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Trends in Alternative Cropping Patterns and Strategies for Research

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Thank you, it's a pleasure to be with you today. I am reminded as we get into this discussion to reiterate what has been said already, that there are no silver bullets. As many of the speakers we've heard this morning are indicating, we're not aware of one alternative. Certainly, there are a lot of alternatives that ought to be considered, and that people make money doing, including organics and some of the ideas that are on the program this afternoon—including the ones I'm going to discuss. But the universal alternative doesn't exist, and in fact for some people the good alternative will be to continue to produce tobacco, which of course is not precluded by this discussion. Each farmer has to consider what their resources are and what the market dictates. This means that we have to figure out who our competition is—it probably includes people sitting in this room.

So, we need to think about research and specialty crops. In my presentation today, I'm going to draw heavily on research conducted by the North Carolina Specialty Crops Program. Jeanine Davis and Keith Tyson operate an excellent program throughout the state. Jeanine is located in the mountains, and further work is being done at the R.P. Cunningham Research Station located in Kinston, NC.

Trends in NC Agriculture

Figure 1 provides some indication of what's been going on, and I would characterize this as one possible view of North Carolina Agriculture. If you look at net farm income in 1980 and in 2000—and these figures are not deflated but are nominal values—you can see that it's increased about 288% since 1980. If you look at net income per farm, it's gone from about $8,700 to $54,000, an increase of 528%. So, some of the people who continue to farm have been successful. This includes some of our specialty crop producers, some of our traditional fruit and vegetable producers, and obviously our poultry and our swine production. Good or bad, these producers have contributed to the increase in these numbers. So generally, we do have a situation where agricultural income has continued to increase—even with the impact of Hurricane Floyd last year—and there are some people making money in agriculture in North Carolina.

At the same time, we have a situation where the number of farms is continuing to decline. This is of course true nationwide. It's a continuing concern, and leads to questions about the future of agriculture. When I talk to people—whether about specialty crops or traditional fruits and vegetables—one of the questions that I often ask is: "are your kids continu-

	1980	2000
Net Farm Income	$802 million	$3.1 billion
Net Farm Income per Farm	$8,700	$54,500
Number of Farms	91,000	57,000

Figure 1. One View of North Carolina Agriculture

ing to farm with you? Do you have children who are interested in farming?" Universally, I used to get a response that "no, they're going to do something else." In the last couple of years, however, I have had a few people say: "well, I do have one niece who's maybe thinking about coming back" or "I have one son who's maybe coming back from college." So, there has been a little bit of a turnaround in recent years. And this situation, where your kids are going to continue on, and be fifth or sixth generation farmers, is a little different from a situation where you know you're going be out of agriculture, and your land is your retirement plan. In the former scenario, we need to consider solutions, and try to diversify.

When thinking about our choices, there is a crop planting hierarchy that I think is important to think about (See Figure 2). Traditionally, many farmers have concentrated on low value, annual crops, at the bottom of the hierarchy. This would include corn and soybeans, for example—it's a large acreage, mechanically harvested, the government provides a good floor for the price, and we can participate in government programs. So, many farmers said, "that's a good deal, I can make a living from it." Many farmers, however, found that they were getting profit squeezed. So they stopped looking at low value annuals, and looked to low-value perennials, such as irrigated alfalfa. This is not a situation where they're making a lot of money, but it's more than corn or beans. Then, once again, you get caught in a round of price squeezes, so you begin to wonder if there's a high-value alternative to these traditional crops. So, we look to things like tomatoes, or peppers. And the last step, now that you have the land, is to say "let me look at high value perennials," and so you get something like Christmas trees over in the mountains or here down east. Now, as you move through this sequence, you're absorbing more and more risk. You've gone from a small and flexible investment situation, to one with a very high fixed cost. So, you have to have the willingness to accept the risk.

If we look more closely at some of these alternative crops, we can see that there has been some increase. Between 1980 and 2000, for example, vegetables increased (in nominal terms) from $117 million to $163 million, a pretty good increase. During the same time, Christmas trees went from a $10 million industry to a $95 million industry. And the greenhouse and nursery industry—which includes a wide range of items, from bedding plants and flowers to vegetables and greenhouse tomatoes—increased substantially, from $80 million to $987 million. If you had told me in 1978,

Commodity		Investment, Fixity
4. High Value Perennial (Christmas trees)		4. Very high, fixed
3. High Value Annual (tomatoes, peppers)	↑	3. High, inflexible
2. Low Value Perennial (irrigated alfalfa)	↑	2. Moderate, flexible
1. Low Value Annual	↑	1. Low, very flexible

Figure 2. Crop Planting Hierarchy Sequence

when I first started in North Carolina, that the greenhouse and nursery industry would exceed the value of tobacco, I would never have believed it. But it does today, and that is something to think about.

It is important to realize that there are different ways of looking at 'alternative agriculture.' One might, for example, look at it as growing nontraditional crops, offering new products, or even new types of livestock. Or, it could simply be a new production system. We have a lot of people now using intensive production systems, such as drip irrigation and plastic culture, and this could be considered a bit 'non traditional.' Another alternative could be to sell traditional crops in unconventional ways, such as direct marketing or Community Supported Agriculture, where you essentially pre-sell your crop to people locally. Will that work for many farmers? No. Will it satisfy some who are not making a lot of money right now? Yes. It's just one of many ways to look at alternatives. Of course, there is also the alternative of off-farm employment or of selling off some assets. A lot of people I talk to begin with a lot of land, and if they continue to lose money, one option is to sell off some of their assets—not as a retirement fund, but as a way to continue to make money, and to be able to continue their way of life in farming.

So, there are a lot of different things we can look at. As I indicated earlier, there is no silver bullet that fits all guns. One of the many possibilities, however, is the greenhouse industry—essentially small fruits and vegetables—and that's what I'm going to talk about here. And I want to begin by talking about some of the fallacies that many people believe about agriculture. The first is the old traditional view that agriculture is defined by the commodity programs, and doesn't include nurseries, shrubs, flowers and specialty products. I still hear this in many meetings that I go to statewide—even at national meetings—but I can assure you that, if this attitude is not already dead, it will probably die soon. It is difficult to continue to try to grow and sell a generic product. If you are trying to sell a supermarket chain a green pepper, and yours is no different from anybody else's; well, this is a dead end, because the business is so structured, and pretty much tied up with twelve month supplies. So, you need to provide added value, you need to offer something that gives you an advantage in the market place. This could be a production advantage, but certainly it has to be something that the buyer wants, and so you have to be attuned to the market.

This leads to a second fallacy, which is the belief that we don't need to market our product, only sell it. I can't tell you the number of meetings I've been to, where someone has said "just give me the name of an honest broker who will buy my product—that's all I want from you marketing guys." But you can lose money on *all* of these crops, believe me, if you don't pay any attention to the details of the market. A corollary to this is the belief that "nobody is growing crop x, y or z around here, so there must be a market for it." Too often, our marketing information is not based on experience, but on what we've heard at the seed store, the coffee chop, or wherever. I've been around farmers most of my life, and I can tell you they'll remember that the price of peppers in the second week in June 1993 was $30 a case on the spot market. What they often do not remember is that the rest of that month it was $3. What we're looking for is stability—trying to market products, rather than just sell them. Marketing and selling are not the same thing—I think most of you in this room are aware of that.

Fruit and Vegetable Alternatives

Now, let me talk a bit about fruits and vegetables. A lot of people have made money with fruits and vegetables, but of course it can be a risky business. And when we talk about a crop hierarchy, fruits and vegetables are pretty high up on the hierarchy. But they can be a moneymaker, and that is why people are interested

in them. Obviously, you have to be able to withstand the off years when you lose money. Most of the people in the fruit and vegetable business are not making money every year. They are happy if they make money two or three years out of five, but when they do make money, they can make a lot of it.

Product diversity is important when it comes to fruits and vegetables. Let me explain what I mean by this, because there has been some change in this area. The ethnic market is much stronger than it used to be, and by the ethnic market, I mean growing particular varieties of crops that are in demand for certain ethnic groups. For example, the Boniato variety of the sweet potato is very popular with Cuban-Americans. If you go to Miami, you will find that all of the sweet potatoes that are sold are Boniatos. So, that is a market niche, and those sorts of ethnic market niches have increased, and they are an example of a sort of market subtlety that we need to be aware of. Another example is the wide variety of tomatoes that are sold in the supermarket these days. When I was in the business 30 years ago, there were three tomato varieties, or three 'Price Look Ups' (PLUs) sold in the supermarket. But if you go into any average supermarket like Harris Teeter or any other today, you will find fifteen different PLUs for tomatoes alone, ranging from grape tomatoes to vine-ripes to the imports from Holland. The supermarket business is a very different business these days. Rather than the 130 produce items that there used to be, there are now about 400 items rung up on the produce key, and that requires a supply chain that is very concentrated and extremely well managed, particularly since you are dealing with perishable items. If you want to be in the produce business, you need to understand how to fit into this supply chain network. Market access is important, and it is not easy.

One way to understand the market system for produce is to think in terms of an hour glass. On one end, there are a lot of produce growers, and on the other end there are a lot of produce outlets, but in between, there are a much smaller number of distributors, and this has important implications for how the market works. Let's start with the produce growers. In the US, there are roughly 28,000 produce growers, and of course they operate on a seasonal basis. And then there are thousands of grocery stores (both independent ones and chain stores, along with supercenter stores), and of course millions of shoppers. Now, where do you think the power exists in the food distribution system? I always thought the supermarkets had the power to dominate things—that they could tell the produce growers what was going on. But the fact is, it's not the growers *or* the supermarkets. The power in the system exists at the level of the distributors—the 350 US buying headquarters. They are the buying headquarters for stores like Food Lion and Harris Teeter. That is the location of concentration in the market, and that is the key to how the marketing system works. This is a global market, it operates on a twelve-month produce supply basis, and this is the biggest change I have seen in the produce market in the years that I have been in it, starting from my time as a produce buyer 30 years ago for Giant supermarkets.

I talk to growers constantly, and I hear things like, "I've got the best darn greenhouse tomato that there is, and I know there has to be a market for it, 'cause this is a high quality product." But the fact is: that tomato will never be in the store unless it meets the buyer's needs, and fits into the slot that meets the marketing system. This is not to say that this is a good or a bad system, it's just the system that there is, and if you want to fit into the fruit and vegetable game, you need to figure out how you can get around it or participate in it—and there are plenty of people who have figured it out. The supermarket chains go to the very large fruit and vegetable grower-shipper distributors, such as A. Duda or T&A and they say, "we don't care where you get your produce, we just want you to supply us with

produce on an even, 12 month basis. We don't care if you get it from North Carolina for three weeks, then from New Jersey, then from Michigan, then from Washington State." The fact is, the large grower-shipper distributor companies are the ones that work the deal out, not just the supermarket chains. It is possible in North Carolina that a grower can act as an entrepreneurial individual, and put together a deal with a supermarket or a chain or a supplier, but they are not ever going to be anything more than a fill-in supplier on a seasonal basis. There are always opportunities to be a fill-in supplier, and you always hear stories about your neighbor selling Winn Dixie a couple of boxes of tomatoes, or even a pallet load every week. Those kind of short-term deals always exist, but they are not dependable or predictable, and the price is not predictable either.

Let me now turn to some recent studies that have looked at what sorts of specialty crops are in demand with buyers. In May of 2000, our friends at the North Carolina Department of Agriculture did a survey of buyers to see what specialty crops they were most interested in. If you are interested in growing specialty crops, I would recommend that you get a copy of this study. Let me go through the survey results. There was a *strong demand for grape tomatoes, colored peppers (yellows, full reds, some greens), seedless watermelons, romaine lettuce, greenhouse tomatoes, leaf lettuce, and hot peppers*. That is not to say that there is a huge demand for these things. We are probably not going to sell them by the tractor load, because of limited demand and because frankly, buyers can get enough from California or Florida. But the buyers are interested in some local supply to fill in the gaps in their other supplies, so for these products, there is a strong demand. The study also showed a *limited demand for sprite melon, kabocha squash, Boniato sweet potatoes, muscadine grapes, pink lady apples, and yellow flesh watermelons*.

We also have some specialty crop research programs underway, and let me just quickly run through some of the crops that we are doing research on. Additional information about the specialty crops research program can be obtained by going to the specialty crops web address which is www.ncspecialtycrops.org

- First, there are two types of herbs—medicinal and culinary. *Culinary herbs* are those used in cooking, like basil, and medicinal herbs would be those used for health, those that have some health attributes.
- For example, we have worked with *echineacea* or purple coneflower, which has health benefits, and we see it in stores. It's used in cold and flu prevention. There is a certain amount of volatility in the price for it, but that is one of the things that the research is working on.
- We have also tried *black cohosh*. It is a perennial shrub, and its roots are used for health problems.
- *St. John's Wart* has also been grown in a number of research stations across the state, in Reedsville, for example. We did not enjoy particularly good stands with this, frankly. It needs well-drained soils. In some cases we made some mistakes, so we are trying to figure this one out. Also, some of the markets for this have been a little soft recently. With all of these medicinal herbs, it can vary a bit, but there are always some folks who will say they made a lot of money (or they lost a lot of money) in this one or that one.
- As for food crops, we have had some success with *sprite melon*—we sold about 800,000 of these. It is basically a small honeydew/large cantaloupe type of melon with a green flesh. It is very sweet. You may have seen them at Food Lion—they bought a lot from us. Harris Teeter bought a a number of loads as well. We are currently working on a deal to sell them in the northeastern US. It is an excellent melon and growers

have made some money on them, although supply is a bit limited.

- We have also worked with *cherry tomatoes*, one variety in particular that is very sweet, and almost golden. It will rival the grape tomato in terms of sweetness.
- There are other kinds of crops as well. Take *pyrethrum*. It is a natural insecticide, harvested mechanically, which can be grown for a processing market. We have had four test plots throughout North Carolina and we have been able to grow it successfully in two of them, so it is a promising crop. A major problem has been weed control, but that is why we have studies and do research, so we are continuing to do that.
- We can also take a look at gourds, such as the *luffa*, a natural sponge.
- We also have some *sunflowers*. In western North Carolina, some growers are creating paths through their sunflower fields and then kids walk through it as agri-entertainment , if you will. Obviously, you can also harvest the sunflower seeds. You get the idea, there are a many possibilities.

I just want to end with one more comment about the difference between a niche market and a market niche (see Figure 3). I think there is a difference between the two, and as you think about specialty crops, I think this is something you need to be careful about. A niche market is something where there is a focused demand and a clear preference for a specific item. An example of this would be an organic tomato. If you walk into a store looking for an organic tomato and you don't find it, you are probably not likely to substitute something else for it (you might try another organic product, but in general you just want that one thing). Contrast this with a colored pepper. If a buyer goes in looking for a yellow pepper and doesn't find it, they are probably willing to substitute a red pepper instead. So a yellow pepper is an example of a market niche, as opposed to a niche market. It is an important difference be-

Niche Market:	**Market Niche:**
• *focused* demand & clear preference for item;	• *broad* demand, where there are a lot of close substitutes;
• *price insensitivity*, so wide range for prices and markup;	• *price sensitive*, so price is very important to buyer;
• local market *saturates* quickly as growers learn about buyer interest	• has *price limits*, so really driven by cost and overall supply situation
• sold in *specialty outlets*	• sold in *mainstream grocery*
• *demand* dominates buy decisions, but often there is easy market saturation	• *supply* availability and comparative price dominate buy decisions
• ***examples:*** organic produce, medicinal herbs, elephant garlic, microgreens	• ***examples:*** greenhouse tomatoes, yellow peppers, sweet onions, seedless watermelon

Figure 3. Niche Market vs. Market Niche

cause it has implications for price, and for the size of the market. With a niche market (like the organic tomato), the customer really wants that one product (focused demand), and so the price is relatively insensitive, but the market is not huge and it saturates fairly quickly. On the other hand, with the market niche (like the peppers), the customer is more willing to substitute, so the price of the item is more sensitive—the price has to be competitive.

Niche market items tend to sell at specialty stores, whereas market niche items are often available in mainstream grocery stores. Just to give you a few more examples, in addition to organic produce, niche market items would include medicinal herbs, elephant garlic, and micro-greens. Market niche items would include the yellow peppers, and also greenhouse tomatoes, sweet onions, and seedless watermelons. I'll stop here, but let me just emphasize that when you make these specialty crop decisions, I think this niche-market/market niche distinction is an important one to keep in mind, because it makes a difference for price and market size. Thank you.