BIOS, BIFS, BASIS-OASIS:
Acronyms for Success in Agricultural Research Partnerships

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Although agriculture is one of our most important industries nationwide, only a small fraction of our nation's research budget is directed to maintaining our leadership in this industry. Research on organic farming systems receives a disproportionately small fraction of that budget. Low research budgets have necessitated that groups work together to maximize the impact of research dollars received.

In California, representatives from the farming community, non-governmental organizations, state and federal agencies, and industry have worked together to provide research that is pertinent to producers. These models will be very important for insuring that research conducted to address the needs of organic farmers has its maximum impact.

The objective of this presentation is to describe the BIOS (Biologically Integrated Orchard Systems Management) and BIFS (Biologically Integrated Farming Systems) models for agricultural research. The BASIS-OASIS (Biological Agricultural Systems in Strawberries-Organic Agricultural Systems in Strawberries) program will be used to demonstrate how partnerships among all stakeholders maximize the impact of the research conducted.

Organic production is a growing sector of the agricultural economy in the United States. More than 1% of all U.S. food and fiber is now grown using organic production systems. This sector has grown by at least 20% annually for the past 9 years. Projections indicate that this trend is likely to continue. A snapshot of the U.S. organic industry's growth can be seen in the trends that are occurring in the central coast region of California, where organic farming has grown continually over the past 10 years.

In Monterey County alone, the value of organically grown products reached $46 million in 1998. Likewise, the number of certified organic growers in the county jumped from 25 in 1994 to 69 in 1998, and the number of acres in organic production jumped from 600 to 4,712 acres. Organic production has been increasing at a rate of 25% or more per year and increased by 43% in 1998 (Lauritzen, 1998).

As the organic industry and the economic clout it represents increase, the need and demand for research on organic production systems will increase. This need will be one of many that compete for funds from an already restricted agricultural research budget. In 1997 it was reported that only one tenth of one percent of the national research budget was being devoted to organic production (Lipson, 1997), while at that time the organic industry represented 1% of agricultural production.

Even if organic research begins to receive funding at a level proportional to its significance, research dollars will be a limiting factor. Low research budgets on the state and federal level have compelled research institutions and outreach groups to work together to maximize the impact of research dollars. Because of the restrictive funding situation, partnerships in research on organic systems will be even more important.

In California, partnerships have developed among a diverse group of farmers, research institutes, and non-governmental agencies to reduce pesticide use. These groups have worked as equal partners to provide research that is pertinent to producers. These models for partnerships and participatory research will be very important for insuring that research conducted to address the needs of organic farmers has its maximum impact. Although several models have been developed, the essential element of all of these models is their emphasis on partnerships with farmers.

One of the largest stumbling blocks in the ability of the scientists to benefit from the first-hand knowledge of the

farmers is the dissimilarity in the language of farmers and scientists (Fry, 1999). Information that farmers have acquired through trial and error over thousands of days in their fields is devalued by scientists because the farmers are not using the scientific terminology that the scientists esteem (Fry, 1999). Technical research can be advanced when scientists take the time to understand what a farmer is seeing and describing (Fry, 1999).

The research models developed in California have tried to eliminate elitist attitudes by having farmers and scientists work as equal partners in research. Their ideal is to foster a "co-learning" environment, with farmers and scientists interacting as equals in the entire research process.

BIOS (Biologically Integrated Orchard Systems) was established in 1993 by the Community Alliance with Family Farmers, a non-governmental agency in California. Through this model, growers are encouraged to act as mentors to other growers by demonstrating whole-systems approaches to orchard management. Growers are provided technical assistance and access to on-farm research. The program has included farmers, a wide array of other crop production specialists, and scientists from state and federal agencies.

The goals of this program are to:
· facilitate the exchange of information based on the knowledge and experience of the farmers, PCAs, and researchers who have pioneered and continue to develop biologically integrated orchard systems;
· create and coordinate local teams that provide leadership, program guidance, and technical assistance;
· monitor and document the effectiveness of BIOS farm management practices and the program model;
· foster collaboration and respect among farmers, agricultural service providers and suppliers, research, and public and private institutions; and
· promote the adoption of the BIOS model within public and private institutions.

A similar program, BIFS (Biologically Integrated Farming Systems), was modeled after the BIOS program and is administered by UC-Sustainable Agricultural Research and Education Program (UC-SAREP). This state-funded program is designed to identify cropping systems that are amenable to the BIOS model and to provide funding and aid to enable the programs to develop. So far nine projects have been identified and funded. Some of the projects closely follow the model developed by BIOS, while others have diverged slightly.

The goal of this program is to demonstrate and expand the use of integrated farming systems that have been proven to economically reduce the use of farm chemicals. The farmers in these projects voluntarily participate in pilot projects to reduce their use of agricultural chemicals. Their most important duty, however, is to serve as mentors for other growers and scientists.

The BASIS-OASIS (Biological Agricultural Systems in Strawberries-Organic Agricultural Systems in Strawberries) is a new BIFS program, which began in January 1999. The cropping system that is currently in place for strawberry production in California is extremely sophisticated. Strawberry production relies on high quality certified transplants, soil fumigation with a mixture of methyl bromide and chloropicrin, an extensive pest management regime, and other labor-intensive management practices.

To develop a biological based production system for strawberry, it is essential that we take an interdisciplinary approach and involve farmers at the start. We have enlisted farmers, PCAs, plant pathologists, weed and soil scientists, entomologists, erosion control specialists, members of the strawberry commodity board, and an industry partner. Our goal is to develop a set of biological approaches for growers to use. We do not expect that this approach will yield one-for-one replacements for currently used chemicals but will provide an alternative system of plant production.

Scientists are working with farmers to develop new cultural practices, while farmer mentors are providing information about current farming practices to other farmers and scientists. In particular, our grower participants have contributed key information that will help with the success of this project. In organic systems we are testing biological approaches developed in conventional systems, including the use of microbial agents for disease control. Additionally, our industry partner is dedicated to obtaining OMRI (Organic Materials Research Institute) registrations for the biological products identified as useful.

Although these models have been very successful, funding may not be available for interdisciplinary research. Organic growers will need to be integrated into the research process in additional ways. Recently

the USDA/ARS at Salinas, CA, has made a commitment to conduct organic research. We are developing a 16-acre organic research plot at our Spence Road field site to specifically address the research needs of the organic farmers in our area. The entire acreage is certified organic.

This will be the first year that research will be conducted on the certified land. To insure that the research conducted on the research site is relevant to organic growers, we have integrated organic farmers into the research process. Our Organic Liaison Committee consists of organic farmers and crop advisors who are interested in helping to escort the program we are developing. At our first liaison committee meeting, the need for such a committee became clear. Our ideas of what information is pertinent to organic farmers did not always coincide with the farmers' ideas. Our approach to managing the organic plot changed as a result of that meeting.

In 1997 Lipson stated, "The national agricultural research system has failed to ... explore (organic production) seriously or help to improve the performance of organic farming systems." This might suggest that agricultural research has left the organic farming community behind. In my experience, the organic farming community has left the research establishment behind and has been solving their own problems. Organic production has matured and practice has surpassed theory. This has happened through organized research efforts such as those of the Organic Farming Research Foundation, which dedicates its research dollars to farmer-directed research and through on-farm development by farmers.

The information gathered by individual farmers has been exchanged through grassroots meetings such as at the Ecological Farming Conference put on by the Committee for Sustainable Agriculture or the Lighthouse Network of CAFF.

Organic farmers need to be a major component of all organic research because:

- they are the leaders and experts in this field where so little research has been conducted;
- they have already begun to answer questions perti nent to their production systems;
- they have defined organic agriculture; and
- without integral understanding of what is happening on organic farms in any region, scientists may spend

years researching questions that are no longer

It is rare that growers are considered partners in research programs, but it is essential that scientists seriously consider the information gathered by these experts when conducting organic research. I propose that without integrating organic farmers directly into the research process, the research establishment will be left farther behind.

Additional Information

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CAFF (http://www.caff.org)

UC-SAREP (http://www.sarep.ucdavis.edu)

OFRF (http://www.ofrf.org)