservation Service, which for fifty years had concentrated largely on the problem of soil erosion. The beginning of the shift to water quality concerns also coincided, it was reported, with relatively good times economically for agriculture and national agricultural policy that pushed for maximum amounts of land in production. The result of maximizing production was often loss of buffers, hedgerows and wetlands. The result of the focus starting to shift to water quality issues were changes to agricultural practices and types of farming altogether. Another shift in perhaps the last decade in the Chesapeake Bay clean-up effort was from a concern about point source pollution to non-point source pollution. As one interviewee put it, "it changed the perception among farmers that production was their most important contribution. There developed a gap between the impacts of farming and the farmer's perception of stewardship."

Overall, the impression of the interviewees was that agriculture and forestry had changed greatly in the last two decades to try to deal with their environmental impacts. The perception of what spurred the changes differed somewhat relative to the interviewees' direct experience (either personally or professionally) of farming operations. Those most familiar with agriculture (farmers, agency officials, some academics) stated that the changes were largely through education and voluntary and incentive based programs. They often said that the recently passed mandatory nutrient management regulations (which have yet to actually take effect) represent a major change in approach to the industry practices. Others (environmental activist representatives, some academics) tended to think that regulations or the threat of regulations had been the driving force behind changes made in agricultural practices.

The exception to this differential assessment was for the forestry industry. Everyone who addressed forestry, cited regulations – non-tidal wetlands, endangered species, and forest conservation management – as the overriding impetus for change in the industry. Industry initiatives and educational efforts followed as chief agents of change.

Specific changes most commonly mentioned and their impetus included:

Agriculture

▪ No-till and ridge tilling	Farm economics, education,
▪ Nutrient management plans	Farm economics, education, incentives
▪ BMP's/buffer strips, erosion controls regulations	Education, incentives, Critical Areas
▪ Odor control	Urban pressure
▪ Integrated Pest Management	Education
▪ Better pesticide management	Regulations
▪ Ag land preservation programs	Fiscal responsiveness/urban pressure

Forestry

▪ BMP's/harvesting timber	Non-tidal wetlands regulations
▪ Master Logger Program	Industry initiative
▪ Adoption of forest management plans	Education

A point made repeatedly in the interviews about the widespread voluntary adoption of best management practices (BMPs) for agriculture was that they were embraced by operators for two main reasons – the desire to be responsible stewards of the land and the fact that most changes also made economic sense to the farm or forestry operation. Where there was no immediate economic benefit, there was usually a cost-share program that made the change possible.

Also mentioned were changes in practices that had created new worries about their environmental impacts. Examples given such as confined animal feeding operations (CAFO's), monocropping, increased use of chemicals as a component of no-till farming, and hy-grading as a timbering practice.

The round table discussion groups tackled these questions from a broader context of all the forces acting on agriculture and forestry in recent decades in Maryland. They generated the following catalogue of influences:

- Population growth
- Production methods/technology
- Globalization of agriculture – production and markets
- Regulations of all kinds – positive and negative
- Government policies (from federal to local land use)
- Political power shifts in Maryland
- Industry consolidation
- Labor costs/shortages

- Environmental awareness
- Public opinion/activism
- Family lifestyle changes
- Demographics

KEY CHALLENGES

- ***What is the key challenge facing the agriculture/forestry/natural resource industries in Maryland? Why this issue at this time?***

- ***What other issues present major challenges for Maryland's agriculture/forestry/natural resource-based industries and why?***

- ***Relate these challenges to the economic viability of agriculture/forestry/natural resource-based industries within Maryland.***

The primary challenge to natural resource based industries talked about in many different ways was the ***low profitability of the agriculture industry***. More than half (52%) of the respondents listed the agricultural economy or profitability of farming as the key challenge to Maryland's agricultural industry. As an economic use of the land, agriculture relies on economic return to its participants to continue to function. Along with forestry it accounts for the largest land use in the state. The reasons for the threat to the economic viability of agriculture and forestry are complex and due, in part, to forces well beyond Maryland. The other important challenges mentioned by the interviewees tied back into economic conditions either as a perceived cause of problems or as a symptom of the core issue. They included:

Development pressure from urban sprawl is driving up the cost of farmland making expansion of operations difficult and getting started in farming virtually impossible. Haphazard development creates incompatible use situation between farming and suburban residential development. Low profits in agriculture make selling out to development difficult to resist. The scale and form of population growth was the second most frequently mentioned key challenge (27% of respondents). ***Fragmentation*** and the permanent loss of the land base due to development was the chief concern of all those commenting on the forestry industry. The continued viability of farms was seen as connected to forestry because so much of the resource base for forestry exists on farms, linking the future of both industries.

Regulations. Third place (10%) among the key challenges mentioned by the respondents was regulation of the agricultural and forestry industries. Regulations were mentioned often even when not identified as the foremost challenge. No one claimed that regulations in Maryland were going to immediately drive large numbers of farmers out of business. But regulations contribute significantly, we were told, especially when inflexible, to the practical and psychological burdens of farm families today in Maryland. Fears were expressed that Maryland's differential regulatory climate will affect the competitiveness

of agricultural products in the regional, national and global markets in which Maryland farmers operate.

Environmental concerns. After the three primary issues, the intersection of environmental concerns and the business of agriculture and forestry was most often mentioned among 'other' challenges. This was often expressed as a disconnect between the industries and the environmental activist groups. The results included a lack of understanding by the environmental community about what farmers actually do and the balancing act that they are constantly engaged in. This was usually seen as a reflection of a larger societal ignorance of natural resource-based industries. Running throughout all the comments on the environmental concerns was the notion of uncertainty and anxiety about the future. Everyone seemed to realize that not all of agriculture's impacts on the environment have been solved with the recent passage of the nutrient management law. Meanwhile, the scientific understanding of impacts is evolving. What will happen next? Will future issues be dealt with by the same largely unsatisfactory process? Will farmers be forced to absorb more and more regulatory burden in the same economic climate? What if solutions to profitability pose even greater environmental challenges? Although expressed as the ideal, no one seemed to know how Maryland can transition to production systems that can be sustained both economically and environmentally, given the present situation in economics, land use and leadership.

A lack of forestry education and incentives were mentioned by all those commenting on forestry as the second biggest challenge after land fragmentation due to development. Unlike agriculture, forest production is discouraged or prohibited in some land preservation efforts. Private landowners, who hold 80% of the forest resource are often not well informed about forestry practices and the result is often poor yields for timber sold and poor planning for long-term sustainability. The Maryland Forestry Task Force (whose Interim Report is included in the appendix of this report) views conservation and stewardship as maintaining the usefulness of the resource. The forestry industry's challenge in the environmental arena is a differential land ethic described as 'preservation' versus 'conservation'. 'Preservation' suggests little or no harvesting and seems to be the desire of some environmental interests.

The list of other challenges cited included:

- Communication - between groups and about industries.
- Preserving the *entire* production base: land, people, skills, infrastructure.
- Labor issues.
- Large livestock operations.
- Age of farmers and intergenerational transfer of farms.
- Declining quality of surface and ground water.
- Technology fears (e.g. GMOs) among consumers.
- Disunity among sectors in agricultural industry.
- Transportation costs in agriculture.
- Best wood exported because of lack of secondary value-added processing.
- Climate change.

Responding to the question that asked interviewees to relate the challenges they had identified to industry viability became a moot point for many because their 'challenge' had been viability itself. Most often this question was answered by "connecting the dots", regardless of the key challenges named. Below is an amalgamation of those connections described in the interviews.

> *Farmers are producers of essential commodities who cannot control major factors of their business, namely the weather and the price at which they sell their product. Forces beyond their control (globally and nationally) are restructuring the industry to make increasing in size seemingly essential for survival. Rising input costs, labor shortages, and loss of support infrastructure keep profit margins tight. Because of this, management practices that protect the environment can be adopted as long as there is an economic benefit to the practices. Residential development pressure removes prime land from production, drives up the cost of buying land to expand operations, and results in conflicts with residential neighbors unfamiliar with farming. The flip side of rising land values is that selling out for development becomes a tempting option. Selling the development rights, if successful, is a one-time injection of funds that doesn't address the larger picture. For most farmers, retirement is on the horizon and often there is no one, family or otherwise, able or willing to take over the farm due to all of the above. The farm, with it's accompanying forestland, is sold for development. The relative environmental benefits of the farm operation are now lost to the environmental issues associated with development such as impervious surface coverage, multiple land ownership, lawn chemicals, increased vehicle miles traveled, septic systems and loss of habitat. The opportunity to bring those agricultural practices on the former farmland into better balance with the goals of water quality is lost forever.*

PROMISING AND PROBLEMATIC CROPS/PRACTICES

- ***From an economic perspective, what crops/practices are no longer viable in the industry? What continues to be viable or holds promise of being viable in the future?***

- ***From an ecological perspective, what crops/practices appear to pose problems for Maryland's natural environment?***

These two questions met with the most uncertainty by many of the people interviewed and the confusing array of answers is perhaps testimony to the lack information

accessible by individuals working with these issues almost daily. Many interviewees expressed their feelings of not being qualified to answer these questions.

Tobacco was the crop mentioned by almost everyone who responded to the question about which crops were no longer viable, and that was due to social issues rather than agronomic or market problems, we were often told. While the point was made that many crops are under pressure because of commodity prices few respondents would name a single commodity as no longer viable. If something were completely nonviable, they said, we wouldn't see it being grown now, because 'what to grow' is an economic decision. An interesting point made was that when it comes to *relative* viability, success may be more dependent on the skill of the operator than anything else.

Poultry, hogs, milk and vegetables were named as being both 'no longer viable' and 'holding promise of being viable'. Speculation about other crops holding promise of being viable included nursery/greenhouses, commodity cover crops, cotton, genetically modified tobacco for pharmaceuticals, horses, larger scale animal operations, agroponics (including acquaculture), organic farming, intensive livestock grazing, and direct marketing of truck and niche products.

Poultry has the interesting distinction of being mentioned in all categories – no longer viable, holding promise of being viable, and posing ecological problems. The responses to the questions about which crops appear to pose problems were ultimately about practices. By far, the most common response was "it's not the crop, it's the way it's managed" or "all crops pose problems, but stewardship can take care of them". Poultry was mentioned fairly often as it related to waste management. Other agricultural practices that raised environmental concerns were ditching and large scale animal operations generally. Forest harvesting practices such as clear cutting, hygrading and intensive removal were seen as problematic by some.

DEALING WITH PROBLEMS IN MARYLAND

- ***How can the problems/issues you raise be addressed or ameliorated at the state and/or local level in Maryland?***

Many of the problems seem intractable, we were told, because there is no common vision of what Maryland should look like in the future. This was reflected in the interviews by the less-than-universal acknowledgement among the interviewees that agriculture and forestry were the preferred land uses rather than development. Below is a summary of the most often mentioned topics and some specific suggestions that were made.

State Government Actions

It was repeatedly pointed out that Maryland's "Smart Growth" agenda fails to include attention to these *industries* which are responsible for providing much of the open space, stable rural economies, and environmental protections in the state. Suggestions included:

- Address politicization of the issues at state level.
- Have the governor do a statewide initiative like Hughes' did for "Save the Bay".
- Increase state funding to Maryland Agricultural Land Preservation Program (MALPF) and Forestry Incentive Program (FIP).
- Do a "Smart Regs for Ag" like the "Smart Codes" for developers in Smart Growth.
- Tie tobacco buyout money to permanent land protections.
- Look at indirect impacts of master planning and large-scale transportation planning decisions on agriculture and forestry.
- Tie certification of land preservation programs to protective zoning.
- Recognize "contribution to state" for provision of wildlife habitat and timber.
- Look at tax incentives for ag and for land conservation; also at inheritance tax laws.
- Provide money to counties for infrastructure to support "Smart Growth".

Agriculture and forestry are left out of the state's economic development strategy, as well, despite their far-reaching implications for every part of the state. The State should articulate the importance of the agriculture and forestry industries to its citizens, we were told, and apply its economic development, marketing and research resources towards the needs of Maryland farms. Suggestions included:

- Attach real importance to agriculture; including financial tools and availability of capital.
- Look at innovative funding of agriculture ventures; build good business models for farms.
- Help young people get into farming.
- Help local agricultural economic development with funding and technical support.
- Work with businesses to promote MD commodities.
- Develop economic development strategies for what will work HERE and then how to transition.
- Establish training for industry to transition to new products.
- Manage state's own forestland for production.
- Look to farming as energy production.
- Look at on-farm processing and value added opportunities for farmers
- MDA should take the lead in marketing – regional marketing strategy not international.
- Emphasize higher profit margins instead of trying to increase production.

Other suggestions for state action included:

- Engage the natural inventiveness of farmers in searching for solutions and listen to them.
- Spend more money on cost-share programs for cover crops and nutrient management.
- Help find alternative uses of animal waste; help with chicken litter transport.
- Coordinate policies for animal ag so that it can exist.
- Regulate non-point source pollution, increase funding for inspectors.
- Get MDA more involved in fixing CREP.
- Encourage more ethanol use.
- Provide better training of DNR employees.
- Educate MD youth about careers in natural resource industries.
- Put an agriculture question on Maryland's standardized proficiency tests.
- Support agricultural leadership development and exchanges with other leadership groups. The work of Maryland Agricultural Education Foundation, LEAD Maryland and Water Resources Leadership Initiative is a good start.

Local Government Actions

We heard that since land use controls reside at the county level, local governments should assess their contribution to eroding viability by the absence of agriculture and forestry from local economic development agendas and planning and from zoning decisions that erode the land base of the industry. Specific suggestions included:

- Help local farmers with transitions to new agricultural ventures through local agricultural economic development.
- Change zoning and codes to protect the land base for agricultural and forestry.
- Educate own decision-makers and citizens about the importance of agriculture.

University Actions

The notion that Maryland is unique in its position as having valuable agriculture and forestry resources, enormous near-by markets, great development pressure and high levels of environmental sensitivity because of the Chesapeake Bay was brought to our attention numerous times. It was often followed by the wish that research at the University of Maryland were 1) more geared in its research toward helping solve Maryland agriculture's unique problems, and 2) that research was more connected to practical applications.

Environmental Activism and Land Conservation Organizations

Environmental organizations should learn more, we were told, about the industries whose practices they seek to change. Land preservation interests should broaden their attention to real issues confronting farm families and the limited choices available to them. All groups need to accept responsibility and be less confrontational.

Agricultural Industry Actions

The agricultural community, we heard, should become more rigorous in its pursuit of answers to questions raised about the industry's environmental impacts and remain actively involved in the development of solutions. All groups need to accept responsibility and be less confrontational.

COLLABORATION AND ITS CHALLENGES

- ***What means currently exist for resolving the differences among groups that have a stake in the resource-based industries and in environmental activism in Maryland? How effective are they?***

- ***Do you think that a collaborative effort to develop a research agenda, public policy initiatives, and/or outreach efforts to agriculture/forestry communities and to the environmental activist community would be a beneficial way to address these issues? What barriers would need to be overcome for this to occur?***

- ***What would you consider an acceptable outcome from a collaborative effort?***

The most common responses to the question about how differences are currently being dealt with in Maryland were "the legislature and/or the courts". These responses were almost universally followed by the assessment that these were completely unsatisfactory means to solutions. By the time issues reached the General Assembly or the courts, passing laws is the most common outcome. People with various opinions about the need for the recent nutrient management regulations, for example, expressed doubt about their effectiveness. The reasons cited included a natural resistance to mandatory requirements by farmers, the incomplete science on which they were based, their inflexibility or the lack of resources (money and inspectors) of the State to actually implement and monitor them.

A number of focused rather than broad efforts within agriculture were offered as ongoing models of collaboration in the state: the Pesticide Council, the Nutrient Management Advisory Committee, the Tributary Strategy Teams, the Nanticoke Watershed Alliance, Countryside Exchange, Citizens' Advisory Committee of the Alliance for the Chesapeake Bay, the Maryland Commission on Agriculture, and the Agricultural and Natural Resource Committee of the Forum for Rural Maryland. The Forestry Task Force as well as an industry initiative through the Association of Forestry Industries to work with the Environmental Protection Agency on endangered species planning were mentioned as models from the forestry industry.

Virtually everyone interviewed indicated that a collaborative effort such as the Maryland Center for Agro-Ecology proposes to undertake could be beneficial, maybe even essential, to improve conditions in Maryland. The barriers cited, however, were

numerous and often formidable. The goals of profitable agriculture and a clean environment were essentially shared by all, we were told, but the means to get there were in dispute. Others said that one of the barriers was the existence of completely different agendas, that the goal has never been to develop profitable solutions. With regard to agriculture and forestry working together, we were told that there is a rocky history to be overcome, if they are to work jointly on problems of mutual concerns.

The majority of those commenting mentioned lack of trust and mutual respect between the "sides". We heard that extremists – in the environmental and agricultural communities – were using the mistrust and misperceptions to their own purposes. The result was that the 'middle ground', the people in the field, had lost their voice in the dialogue. The level of emotion surrounding the issues often surfaced in response to this question. The barriers named in the environmental community were it's "control of the political agenda", lack of understanding of how the positions they advocate affect farmers, getting press coverage at the expense of public perception of agriculture, giving lip service to agriculture but not following up, and raising issues but not offering solutions. The barriers cited in the agricultural community were the presence of a "siege mentality", leaders more interested in the past than the realities of the present, a fear of ecology and environmentalists, being slow to forget. One of the most sobering statements made that speaks volumes about the sum total of barriers to a collaborative effort was, "Sometimes collaboration is a way for the stronger group to achieve their goals sooner."

Some interviewees used this question to talk about specific barriers to credibility of the Maryland Center for Agro-Ecology itself. Some believed that the creation of the center was a ploy by the University of Maryland to get more funding to continue the status quo. The University was criticized from various quarters for its research being disconnected from applications, for not focusing its research on agriculture and forestry profitability in Maryland, or for not doing innovative research on 'sustainable' production systems. In order for the Center to be credible, it needs to be independent from the University of Maryland, we were told in several of the round-table discussions. The membership of the Board of the Center came up as a potential barrier as well. While there was some criticism that the representation of agriculture wasn't broad enough (it should also include dairy, beef, and organic), most people thought it was probably a good cross-section of Maryland stakeholders. However, ambivalence was repeatedly expressed to us – that while the membership of the Board was "high-powered" enough to get some things done if they had a mind to, it was hard to imagine that the individuals themselves would ever be able to get past their publicly-expressed entrenched positions. In other words, the issues are the same, the leaders are the same. What will be different about this effort?

In contrast, interviewees often answered the question about acceptable outcomes from a collaborative effort with their hopes and ideals. "Identify things we can do better.....keep talking.....maintain stakeholder participation.....find a common agenda (symbolized by the Chesapeake Bay Foundation and the Maryland Farm Bureau bringing a joint initiative to the legislature in the future).....develop a balanced vision of a working landscape with environmental biodiversity..... pick up the pace.....operate by adaptive management – 'if it's wrong, go back and fix it'.....find solutions that are economically viable and

environmentally safe.....create a true climate of give and take.....action from real leaders on profitability.

ACTIONS AND STRATEGIES FOR AGRO-ECOLOGY CENTER

- ***What are your specific suggestions for actions to be undertaken? Can you suggest a strategy for dealing with the issues you have raised?***

- ***If you were the head of the Maryland Center for Agro-Ecology, what is the first thing you would propose?***

Advice given by the interviewees and the participants in the round table discussions can be grouped into four categories: institutional approach, outreach and education, research and information gathering, and policy initiatives.

Institutional Approach

- Keep track of the big picture – farmland and farmers ahead of environmental concerns, which are transitory. Other organizations can take care of those. Don't get distracted by technical issues. Mettle of board needs to be tested. Make one or two meaningful decisions and all Board members stick with them.
- Eliminate politics. AEC should not be about bridging philosophical differences between environmentalists and farmers, it should be about diversification and efficient resource use.
- AEC must stay neutral and not be an advocate for either side; but for information and concepts; board can disagree but continue working. Lobby the mission, not particular actions. Get funding from a neutral/stable source to guard objectivity. Have an advisory board behind the high profile board members.
- Become the logical extension in time of the Forestry Task Force to push for implementation of the group's recommendations (included in the appendix).
- Getting buy-in of agricultural community critical to success
- Seek fact-based objectivity. Focus on doing projects agencies and the university don't do.
- Be adaptive; think big. Work on solutions based on common sense and practical applicability.
- Search out common interests. Act as catalyst/mediator for disputes. Act as facilitator between groups. Work to keep everyone from jumping to conclusions.
- Watch out for the language problem (raised in all three round table discussions).
- Empower the middle ground. Remain positive, don't demonize; any issue can be turned into a positive. Strive for honesty on both sides; remove emotion from discussions
- Need to be more than adjunct to University. If Center is to bring together and manage interests it needs to be independent of any interest, even the university.
- Explore a grassroots vision, rather than that defined by organizations.

- Find common ground; adopt a holistic approach to ecosystem management.
- Concentrate on third bullet in mission statement; "increase statewide public appreciation of....value of farms and forestlands.." rather than starting new programs.

First Steps

- Explain who and what the AEC is to the agricultural community – quickly!
- Get Board together, have retreat with facilitation to build a team feeling within AEC. How well they work together is key to Center's success. Come up with a clear statement of positive mission with opportunities for all groups. Articulate to each group why they should stay involved.
- Formulate a plan of action to address concerns and put in programs to create change and understanding of issues. Need to go through a thinking process to determine their niche. How is AEC unique, and not just in MD? There are a lot of groups like this around. How is it different? Issues may be similar to the Leopold Center but landscape is different so solutions are different.
- Develop standard bearing issues – strong agriculture, open space, a healthy industry is the best land preservation
- Change name (multiple requests); be clear and visible about what you're going to do.
- Develop a structure and process to prioritize and implement projects and to make decisions by consensus. Get western Maryland representative on board. Get a quick-response team on board right away to deal with breaking issues.
- Begin with education of the Board. Don't just talk. Do a project together with a beginning and an end with a measurable result.
- Pick some projects that have appeal to a broad audience and get something done quickly.
- Get sizeable foundation grants; find collaborators.

Outreach and Education

- First Step – Create education format about the Center, its purpose and goals. Talk to farmers and environmental groups to explain AEC purpose.
- Hold regular forum series; provide findings of fact on where we are.
- Bring together groups of experts in roundtable discussions to brainstorm new and novel ideas. But don't go academic!
- Get research results to decision-makers.
- Provide setting for agriculture, environmental and consumer groups to talk.
- Run educational forums on emerging issues (e.g. GMO's) to understand *before* they become crises; educate legislators on these issues.
- Educate teachers, local elected officials and environmental groups, about agriculture.
- Educate the public about how the cheap food policy affects farmers. Remind people of the difference between temporary change to the natural environment (forestry and ag) and permanent changes (development).
- Educate land owners about forest management practices.
- Work with other organizations and task forces, especially the Task Force on Natural Resource-Based Industries, One Maryland Task Force and the Task Force on a 2020 Vision for Agriculture.
- Overcome harm done by media who do not lay out the facts.

- Need to develop feedback with lower levels of Farm Bureau to keep involved.
- Do a public relations slide show for different agricultural sectors – show large family farms.
- Down the road, produce a news organ of some kind.

Research and Information Gathering

- No lack of science on issues; lack of widespread implementation (not enough technology transfers) because research for research sake is what gets funded. There is no baseline data for Water Quality Improvement Act.
- Support research that is practical, outcome-oriented, in context and includes policy as well as science.
- Act as a clearinghouse for national and regional research – seems to be some duplications.
- Synthesize existing research and make it accessible.
- Bring academics together – agronomists and ecologists. Generate background papers.

What to study:

- Document industry economic contribution.
- Study economic impacts of infrastructure on local economies; not now included in industry statistics that say agriculture is largest in state.
- Study effect of nutrient management plans on actual farms – economically and environmentally – now and in later years.
- Look at organic farming on a larger scale.
- Examine sustainable practices from an economic operation viability perspective.
- Look at ways to make a profit from cover crops.
- Investigate using barley and tobacco for east-coast ethanol production.
- Look at statewide investment priorities for land protection.
- Look outside US (e.g. Holland) for solutions.
- Do holistic, socio-economic research to look at input-output management and rising land values.
- Do some credible studies of costs of conservation measures vs. public good. Research by USDA or land grant universities that affirms practices is missing. If done, not disseminated into regulations and standards.
- Research to make connection between preserving farmland and public policy.
- Sponsor policy review of agricultural and environmental programs.
- Look at monitoring and counting issues – important for long-term credibility of agriculture.
- Show who pays additional taxes to support new development.
- Research should be on production agriculture and how to make it more environmentally safe rather than on the environment with agriculture simply a part of it.
- Do a cohesive look at diversification of crops.
- Look at new and creative ways marketing could be done by MDA.
- Look at cultural treatment of forests; nutrient requirements/standards are scarce and in need of research.
- Develop workable economic models and do "what if" testing.

- Look at research gaps at University; physteria claims not supported by research.
- Study impact of chicken sector and agriculture to Eastern Shore.
- Study interrelationships of sectors, rural economy, state economy and open space.
- Study economic viability of farmers; efficacy of state programs (marketing, Rural Legacy, CREP, MET, MALPF).
- Study land values with various land use controls.
- Do analysis of regulations to really see the problems they create for operators.
- Environmental studies should measure agriculture against other sources of pollution such as development.
- Study importance of natural resource based industries to rural economies.
- Get agricultural economic data, separate out retail food, and relate it to county or regional perspective; may be more critical than statewide.
- Look into MaryPIRG collaboration on bio-mass energy production.
- Interdisciplinary research is critical to look at farming systems.
- A research agenda that devises small scale, ecologically friendly farming systems and products.
- Research incentives for alternative crops/markets for special crops.

Policy Initiatives

AEC should:

- Change perspectives at highest levels.
- Provide science-based public policy. People need to know that what they are being asked to do has been researched and is valid.
- Explicitly discuss a policy agenda; find answers to questions in dispute.
- Bridge the gap between forestry and agriculture; look at common ground issues.
- Become advocates for agriculture in public schools.

Desired Policy Shifts

- Promotion of viable agriculture and forestry by Smart Growth initiative.
- Long-term economic investment of the state in agriculture and forestry. Department of Business and Economic Development gets involved in the industries.
- Recognition of zoning as a public policy issue affecting agriculture.
- Transfer of solutions into political action.
- Redirection of funding for international marketing at MDA toward marketing to regional and domestic populations.
- Development of solutions that respect property rights with sharing of costs and responsibilities.
- Arrival at a consensus in the state about importance of the industries.
- Increased funding to Maryland Agricultural Land Preservation Program.
- Use of bio-mass energy production – plants and wood chips – in the state.
- Connection of agricultural viability to the lives Maryland citizens.
- Arrival at a common vision of what we want to be and look like.
- Ability to make recommendations to agencies, governor, and public.
- Balanced recognition that agriculture needs to make living and the Bay needs to be cleaned.

What We Learned from a Review of the Academic Literature

National Perspective on Agriculture and the Environment

What, in a general sense, does the literature on the state and future of agriculture offer? Perhaps most succinctly this:

> "(T)he future of agriculture must address a number of critical issues--including the structure of the agricultural sector, ownership and control of resources, trade, and the environment--that go well beyond the level of income the government should transfer to the sector...In fact, many of these issues will be more important to the long-run health and future shape of the agricultural sector than the transfer payments to farmers and landlords. Congress has tended to focus on payments, to the peril of agriculture" (Doering, 1999).

This last remark--"to the peril of agriculture"--is a hallmark perspective of this literature and analyses. For example Swanson, in a piece entitled *From New Deal to No Deal*, remarks "conceived as temporary responses to the Great Depression and the Dust Bowl of the 1930s, (these) federal farm programs have lasted more than 60 years" (1999). This has been possible, he argues, as the American public has until recently associated rural well being with farm well being. Indeed this was a view which "persisted even after the 1960s, even when rural economies came to depend more on manufacturing and service industries than on agriculture." Of course this--much like in the other pieces reviewed--is just explanation of the past and setup for what currently ails agricultural policy.

These pieces trace policy effects on agriculture over time. They begin from a time when agriculture indeed remained aloof from a great deal of environmental legislation, at least much more than other industries, to the present time when "improvements in the measurement of off farm environmental costs has made it increasingly clear that farmers are not the only ones bearing the environmental costs of degradation (Swanson). As an explanation for this, almost all begin with a description of the rationale behind both the existence but perhaps most interestingly, the persistence of the voluntary subsidy programs, with the difficulty of monitoring pollution from agricultural lands--the nonpoint source problem, also somewhere included. Swanson believes that the persistence of the voluntary program had much to do with the endurance of the belief that "farmers would voluntarily practice conservation during periods of economic prosperity." What has since been discovered he reports, and increasingly clear to research and policy experts, is that "conservation techniques (are) often unprofitable for farmers". This finding also appears apply to nutrient management as well. Beedle for example, in *Nutrient Management Planning: Justification, Theory, Practice*, (2000) makes precisely this point:

> "(U)nfortunately, he writes, "farms that receive an economic incentive [from nutrient management schemes] are often farms that are *least likely* to have environmental problems related to nutrients. On more intensive

> farms with significant potential for environmental problems (e.g., concentrated animal operations or CAO's), the economics are often not an incentive to voluntary adoption of nutrient management planning (Young et al., 1985; Lemberg et al., 1992). In fact, the farmer may incur significant costs for planning and implementing the plan, which is a disincentive to voluntary uptake of the nutrient management process. This is often the source of misunderstanding in discussions of nutrient management policy. Many people assume that improved nutrient management is always economically beneficial and thus cannot understand why voluntary programs are not more successful".

Ultimately, such observation allows Beedle to distinguish and most importantly target or custom regulatory application per farm or area. This is built on an analysis of on-farm nutrient deficiency, balance to surplus. "Targeting of nutrient management programs has been shown," he writes, "to be important to successful implementation."

> "(T)he targeting may be based on existing or potential environmental problem areas, on the types of farms operations, or on more formal risk assessment criteria. Targeting allows better allocation of program resources focusing on desired outcomes. The structure of nutrient management programs can have a significant impact on implementation. An often controversial issue is whether nutrient management goals can be met by voluntary programs or whether mandatory controls are necessary. Generally volunteer programs are preferred. However, depending on the situation, some regulation may be necessary".

Almost identical to this reasoning and outcome, are the policy suggestions which emerge from the May, 1995 Office of Technology Assessment report, *Agriculture, Trade, and Environment: Achieving Complementary Policies*[1]. For they likewise conclude key to structuring more effective federal programs is identifying the strength of private incentives to implement environmental practices. Thus in the situation when farmers have incentives to adopt technologies that increase profit and simultaneously improve environmental conditions ("win-win"), voluntary education and technical assistance can accelerate and expand adoption. For situations in which farmers have insufficient incentive to adopt technologies that provide environmental benefits to other parties, voluntary compensatory (subsidy) programs may be necessary. And when farmers have inadequate incentives to discontinue damaging practices that violate minimum environmental standards, regulation may be necessary (OTA, 1995, pg. 216).

What further accrues from the historical and technological developments laid out by researchers such as Doering, Swanson and Ervin, particularly the ecological developments that have transpired over the last 30 years, are the two other hallmarks of this literature: One is the observation of the increasing role played by EPA in agriculture and two is the undeniable pressure or "lurch" farmers--if only subtlety referred to--must now contend with as a result of out-dated or un-anticipatory federal farm and research

[1] http://www.wws.princeton.edu/~ota/ns20/alpha_f.html

emphases. Indeed, to these researchers EPA plays a larger role precisely as the agricultural community has largely failed to do so.

Thus it is probably no coincidence that just as point sources of pollution are brought under control, EPA is not only expanding into territory that once was the realm of NRCS, but doing so in much more interventionist fashion. Doering may put it best when he writes:

> "(A)n important institutional change is (also) taking place that will be critical in determining which policies are adopted and which are successful. The USDA is losing its place at the table where resource and environmental issues are decided. The particular interest of Vice-President Gore in environmental concerns and the Clinton administration's focus on EPA as the primary vehicle for carrying out U.S. environmental policy leaves USDA out of the loop on concerns about agriculture's impact on the environment."

Swanson too writes, "(I)n fact, EPA today is directly challenging the rights of private property owners in ways that would have been unthinkable to SCS." He continues,

> "(R)ural environmental programs now cover a continuum ranging from voluntary participation to mandatory participation with penalties for noncompliance. The more mandatory a program, the greater the possibility that it will directly challenge the perceived rights or private property owners and, consequently, the greater the potential for conflict. Mandatory compliance presents a conflict within the federal government as well because federal interventionism cuts against the prevailing preference for a less intrusive and smaller federal government."

An article titled "Does Nature Limit Environmental Federalism?" which includes a case study of nutrient control for the Neuse River in North Carolina, raises the same issue, but makes a compelling case that a growing technical and theoretical sophistication clearly raises the specter of a persistent *trans*-boundary authority.

What this *means* for farmers is not missed on the 1995 OTA report. They perhaps most ably capture the resultant bottom line such emphasis--what increasingly *is* the product of ever more sophisticated ecological understanding (see for example Jerry Franklin's 1999, *How Science Altered One View of the Forest*)--means for farmers:

> "(T)he prospect of future regulation to protect endangered species, control coastal zone water pollution, or address other environmental issues adds more uncertainty for farmers in planning their production operations...For "(t)aken as a whole the current mix of regulations, voluntary programs, and compliance schemes neither cover the broader set of environmental priorities nor operate efficiently. As matters stand [1995], there is no clear set of environmental objectives and priorities for the agricultural sector,

> and excessive costs for producers, consumers, and taxpayers, as well as environmental losses, result." (pg. 10).

Lest it be thought the 1996 Farm Bill and Freedom to Farm changed this basic dynamic, Ervin in 1998 still finds it necessary to ask: "(H)ow can the market and institutional failures that hinder more environmentally useful R&D be overcome?" To which he replies--given both the public's desire to shrink government and the highly diverse nature of agro-environmental impacts--through three means:

- Setting clear, measurable environmental objectives and performance standards;
- Developing tangible and significant incentives that reward progress toward those objectives;
- And using market based mechanisms to achieve cost efficiencies.

However, it does not appear sufficient simply to phaseout--as Congress began in 1996--the longstanding government programs and force farmers to base production decisions on market prices alone. For

> "(f)rom an environmental perspective, market prices do not give farmers perfect signals unless they reflect all the environmental costs (and benefits) of their actions. Prices, in fact, are often deficient in this respect. For example, the cost of water pollution originating on farms is not reflected in the price of fertilizer" (see Swanson's point above).

OTA and others are predictably critical of the current distribution of federal agricultural research dollars. The nearly 60 percent of federal monies directed to traditional production emphases, leaving some 10 percent for research explicitly in support of "complementary" technology research and development, is a predicament agriculture currently finds itself. "(T)he low level of funding for agro-environmental research and lack of major program support for complementary technology, will slow, they contend, "the reorientation of public research priorities from traditional production emphases to enhancing the integration of production and environmental goals" (13). Concluding from what is clearly the most thorough literature review done up to that time (1995) and more than likely the present, they write, the need is not just (however) for more research, "but for more sophisticated agroenvironmental science" (pg. 87). Three areas in particular must be explored: the functioning of environmental and farming systems and their interrelationships, the spatial environmental conditions that flow from these relationships, and the dynamic implications of these conditions for environmental health.

> "An agroenvironmental system approach parallels a shift in emphasis from on-farm, on-site environmental concerns to linking on-site practices with off-site conditions and, indeed with the total agroenvironmental system. The fundamental research questions are not whether interaction between agriculture and environmental system occurs, but how it occurs" (pg. 89). (See especially pg. 88, "Who Answers Key Scientific Questions on Water Quality?")

The theme running throughout the critical perspectives summarized here is that maintaining the status quo--either in farm programs or agricultural research-- in face of such overwhelming change, development and accumulation of knowledge--is bad for farmers. What has resulted is a farm community seemingly unprepared or out-of-step with the lead or charge newer ecological based understandings are precipitating. Of course, this is Doering's point: current farm programs ironically act "to the peril of agriculture". What Ervin calls the "social efficiency" of agriculture is apparently under serious review. Thus the policy options under discussion in this realm

> "(T)he quality of water, the diversity of wildlife, the character of rural landscapes, and other non-market goods have risen in value over the past few decades to the point that agriculture's responsibilities and opportunities in these areas are shifting. It is in agriculture's interest as well as those of the entire rural community to find ways to meet those new responsibilities. What is needed now is the strategic vision to start afresh".

These developments therefore suggest, he concludes, "that continuing to rely on voluntary-payment approaches to agro-environmental management is risky for both agriculture and the environment". In their final chapter entitled "Opportunities for Redesigning Policies for Agriculture, Trade and the Environment, OTA clarifies this "risk" and the consequences to both agriculture and the environment:

> "(T)he up shot is that the current information base lacks comprehensive data on environmental conditions, the relationships between agricultural and environmental systems, and related biological health issues that are precise enough to guide policy making, program implementation, and technological innovation. What potentially results thus is the risk of acting too late or too narrowly to address environmental quality problems (see controlling for N but not P in Maryland), and the [resultant] risk of over regulation and lost competitiveness" (pg. 212).

Direct References

Beedle, D.B., O.T. Carlton, J.S. Bailey, 2000, "Nutrient Management Planning: Justification, Theory, Practice," Journal of Environmental Quality, 29: 72-79.

Doering, Otto, 1999, "Farming's Future," Forum for Applied Research and Public Policy, 14: 42-47.

Ervin, David, Ford C. Runge, et al., 1998, "Agriculture and the Environment: A New Strategic Vision," Environment, 40: 8-15.

Office of Technology Assessment, May 1995, *Agriculture, Trade, and the Environment: Achieving Complementary Policies.*

(See also the excellent, OTA, Sept. 1995, *Targeting Environmental Priorities in Agriculture: Reforming Program Strategies*; see in relation, Clive Potter, 1996, "Beyond Soil Conservation," Environment, 38: 25-27.)

Smith, Kerry V., Kurt A. Schwabe, Carol Mansfield, 1997, "Does Nature Limit Environmental Federalism," Resources for the Future Discussion Paper: 97/30.

Swanson, Louis, David Freshwater, 1999, "From New Deal to No Deal," Forum for Applied Research and Public Policy, 14: 84-89.

Centers with Similar Missions

The appendix of this report profiles 16 centers, often referred to as 'sustainable agriculture centers'. Ten are affiliated with universities and six are independent. Except for the University of Vermont Center and the Wallace Institute in northern Virginia, all of the centers are located in the mid-west and western United States.

Most of the university affiliated centers were founded at about the same time, late 1980, early 1990's. According to Anderson, at that time, much was happening in the field of sustainable agriculture and many centers were responding to this. Over the years these centers grew as more and more issues were identified in the area of sustainable agriculture. The beginning Sustainable Agriculture, Research and Education (SARE) Program, authorized through the 1985 Farm Bill, greatly boosted interest in sustainable agriculture at the university level which was the first time USDA funded sustainable agriculture. The independent, non-university centers got their start about a decade early and it took the Sustainable Agriculture Coalition about that long to lobby Congress for money to be designated for sustainable agriculture.

Funding for the university affiliated centers ranges from about $350,000 to $2.6 million, while the funding for independent centers generally have more than $1 million in their annual budgets. Most university affiliated centers have direct legislative appropriations through the university and external grants which are primarily designated for projects. All receive at least some outside grants. The independent centers all receive private grants as well as federal funding.

Staffing of the centers ranges from 1 to 10 people for the university centers and up to 27 full time staff for independent centers. Missouri's Alternative Center has the fewest personnel with two, with one person designated for project management. The California Program is the largest with 10 people that make up an equivalent of 6 full-time employees.

University Affiliated Centers

Center	Year Est.	Funding	Personnel	Program
IA – Leopold	1987	$1.6 Million	2 full-time staff	Annual conferences and reports
WI – CIAS	1989	$350,000	3 full-time 5 part-time staff	Strong Citizens Advisory Council, short courses for farmers
MN – MISA	1991	$425,000	5 full time staff	Strong legislative support, relationships with grassroots org's., impact on ag students at UM.
CA – SAREP	1987	$650,000+	10 people = 6 full time positions	Permanent State funding, broad conception of sustainability including community development and food systems
VT – CSA	1994	??	8 full-time staff	working collaborations among the University, agencies and organizations, farms, and communities to promote sustainable farming systems.
NE – CSAS	1991	$300,000	1 full-time 1 part-time	training extension and the Integrated livestock/crop Farm
WASU – CSANR	1991	$2.6 million	7 full-time staff	facilitation and networking, funding, and education, new linkages and better communication between interest groups, WSU units, growers, agencies, industry, environmental groups, and the public.
KS – KCARE	1997	$400,000	2 full-time 2 part-time	identify research, establish interdisciplinary working groups between KSU and organizations outside of KSU
MO – Alternatives Center	1988	??	1 project manager	Strong farmer contact
UI – ASAP	1989	$120,000	2 full-time staff	Newsletter, website, on-farm research.

Independent Centers

Center	Year Est.	Funding	Personnel	Program
MD – Wallace	1983	$1.0 million +	10 full-time staff	policy research and analysis necessary to influence national agricultural policy.
MT, AR – NCAT*	1975		25 full-time staff	promoting sustainable technologies and technology transfer, including nationally-recognized work in energy and resource efficiency and sustainable agriculture
IL, DC – CAE	1980	$1.5 Million	7 full-time 3 graduate students	research and policy analysis on urban sprawl and land conversion, on farmland protection issues, and on the economic impacts of transportation infrastructure, land prices, and agricultural policy
NE – Center for Rural Affairs	1973	$2.2 Million	27 full-time staff	reforming federal agricultural policies through policy research
OK – Kerr Center*	1985			Encouraging stewardship, innovation, rural development through competitive grants to farmers
MN – IATP	1986	$2.5 million	20 full-time staff	Domestic and international policy making through monitoring, analysis and research, education and outreach, and information systems management

* information not available at time of publication

State of Research on Agriculture and the Environment in the Region

The research literature reviewed is arranged by category and, in many cases, abstracted in the appendix. The focus of the review was on Maryland and the Chesapeake Bay region. Web pages are cited where available. Also included are web sites pertaining to Maryland in general. We collected for the Center's use, a few contact details of people working in the field of sustainable agriculture.

State of Implementation of Programs in the Region

Information can be found in this topic in some of the research reviewed as well as in the compendium of Maryland organizations, programs, task forces, and regulations regarding agriculture, forestry, and the environment to be found in a separate notebook provided to the Center.

RECOMMENDATIONS

In designing and conducting this needs assessment for the Maryland Center for Agro-Ecology, we were cognizant of two points. First, that the subject of agriculture and the environment in Maryland is presently fraught with tension, in large part, because of a relatively recent, significant shift from a voluntary to a regulatory approach to nutrient management in the state. Second, that Maryland is home to a multitude of agencies, research institutions and non-profit organizations dealing with many different aspects of agriculture, forestry and the environment. We did not embark on the process with a preconceived notion of what an agro-ecology center should look like or what it should do. Instead we sought information and advice on what the pressing needs are for Maryland right now that could be uniquely served by the new Center. We sought the advice of a representative groups of the people who are raising the issues, the people whose livelihood are affected, the people studying the issues, and the people whose job it is to carry out public policy around these issues.

Chiefly, we found a wealth of people who care deeply about Maryland, who have struggled with these issues for a long time, and who want things to be better. But we also found a highly politicized atmosphere where opinions sometimes seemed to be driven by one's definition of conservative vs. liberal, Democrat or Republican. These seem to be especially irrelevant distinctions when dealing with issues as vital to all Marylanders as food, air and water.

We encountered an agricultural community deeply discouraged and under stress due to low commodity prices, a lack of understanding and appreciation by the public, perceived unfair treatment by the media, environmental advocacy groups, and the state administration. The notion that they have been unfairly targeted as a small and vulnerable group of citizens was often expressed. The intense focus in recent years on agriculture's contribution to environmental problems, they say, has caused the public to lose sight of the totality of the sources of the Bay's environmental problems, especially population increases. Lack of attention to viability concerns by the state accompanied by increasing environmental regulations that cut into low profit margins sends the signal from the state that what they do is not valued. Weary of continually being placed in a defensive mode, they are looking for their leadership to be out in front on issues of viability, the environment and protection of the land base.

The environmental activist group representatives that we spoke with, with some exceptions, seemed narrowly focused on certain environmental impacts of particular agricultural practices but had little direct experience of farming and were not particularly knowledgeable or caring about the day to day complexities of the industry. Their strength seems to be the ability to raise issues but they are far weaker on offering practical solutions.

Across the range of interests we listened to, however, trends did emerge from the many answers to our questions. These trends and our reaction to them fall roughly into two

categories – substantive issues and functional issues - and underpin our recommended strategies and actions.

Substantive Issues

Concern about the low profitability of agriculture was the oft-repeated key challenge to Maryland agriculture. Indeed, progress in other areas such as land protection and environmental impacts may be close to an impasse because of the relationship of each to profitability. Like a three-legged stool – it may be about to tip over because the balance has been lost.

Profitability of Maryland's farm enterprises should concern all interests because the landscapes so many people are keen to protect from development are shaped by economic activity. This is an underlying assumption of this discussion and set of recommendations. If this vast area of land is not used to profitably produce food, fiber, or timber, there is little to stop it from 'producing' widespread residential and commercial development. Agriculture and forestry have value both for what they produce as well as for what they are alternatives to. This notion also seems to be the premise for the mission of the Center. If the natural resource based industries were not important there would be no need to work to reconcile their practices with their environment impacts.

Agriculture and forestry as preferred land uses should be a unifying concept across the range of stakeholders. However, our experience with interviews and group discussion showed us that this is not necessarily a universally accepted concept. The Center will need to keep in mind that not all parties understand or are in agreement with this pivotal point.

In this context, actions that support understanding and appreciation of the Maryland's agriculture and forestry industries in the broader community, in our opinion, needs to be at the top of the list as the Center embarks on its mission. That support needs to be for the entire range of agricultural sectors. Maryland agriculture may indeed be moving toward a bi-modal future of very large and very small farms. All scales and types of agriculture will need to deal with its environmental impacts but they must stay in business to do that.

Maryland agriculture is in the throes of major restructuring along with much of the country due to globalization. But it also has half of the United States population within an overnight drive, presenting enormous marketing opportunities. Significantly, it also has the huge challenge of protecting the Chesapeake Bay while it sorts out the economic and marketing issues. Keeping track of the big picture– the economic survival of the industries to enable other goals of stable rural economies, 'Smart Growth', land conservation, and continued improvement of environmental protections – will be crucial.

Functional Issues

Four themes emerged that reflect on the functioning of the Center itself.

- **The need for neutrality, independence and reliability** on the part of a new Center was expressed at every turn in many different ways. The perception exists that Maryland lacks a dependable source for unbiased information on agricultural and forestry impacts on the environment that is broadly trusted. Absent also is a safe place for honest debate and dialogue to occur and practical solutions to be sought. If the Center chooses to become this neutral facilitator, it will have ramifications for how it structures itself, its processes, its funding, and the projects it chooses to fund or engage in.

- **Care with language** will be paramount in all of the Center's dealings. Fuzzy definitions and emotionally charged words, carelessly used, are a source of great frustration to many involved in these issues. The words 'conservation' and 'preservation' are not interchangeable to many who fear a static, museum-like approach to protection of farmland and forestry resources. The careless use of terms such as 'corporate farms' in contrast to 'family farms' confound many who are knowledgeable about agriculture because so many family farms are in fact corporations and one of the largest agriculture corporations in the state is family owned. 'Sustainable agriculture' in the academic community refers to a body of site-specific practices based on agriculture as an integrated biological, economic and social system. It is an approach meant for all scales of agriculture. But in the general agricultural community, the term often means 'small' or 'organic' – and both seem to have potential for only a minor segment of the farming operations. To some it is an affront to 'traditional' agriculture in Maryland that, they feel, has been working hard to make adjustment to their operations in response to environment concerns. If the Center is going to attempt to 'ratchet-down' the emotionality of the debate to the level of rational dialogue, it will need to lead in developing the language used.

- **Inclusiveness** of a broad range of interests in the work of the Center is essential to its credibility. Sufficient representation and involvement from the agriculture industry (traditional sectors as well as organic), forestry and forest landowners, educational institutions, environmental advocacy and land conservation organizations needs to run through the structural make-up of the Center as well as its processes and programs. A broad geographic representation is important as well. Cultivation of partnerships with legislative task forces, financial institutions, economic development agencies, and private foundations to engage them in the problems and the solutions will round out the picture of interconnectedness of these issues.

- **Action will speak louder than words.** The only way to address the skepticism about 'lip service' to ideals of cooperation and mutual respect is to follow through on actions that demonstrate them. As projects are identified that have common ground and work begins on them, meaningful communication among the groups will, by necessity, be the indirect effect.

PUBLIC POLICY

GOAL: *To affect public policy by improving the factual context for decision-making, primarily through information-gathering, communication, and facilitation of dialogue.*

DISCUSSION: This assumes a neutral stance by the Center that attempts to facilitate change rather than to advocate directly on legislative or policy actions. There does seem to be a 'disconnect' between the research being done (and gaps in that research) and decisions that are being made that affect the natural resource based industries. The politicization of these issues may not entirely be due to lack of information but it probably exacerbates the situation. Therefore, part of the antidote may well be getting the appropriate parties talking to one another and supplied with as much information as possible. This isn't meant to suggest a passive role. Connecting the right people with each other and with facts and options can be aggressively pursued and be guided by the stated mission of the Center.

SUGGESTED ACTIONS:

- **Take the lead as the facilitator of a statewide vision for agriculture and forestry in Maryland.** Partner with multiple state agencies (e.g. MDA, MDE, DNR, DEBD), legislators, the University of Maryland, College of Agriculture and Natural Resources and others to initiate the process of looking at the future of the industries in Maryland's unique physical and regulatory environment.

- **Work to fully integrate agriculture and forestry into the state's economic development strategy and actions as well as Maryland 'Smart Growth' initiatives.** Assemble the facts and use the stature and influence of the Board members to present them to the highest levels of the State administration and key agencies.

- **Educate and engage state and local decision-makers in the issues.** Design an educational program that has particular relevance for local and state public officials. Elected and appointed officials will rarely attend general public presentations and are often hesitant to ask questions. Consider relatively small, by invitation only, educational forums and/or tours. Try to arrange them on emerging or on-going issues before they are crises and outside of the state legislative session. Include local planning, economic development, and farmland preservation board members.

- **Assist in the development of leaders.** Establish yourself as a programmatic resource for new and established leadership programs around the state including LEAD Maryland (Agriculture Leadership), Water Resources Leadership Initiative, Future Farmers, Eastern Shore Leadership, and others.

- **Broaden non-traditional partnerships to foster innovative approaches to problems.** Contact the current Task Forces particularly the one designed to explore the creation of a natural resource based economic development authority and another

to examine the Maryland Agricultural Land Preservation Program. Stay in touch with the work of groups such as Audubon Society's Pickering Creek Environmental Education and Md. DEBD's Forum for Rural Maryland, Committee on Natural Resource Based Industries. Establish relationships with local chambers of commerce and other business organizations.

INFORMATION GATHERING

GOAL: *To continually bring complete scientific and economic data to technical, policy and regulatory discussions.*

DISCUSSION: The use of the term 'information-gathering' is deliberate because we found that 'research', in the public imagination, seems to be associated only with universities. While university research is no doubt very important to the issues of agriculture and the environment, there is other important information that can be generated by others. In order to accomplish this information-gathering goal, the Center will probably need to gather, organize, evaluate and sometimes generate studies. It is important not to duplicate the work or function of university departments, the Cooperative Extension service or of any state agencies. This function of the Center should be concerned with identifying and filling the gaps in all kinds of information related to agriculture, forestry and their environmental impacts in Maryland. Technical research about management practices should be practical and results-oriented and then be made available to operators and agencies.

SUGGESTED ACTIONS:

- **Distill and synthesize the current state of research** from all sources in the Chesapeake Bay region on agriculture, forestry and the environment as the basis for becoming a clearinghouse for information on the issues. The process of doing the literature review for this needs assessment has convinced us of need for this function. Hopefully, our literature review will be a start on this process but more needs to be done to understand the exact nature of the research and how it fits into the larger picture. Once a baseline is established, a process will need to be in place to maintain the collection and to continually synthesize the state of research. Establish linkages to Penn State, the University of Delaware and Virginia Tech and the EPA Chesapeake Bay Program.

- **Create research advisory committees** to continually review and comment on the economic and scientific research being done in Maryland for its relevance to the needs of Maryland farm and forestry operators and for balance between economic viability and environmental protection. The Center should convene scientific and economic committees to help identify the gaps and then the Center should consider funding research to fill them.

- **Scientific and technical studies should be undertaken where gaps appear.** The following list is a sampling of some of the perceived gaps in the scientific research

being done. A scientific review committee should be able to confirm whether these are actual missing pieces or if this information isn't widely disseminated.

1. Who is looking at monitoring and counting issues having to do with nutrients and non-point source pollution? How is it being assessed? Is there a baseline of water quality data to measure the effective of the nutrient management regulations.

2. Is anyone looking at the cultural treatment of forests? Are there nutrient requirements and standards?

3. Is research being done on approaches to nutrient management in other water-sensitive places in the world? (e.g. the Netherlands)?

4. What is being done to study the effects of nutrient management plans on actual farms – economically and environmentally – now and in later years?

5. What is the practical potential for bio-mass energy crop production here in Maryland? What needs to happen to make these viable crops?

- **Initiate important economic studies** to better understand the implications of decisions and to create a baseline of data upon which to do strategic planning in the state. We think that our interviews came up with an excellent list of questions in search of answers:

1. What is the agricultural industry's total economic contribution to the state? (This was done for forestry. A summary accompanies this report). What is the economic picture when you separate out retail foods? What is that impact at the county or regional level even if not great (compared with other industries) at the statewide level? What are the economic impacts of agriculture and forestry infrastructure on local economies? Why not identify or develop workable economic models and do "what if" testing?

2. Where are the state's agricultural and forestry marketing energies going? What opportunities are we missing for diversifying production and adding value to products based on connections to the enormous east coast population? What are some new and creative ways marketing could be done by Md. Dept. of Agriculture, Md. Dept. of Natural Resources (Forestry), and Md. Dept. of Business and Economic Development?

3. What is the economic impact of agriculture in general and poultry in particular to the Eastern Shore and to Maryland?

4. Can 'sustainable' agricultural practices be examined from an economic operation viability perspective? Can organic farming be done on a larger scale?

5. Can cover crops be made profitable as well as environmentally beneficial?

6. What is the potential for using barley and tobacco for east-coast ethanol production?

7. What is the large scale, socio-economic picture of management of inputs and outputs for agriculture in Maryland?

- **Conduct or sponsor policy evaluations** concerning the efficacy of a host of programs and regulations affecting natural resource based industries that is not being done by the state agencies or the university. Show whether practices and programs are working. Some examples are:

    1. Look at statewide investment priorities for land protection. Look at the efficacy of state programs such as Conservation Reserve Enhancement Program, Maryland Agricultural Land Preservation Program, Rural Legacy.

    2. Study land values with various land-use controls.

    3. Do an analysis of regulations for their functional and economic impacts on various types of farm operations.

    4. Study the costs of various conservation measures vs. the public benefit.

    5. Research to make connection between preserving farmland and public policy. Show who pays additional taxes to support new development. What are the fiscal ramifications of conversion of farm and forestland into residential development?

    6. Compile data to convey the complete picture of pollution sources for the Chesapeake Bay.

COMMUNICATIONS

GOAL: *To serve as a reminder of the 'big picture' while increasing the accessibility of information and research and improving the quality and breadth of the dialogue.*

DISCUSSION: As with all the Center's initiatives, this piece also needs a commitment from each Board member to stay positive, to create a process of reporting back to their respective constituencies, and to encourage participation by staff and members.

SUGGESTED ACTIONS:

- **Create an education format for the Center** and clearly articulate what the Center is, how it will function and why it is different from other similar attempts to bridge the divides. Get out immediately with the message, especially to the agricultural community.

- **Develop and conduct an education agenda** (forum series) aimed at the constituents of members of the Board and expand to partners on *emerging issues* in agriculture and the environment, before there is a crisis. Examples include genetically modified organism (GMOs), nutrient management elsewhere in the world, biomass energy production.

- **Make a special effort to create an education program particularly for environmental organization staff and members** that involves tours and 'hand-on' farm management experience.

- **Disseminate economic and scientific research findings broadly** to all stakeholders and to legislators at the state and county levels. Package summaries of research and information sources on various subjects.

- **Reach out to the mainstream press** to become a source for background on issues. Meet with editorial boards and develop a relationship before there is a crisis. Have lists of farmers, foresters, landowners and environmental representatives available for reporters to talk to.

- **Find ways to educate the general public** about the meaning of these issues in their lives. Consider supporting the development of slide shows with scripts and available speakers on various subjects in agriculture, forestry and the environment. Develop a news organ of some sort to be a central point for news on the issues.

ORGANIZATION

GOAL: *To create an organization based on a commitment of all board members to clear underlying principles that allow them to function effectively, in spite of differences.*

DISCUSSION: Since this is a new organization, these should be the first steps taken before launching any projects. No matter what organizational structure is adopted, there is no substitute for personal commitment by each board member to making the work of the Center more effective than previous efforts at bridge-building. This Board faces the unique challenge of proving to the broader community of stakeholders that the same 'players' can produce different results.

SUGGESTED ACTIONS:

- **Conduct a strategic planning process** using the results of the needs assessment as guidance. Set short, medium and long range goals. As part of that process examine the make-up of the board for inclusiveness and expand it if necessary. Consider other representatives from more agricultural sectors and look for geographic distribution, especially southern and western Maryland. Agree to a set of principles that will guide your decision-making. What will the functional role of the Board be? How will others participate in the process s to choose projects, topics, and direction? How much money will need to be raised to run the Center's educational programs? How will projects be vetted for participation and funding? How will the Board members keep their respective constituencies apprised of the Center's work?

- **Consider changing the name of the Center.** To the community that defines itself as the 'sustainable agriculture' community, the term 'agro-ecology' has a very specific meaning and suggests an organization dedicated to supporting a set of agricultural practices with research and educational programs. For the broader traditional agricultural community, the term is unfamiliar and somewhat alienating. For some it's a sticking point, even if only symbolically. Ultimately the degree of trust that the Center earns across the agriculture community will be based on its actions over time. In the meantime – the mission of the center is broader that what has come to be known 'sustainable agriculture'. Therefore the term seems somewhat narrow and perhaps a bit misleading based on its current popular usage. It may be the first test of the Center's leadership in care with the language.

- **Develop a process** for the Center to initiate studies that are then contracted to others as well for the Center to entertain proposals from outside the Center. Consider several 'tracks'; one that deals with broader policy and economic issues and a second that deals with technical aspects and practices in the industries.

- **Identify a common agenda** and choose issues/projects to begin work on. Economic development and economic studies in both agriculture and forestry appears to be the most obvious and pressing ones. The subject of cover crops is clearly an area of common interest. And bio-mass energy production (plants and wood chips) appears to be an subject worth investigating for common ground potential.

CONCLUSION

This needs-assessment is the starting point of a strategic planning process that the Board of the Center needs to initiate as its first project. The opinions and hopes of many people about agriculture, forestry and the environment in Maryland and about the role of the Center have been collected here. A good deal of information about centers with similar missions around the country in contained here as well as a compendium of organizations, programs, task forces and regulations dealing with these issues in Maryland. We hope that it offers a baseline for reference as the Center decides what it will become.

A review of similar centers elsewhere does not reveal to us a 'wholesale' model for the Maryland Center. There are important strengths in different programs. Maryland may be experiencing a confluence of extraordinary circumstances – keen and widespread environmental sensitivity due to the presence of the Chesapeake Bay, pressure to develop in almost all parts of the state, and real stress in the agricultural community due to both of these plus weather conditions and commodity prices. All of these circumstances are imbued with a sense of urgency. Combined, they suggest to us that Maryland's Center needs to take the broadest possible approach to the natural resource based industries and not limit itself to being only an adjunct to an academic institution or to a label of 'sustainable agriculture' which seems to be vaguely defined and poorly understood in the larger community.

Finally, Maryland is home to a multitude of organizations, agencies, associations and programs dealing with various aspects of agriculture, forestry, land conservation and the environment. It is essential that the Center find its 'niche' in that organizational landscape. We believe that the interview process yielded a surprising degree of agreement on the critical functions in need of attention. Hopefully, this entire needs-assessment provides resources and guidance for the Center's strategic planning process.

APPENDIX

NEEDS-ASSESSMENT
The Maryland Center for Agro-Ecology, Inc

Appendices 1-3 were prepared by Trent Shaskan of Northern Illinois University and Esther Day of the Center for Agriculture and the Environment, American Farmland Trust, DeKalb Illinois.

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