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Overview of Texas Research Program
by Dr. Frank Gilstrap – Texas A&M University

This map defines the experiment stations in Texas. At Chillicothe Vernon we do field crops, vegetables, livestock, range management, and pest management. Don Robinson is the resident director there. I neglected to say that at Beaumont Ted Wilson is the resident director. Then at Corpus Christie we have field crops, mariculture, aquaculture, livestock, and pest management. At Dallas, as Tim Davis said a few minutes ago there is turf management. That is one of the premier programs in the experiment station. There is also landscape plants, forages, field crops, and pest management. At El Paso it is horticulture, field crops, and soil and water quality. Water quality will probably be the primary emphasis at the El Paso center in the future. R.E. Nicholson is the director at El Paso. In Lubbock we have cotton, grain sorghum, vegetables, precision ag systems, irrigation, and pest management. J. Roy Moore is the resident director there. Lubbock is the largest center. Maybe it would be very close to the Weslaco Center but it certainly has one of the premier locations in terms of the center of activity for agriculture and high value agriculture for Texas. In Overton, we do forage, roses, or horticulture, livestock, fruit, vegetables, and small grains. Charles Long who I see here in the audience is the resident center director there. At San Angelo, John Walker is serving as resident director there. The emphasis there is sheep, goats, cattle, and range management. By the time you get out to San Angelo which is in the western part of the state, where there really is not much else you can do besides ranch, there is a real emphasis and need for the sheep and goat programs there. In Stephenville the resident director position is vacant. At that location the emphasis is on field crops and peanuts. Peanuts is the big item at Stephenville location along with forages, pecans, and fruit crops. At Temple Bill Dugas is the resident director. The emphasis is on crops modeling, soil, and water. At Uvalde the emphasis is on field crops livestock, range, vegetables, and water. Bill Holiday is the resident director there. At Weslaco, Jose Amador is the resident director. The emphasis at Weslaco is citrus, vegetables, field crops, ornamentals, irrigation, and pest control. I might add that would also include sugar cane. All of the sugar cane in Texas which is about 50,000 acres, maybe a little less than that, is produced down in the Weslaco area.

How do we get our revenue at the experiment station? You can see that 34% of it is with grants and contracts. Fifty percent of it is appropriated with State general revenue and then 5% is with federal appropriations or the formula money. With a balance like this it is really difficult to drive programs especially priority programs so many people have grants and contracts. That is really what has their attention. And so it takes a bit of finesse to keep faculty pursuing things that are in the best interest to the state, as opposed to the best interest to the faculty members. This is how we spend that money. Just over half of it goes into personnel, but that is pretty good balance. A good rule of thumb I think often is around 75% for personnel. The rest is between fixed cost and operations. We have a substantial part devoted to maintenance and operations. I think the resident directors here in the audience from Texas would say that maintenance is something that we struggle with. Operations is more like the majority of that category. In terms of how we have managed over time, our legislature is much like legislatures in other states. Texas is a very conservative state. Funding I noted has declined slightly. So how do you get down the road with stable budgets and tremendous need? I mentioned earlier that our actual revenue or appropriated funds have grown very little. Over the last 10 years, and actually if you will look at purchasing power of agriculture research, you do it with partnership. We have many partnerships. I will start here at the top with the A&M Systems universities. There are about five of them. We will start with West Texas A&M which is in Canyon just south of Amarillo and John Sweeton has done a superb job of bringing West Texas scientists and students into the program. Then we have equally quality programs down at the Texas A&M University in Kingsville with work that Jose Amador has done. There is a citrus center that is administered down there through Kingsville. In Dallas, Tim is working with UT in Dallas and also with Texas A&M University at Commerce. Tarleton is located close to Stephenville and Praiview A&M is not far from College Station. Other partnerships with A&M include commodities groups. Especially those that have check offs are tremendously important in terms of providing working capital. There are state agencies in partnerships. Federal agencies include the Department of Energy, Department of Defense, Department of Interior, International

Ag Research Centers. The Wheat Ag Research Center in CIMMYT comes to mind. The Agriculture Research Service. We have got a really good relationship with Chuck Onstad. There are three locations where we have really close ties with ARS. We have got Amarillo, Temple and Beaumont. And then we have other universities within the state of Texas, the University of Dallas, University of Texas at Austin, University of Texas at San Antonio, University of Texas at El Paso, Texas Tech are probably some of the most noteworthy universities that we have partnerships with. In terms of what we have accomplished in recent times, we have increased agriculture production by 200%, reduced the cost of labor and production by 25% and we have done this in the face of reduced land use in ag production that has dropped by 21% and then we have increased ag sales of 50%. Like most ag research stations we do research as a full continuum of research from the very basic molecular science. Molecular genetics through developmental and application in technology transfer.. things like new varieties and that sort of thing. Another would be the new application of the new science.

Major existing program areas I want to run through include a very brief synopsis of what we've got. We emphasize sustainable water conservation in planning for Texas communities. This is a very key ingredient for both the research and extension centers at Weslaco and out at El Paso. The ag air quality and animal waste programs are largely at Amarillo and Stephenville and Texas is a member of the Fund for Rural America's the Center for Animal Waste Management. Moving to informatics and system modeling it ranges all the way from very basic models. Most of the work is done at Temple or at other locations such as Beaumont. We have a rice model that provides decision support for plant breeders, helping breeders recognize, what kind of traits they should be looking for and how those traits move from generation to generation. Ranging from that kind of a very basic model to one that is more applied like one that is called "Crop Man", which is a decision support model for farmers to help them recognize what the anticipated cost will be versus what their return on that investment would be. And then another one for animal science which is called "Nutrient Balance", which is a decision support tool for ranchers in animal management.

Precision agriculture: Most of that is done up on the high plains, both at Amarillo and Lubbock. There are two different kinds of ways that they are using precision agriculture. In the one case they are accessing commercial sites for specific technology and things like yield monitoring, GPS instrumentation, variable rate application technologies. On the other hand they are using those technologies themselves in order to conduct research using GPS and GIS technologies to conduct better and more reliable research. Sustainable crop research systems for Texas is a fairly new program for us. It is identified to us by the term profit. It is really focused mostly on grain sorghum. Grain sorghum is a very water efficient, a very drought tolerant crop. It is also one that produces residue or a residual after the crop which benefits the following crop. So grain sorghum has been kind of a step-child in Texas. I suppose it could play a key role in other states as well. We have people looking at new ways of using sorghum in animal feeds and human foods. Also, we are getting producers to recognize the role that sorghum can play in their cropping systems. Beef industry competitiveness is addressing the changing economics of vertical integration which has been going on in poultry and pork for some time. "Foods for Health" is a program looking at nutriceuticals and enhancing vitamin presence in vegetables and fruit. Then we have the imported red fire-ant which is something that has had a tremendous mount of attention for along time. Our legislature appropriated $2.5 million dollars for this. We have some really strong partnerships. What ended up happening was that the scientists at the University of Texas at Austin, Texas Tech , Texas A&M and the Texas Department of Agriculture have come together and they are pooling their capabilities. They are pooling their resources in order to do something very different and we hope perhaps, very significant to manage the fire-ants to a point where it becomes a non-issue.

And finally molecular science. These are things that we call "Tex-Cot", and "Tex Grain" which are legislative incentives. There is $ 0.5 million dollars in each, which is not much money when you talk about molecular science. What we are doing is structuring these until they really provide support to the traditional breeders in the context of marked or assisted selections. Talking about molecular sciences briefly, most of what we have in the field at the research and extension centers has to do with marked or assisted selections. These include working

rice, cotton, sorghum, corn, sugar cane, also herbicide resistance crops. Some very innovative work has taken place recently on red rice. I know there are some people here from states that produce rice and the work that has been done will be published very soon. It will have a tremendous impact I think on management concepts for managing herbicide use or herbicide resistance use on rice, insect resistance and I should add disease resistance crops to things like aflotoxin, which is a major issue. It is a micro toxin. After that, root diseases are the major focus, then crops with enhanced nutrients such as increased oil content in corn and increased amino acid content in soybeans. Really, what we are talking about is value added crops. These are really the crops for the future. They make niche- products possible. I think that is probably the bright spot at the end of the tunnel for farmers in Texas.

Major concerns and risks are faculty salary and competitiveness. It is really tough to keep your best faculty. It is a real compliment on the one hand when your faculty is recruited away to another University but it is a tough thing to replace the leadership and the experience you lose in that case. I think something that is lost besides time, in the process, is not only the faculty's salary but also competitiveness. Lost also are quality programs that maintain good faculty. A full-funding event for structure support is a major issue for us. And it is related to the last one listed down there for us.

Maintenance for Research and Extension Centers: There is a formula that our legislature uses for allocating maintenance cost. All of the maintenance appropriation is devoted just to Brazos County which is where the university is located. While we (Experiment Station) are as an agency affiliated with the University, we get our budgets separately. We don't participate in that formula and this legislative session we've got an initiative that will address that and perhaps get it fixed.

Again I want to welcome those of you that are visitors to Texas. And I wish you a most successful meeting.

Teaching Roles at Research Centers Expanding
Dr. Larry Conners: University of Florida - Distance Education

I would like to talk to you about our experience in Florida with teaching programs that are off-campus centers in the state. We have been at this for about 14 or 15 years. We have acted like we knew what we were doing. Sometimes we did and sometimes we did not. I would like to tell you where we are at the present time. The first thing is our satellite teaching programs out there. Currently we have five of them.

We also have another major proposal in the state. They range from Pensacola to up near Milton then go down the coast to Pierce, to Orlando, Ft. Lauderdale, and Homestead where we have active teaching programs. These active teaching programs are where we offer degrees, we also offer the Masters in Agriculture, with emphasis areas in Agribusiness and Agriculture Education. We offer a Natural Recourses Conservation Masters degree as well.

If you will notice there is one hole in the western part of the state. We do have a major proposal in the legislature which would connect the I-4 and I-75 quarters with all the current politicians that we have in Orlando. The next one gives you a sensing of the undergraduate degrees that we have at various places and what the particular majors are that we offer.

The model that we have chosen is the most politically acceptable that we could get. We depend upon the local community college for the two-year AA degree, the regional state university to provide the upper division support courses and then we teach the professional courses for a University of Florida degree.

It is the same degree that you would choose on campus. So many students out here never step foot on a Gainesville campus and still obtain their undergraduate degree. To give you an example: Out in West Florida, they support upper education courses and the community college would provide the undergraduate two-year degree. Now by upper division courses if you were an agribusiness degree major, for example, you might need to have upper division courses in economics or accounting. Those are courses that you would obtain at a major university. So it is very important for us to maintain a relationship with the local community colleges and the regional universities. If you notice we tend to concentrate in some areas more than others as we flex the nature of Florida in the markets that we have. We did some work and analysis. We found that generally speaking, there is more support for agriculture business, the horticulture sciences, fruits, and vegetables from the Department of Horticulture and Dept. Natural Resources than for any others. We have not put any livestock programs out there. We only have one Center that has significant livestock programs. That seems to be better handled on campus. We support our programs with a combination of actual teaching by faculty, on-site, plus distance education sources delivered with compressed video systems. Our video conferencing network is shown here. For your information, not all of the courses are coming out of Gainesville. Increasingly the faculty out in the centers are teaching the distance education courses that are going around to the other various areas of the state. Over time I suspect that we will see growth in that the faculty that we have in place out there are at an advantage and they relate well to the other centers.

These are the guidelines that we have utilized for establishing programs. First, they are for place-bound students, combination for re-seeking or continuing education. These are students that would not be on the Gainesville campus in any event. They are there because of financial situations, or family situations. There are also a number of Continuing Education Centers. I thought that we would exhaust some re-centers but what is happening is it all seems to apply. Supply created it's own demand. People come and take a continuing education course and they tell other people and it creates a kind of steady demand for these students. You have to get you're AA degree at a community college. You get your supporting degree at the state universities. They love us for that. Another thing in that context is that we have gone to joint-use facilities at Milleton and we have another one planned down in the western part of the state. They rise to the top of the building construction list

in the state so the community colleges and the state universities really love us and we are continually kind of seduced about bringing programs on, because we can help them get buildings, for example.

We teach the same courses and the same curriculum as you get on campus. We find that our research centers are basically very good for exploiting industry relationships for enhancing the educational experience providing industry speakers, tours, and internships. They are probably better than campus in a manner of respect for doing those sort of things. The directors are responsible for administering the program but the disciplinary chair is responsible for the overall curriculum and coordination. We have to make sure that is well understood. You cannot have two horses trying to drive the same sleigh down the road. And we find that we have to have the understanding that the local center director is responsible for running that program but the overall curriculum is the responsibility of the department chair. Funding is obtained for new programs from the state. Local political support probably has made these programs the easiest moneys we have been able to receive in Florida. The speaker of the house has said all politics are local. Coming from Michigan I have been absolutely amazed at how sneaky and ingenious Florida Legislatures are about sneaking money into the budget. We got one center funded and no one could find it in the budget. The speaker of the house, whom I might add is in jail, pointed out that it was in the budget and sure enough we finally found where it was and he had arranged moneys for salaries and positions for a facility and buildings and everything else. It is amazing how in Florida how you can do interesting nice sneaky sort of things like that. Our general policy is to request four faculty, one secretary, two technicians and operating funds for a degree program and then hold the positions open for years to generate the start up costs. Start up costs for the teaching programs, and start up costs to help the faculty with their research & extension stuff are what you have. Our faculty are usually 70 percent teaching and 30 percent research or extension.

The old faculty teachers sometimes teach because we move those moneys around. It has been my experience that at places we have tried this we have the first meeting and faculty at the center fold their arms like this and say "Hell will freeze over before I go on with a teaching program". You find that by the time we get the program going, that about half of the faculty want to teach and usually at least one of the faculty wants to make a major career move to teaching. There is a kind of metamorphosis that takes place over time. If you will look at the negative reaction that the faculty initiates you will find that they can change before you get the program going. There are several reasons for this. (1) The programs are better supported financially (2) These are better facilities (3) and I think that they start thinking this is a really interesting thing that they have not really thought about for their professional career.

We achieve the economies of scale by offering the multiple centers for distance education and we do offer selective minors, that we think are particularly relevant to a particular program. This gives some idea of what we have done. We started out in 1986. We pretended we knew what we where doing and we really didn't know what we were doing. It has taken us a long time to learn some things. It started to go up and it really jumped up because we had one center that had been bounced wrong and all of a sudden it came into being. Then we brought another center on board. It is continuing to escalate. We have a proposal going now, a big one serving the Tampa, St. Petersburg, Orlando I-4, I-7, I-5 quarters. We think somewhere over time we should be up there somewhere near 900 to 1,000 students that we will be serving with the students in Florida. If we evaluate our programs we find that they are first of all a mixture of degree seeking and continuing education students and that varies from Center to Center. It depends upon the nature of the agriculture in the area, the aggressiveness of the Center Director and upon the buildings, advertisement and so on. You get a different kind of mixture of those students. Now you cannot assume that laws apply that state that supply creates its on demand. You are entering into a competitive market. You have to go out there and let people know that you have programs. You have to advertise, you have to work at the local high schools and so on if you want to have students and build up your numbers over time. Because it is a competitive market you continue running. Remember there are community colleges and regional universities sitting out there that are alternatives. So you have to be somewhat aggressive. Courses are typically taught in evening and Saturday blocks. This is a major plus for some people just because

they are not teaching the one 55 minute class 3 times a week. Instead you are teaching 3 hours on Tuesday evening or 3 hours on Saturday morning. Because this is what the students have to have for place bound students to work those courses in. So it does take a different type of model it reminds me of when I was a second lieutenant in the army and many times we were teaching courses of this nature. Instead of a 55 minute course it was a three hour course with a ten minute break periodically scattered in. You must set up the required courses with distance education courses. A good example: You may not have a soils person at every center and you probably need to have a soils course at every center . You have to get a soils course at almost every center so we do it at various instances by submitting them with distance education courses. We teach about 30 to 35 distance education courses that go out of here across the state. You have to have good relationships with community colleges and regional universities. Politically it is a tremendous alliance to build up once you get over that hump on this. You often have better physical facilities at the research centers that you have on campus, because the campus is sometimes 50 years old. At the centers, sometimes, you are working with absolutely new facilities and you have modern updated operating budget. Often, it is just a much better place to teach. The scientists are gaining skill at offering courses at multiple sites. At Bonneville the faculty, for example, have acquired considerable skill by offering its courses among the number across the state. We had to establish a satellite programs committee to deal with faculty development and support questions. You cannot take anything for granted out there if you are doing anything like student financial aid for example, or if you are assisting in curriculum development, and so on. You need support for your faculty and we found that you have to have those kinds of things in place out there and the faculty needs a means to express them. You need an on-campus and off-campus curriculum committee to provide leadership and a disciplinary chair to coordinate the things. You also have to make sure that your chair on-campus and your Center Director get along. Some times a little nudge will do it. Sometimes it takes a good kick in the ass to make sure that people are on the same wave-length. This is because sometimes these are competitive relationships, and you have to get past that stage where it is really a cooperative relationship.

Interestingly, I find that research appointed faculty are sometimes more difficult to develop. Our experience has been that the faculty we have brought in do very well in teaching, but they have sometimes had problems developing programs. We have denied tenure to two faculty, because they are coming in with minor appointments at 30% and frankly the Center Directors don't know what to do with someone that has a 30% research or extension appointment. The Experiment Station has trouble because they are used to a big start-up cost with somebody with 50 to 80% appointment. Now this has caused some problems out there so again the Center Directors and the Chairs have to cooperate very closely. Actually, you need a lead faculty person at the Center and good Center-Chair relationships. There needs to be one faculty member who basically assumes responsibilities for scheduling, maintaining a liaison with campus, and basically handles the curriculum committee leadership and those sort of things. There is a certain cost with that since the Center Director does not have the time or the expertise to develop the program. Lastly, you have to have off-campus distance education to keep other state institutions from establishing other campus programs. If we didn't do this I am thoroughly convinced you would have 6-8 mediocre Ag colleges scattered across Florida. The local political pressures are that strong this way. We control it at the University of Florida. I think we maintain higher quality. We offer the same programs, quality programs as we do on campus but if we didn't do this I can almost assure you we would have a bunch of mediocre and I mean mediocre ag colleges across the state. Our feature program, our big thing that we are working on now, is a proposal that would tie the interstate network together, typically the Orlando, St. Petersburg, Tampa area. This is one that we are currently working on. We thought that we would have a good chance at funding them this year but it looks like money might be a little tight with the recession. We would offer this area in Florida degrees in Environmental Horticulture, Urban Pest Management, Agribusiness, and Natural Resources Conservation. This would tie together our programs that we have at Apoka, Dover, Lake Alfred, Mokely, and Bradenton. And it would be coordinated at the facility on the Hillsboro community college campus in the Tampa area, which would be a multiple-use facility used by Hillsboro, S. Florida as well as us. We think we have an excellent chance of getting this funded. This is an area we would like to work on. If I look at a summary of where we have been, this has acquired new ways of us for doing things. We built relationships with community

colleges and 4-yr universities. First, since we were just starting with distant education we started out with satellite. We experimented until we found what worked best, and learned to work our way through everything. We had to understand that we had to experiment and it took new ways. Second, these are of a political nature and anything in a political nature carries substantial risk. Final thing, is if we had not done this in Florida we would have had 6 to 8 mediocre programs scattered across Florida. A number of colleges offer 2-year programs.

Riparian Buffers
Dr. Wendell Gilliam

I know a lot of you have heard a lot about Water Quality & Riparian Buffers. It is becoming regulation in North Carolina. We have at least three watersheds that by 2003 will be required to have Riparian Buffers. It is being promoted by NRCS across the US and there is good reason for that.

First, some background and some answers to why buffers may be needed and what they will do.

I have been working with these for about 15 years. We do have a lot of information about it in North Carolina. You see here a river in North Carolina that is almost green from beautification problems. I will tell you that if you have a still body of water like this here anywhere and it is not green like this it does not have enough nitrogen or phosphorus. If you have a pond on your property and it does not turn pea green it is because it does not have enough phosphorus or nitrogen. Nitrogen and Phosphorus are real problems when they are too high concentration in water.

You have to have some, otherwise you would not have any fish or anything growing. You do have or can have too much and you have to recognize that. I am sure you are all wondering about the fish kill in North Carolina and the increase in hog production. I am sure you have been told it is because of water control problems. I will tell you this picture I have shown you of the body of water before was taken in 1967. Long before there were any hog problems in North Carolina. I will not say that water problems in North Carolina are larger now than they used to be but it is not due to one single factor like hogs or cows. We have a lot of other things contributing. We have a lot of building going on in North Carolina. That is part of it. People have to go to the bathroom and a lot of that ends up going down the river. We have a lot of golf courses the same as everywhere that you have a lot of growth. We are all a part of the problem for water quality.

For one thing I am going to restrict my talk to agriculture since that is my interest and that is what I do most of my work in. All of you in agriculture know if we are going to have a wheat crop like this we are going to have to fertilize. There is no way in the world that you are going to have a good wheat crop anywhere in the world that I know of and not fertilize. The same with cotton, corn, or any other non-leguminous crop. You are going to have to fertilize and that can be a problem because agriculture systems are very leaky with regard to nitrogen.

We can manage them according to your best agronomist no matter where you are. If you fertilize a grain crop your efficiency is not going to be terribly great. You might get 50-60% efficiency. That is about as well as we know how to do on a grain crop regardless of where we are. This just shows an example from North Carolina. I could get data from any of your states showing the unutilized nitrogen in pounds per acre. Various soils are different.

For North Carolina, the normal recommendation for corn is about 150 pounds of nitrogen per acre. You can see that we have from about 40-80 pounds of nitrogen that is left over that is not utilized by the corn crop and this is on the experiment station doing as good as we know how to do.

Now this is hard for a lot of farmers to accept. Two or three years ago we were having all of the proposed regulations with the guards of the river in North Carolina. Riparian buffers were be proposed as a requirement.

I had a farmer friend call me and he was rather irate. He knew that I was involved in riparian buffers and he was afraid that they were going to be mandated on his farm and everywhere. He says to me "We are not polluting the river". I asked him to talk with me about this for a minute. I asked him how much corn that he grew and he said about 1,000 acres of corn. I asked about his yield which was 100 bushels per acre. You harvest 80-90 pounds of nitrogen, which left 60 pounds left. I asked him where he thought it went. There is always a dis-

cussion about how much agriculture has to do with the nitrogen and water problem. In North Carolina around the Nuse River the people claim that about 50% of the problem comes from Agriculture.

What I want to tell you is what Riparian Buffers are for and what they can do to be a part of the solution. One thing is going back to the leaking of nitrogen. I don't know of any land in the SE where you can fertilize a grain crop and not have nitrogen going down into the shallow ground water. There are a few things like forage crops that are harvested for hay and so forth that can get below the root. But if you are going to grow grain crops successfully you are going to have nitrogen leaking out the bottom of the wet soil. It just happens. So where does that nitrogen go? A lot of it goes into surface water. In North Carolina we have generally 1part to 2 parts per million of nitrate nitrogen in our surface streams. In Iowa, for example, they usually run 4 part to 10 parts per million. I want to show what they do. I want to show why ours in North Carolina and most of the SE usually runs lower. Riparian Buffers are the main source for controlling it. In human areas we are extremely lucky that in most of the South we have Riparian Buffers to protect our streams. Otherwise our streams would be running 8 to 10 parts per million of nitrate nitrogen, because our agriculture is not any more or any less than it is in the midwest in regard to fertilizer.

To show you a riparian buffer we went up in an airplane. As you can see in this stream all the water in this stream either has to go through the woods over or above ground to get to that stream and that is important factor for water quality for that stream.

You can go almost anywhere and see riparian buffers. These are ideal for water quality. To show how they work. An ideal buffer will have a grass filter.

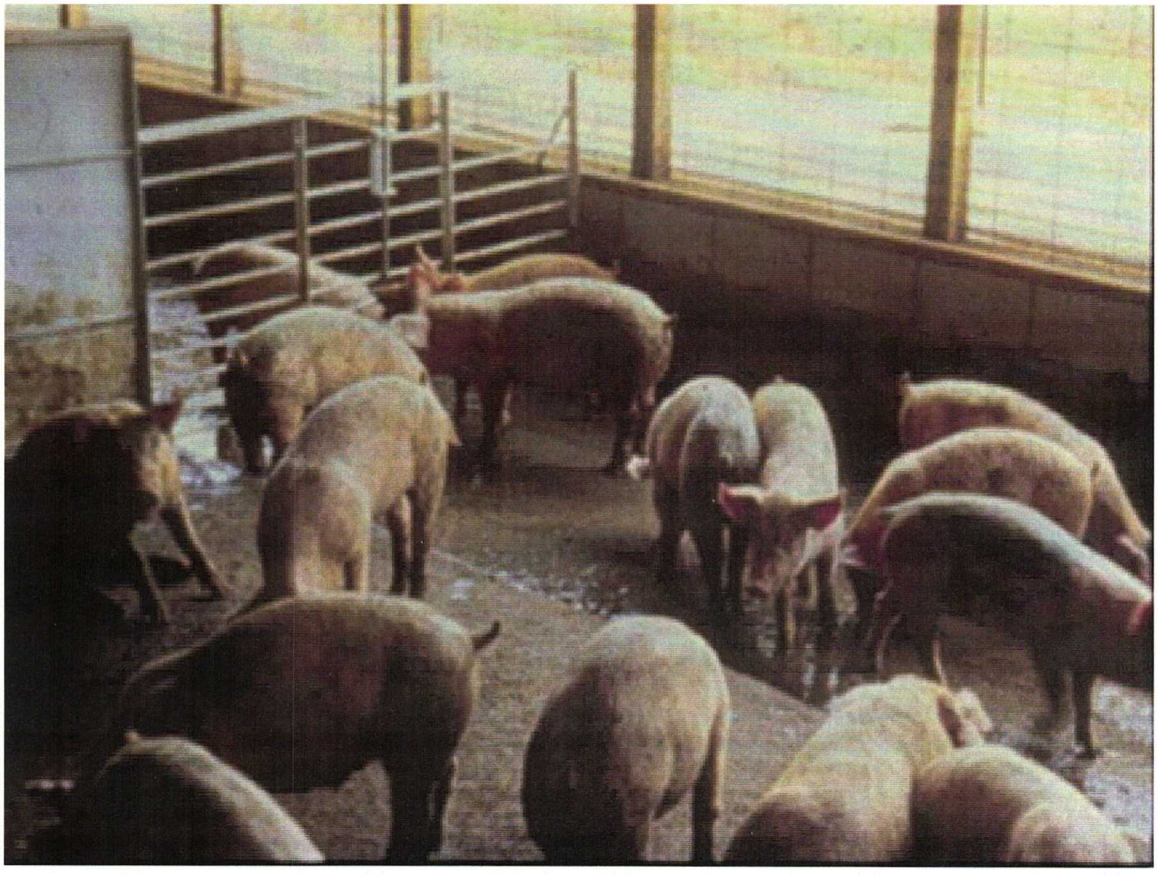
If you have an erosion problem, grass is better than trees for removal of sediment from surface run off. Trees tend to be a little better than grass of removal of nitrogen subsurface flow. So an idealized buffer has grass for a removal of sediment and a wooded area for removal of nitrate from sub surface flows.

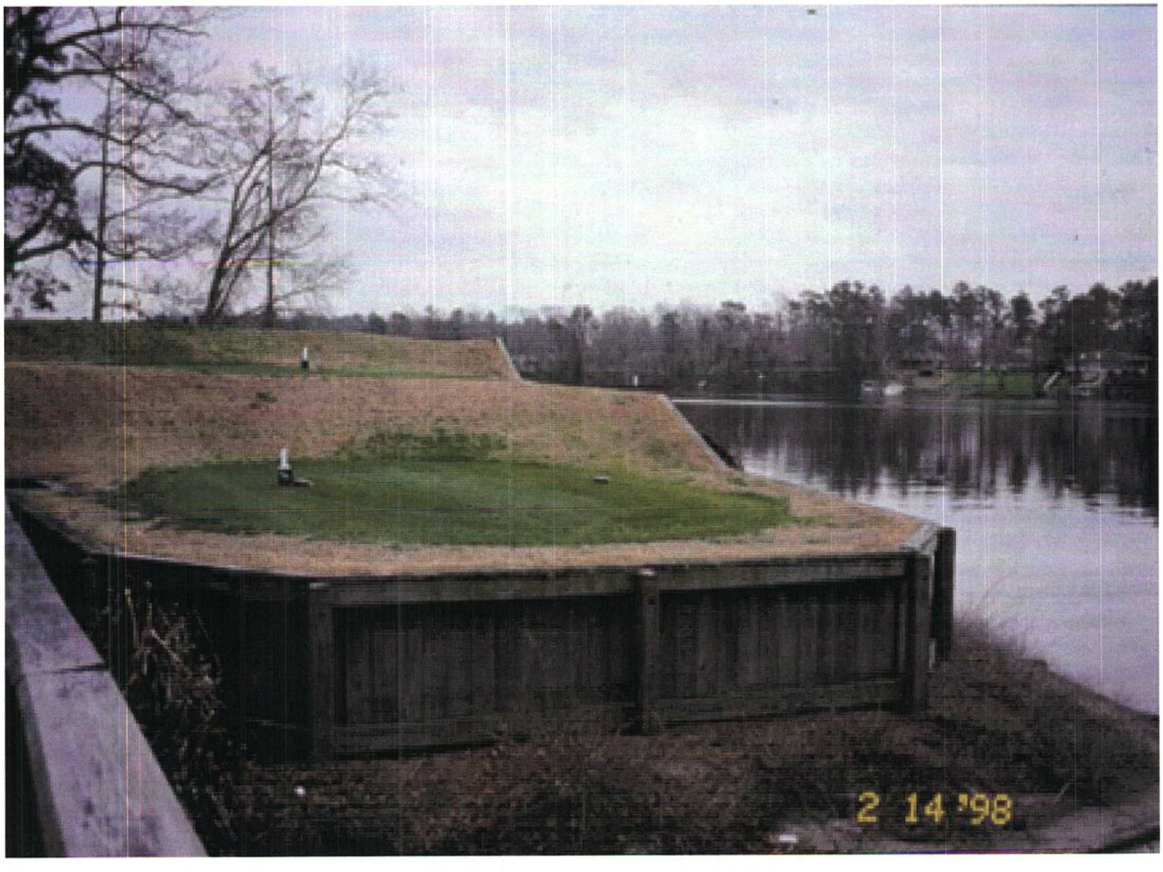
To give you an example of this. This is just an ordinary ditch in North Carolina. We have some groundwater wheels right beside the ditch and right beside this field. Let me show you the nitrate concentration in these ditches. This is distance in the ditch in meters. With this particular field it is running about 17-18 parts per million of nitrate nitrogen in the shallow groundwater. I would say that the average in North Carolina, and I have tested 100's of fields in a research program over the last 30 years, and our average concentration will be very close to this. It is usually between 15and 25 parts per million of nitrate nitrogen in shallow ground water in North Carolina. You see right up against the ditch the concentration is the same as it is out in the field. Going across to the other side where the water is draining in a different direction, you see a little series of wells here. Looking back into the woods you see little strips of wells there. Looking back around you see that creek where all that water is draining towards. Where there are no riparian buffers it is 10-15 parts per million of nitrate nitrogen. Where there is a riparian buffer it is 1 part per million.

These are very effective and there is lots of data in North Carolina and other states that show the nitrate nitrogen concentration with and without the riparian buffer. Buffer regulation for North Carolina is 30ft. If you have a well maintained buffer you can get 80-90 percent removal. We do not get near as much removal of phosphorus because phosphorus attaches to the sediment. We get about 50% removal of phosphorus. In North Carolina I have mentioned we have a mandate to remove Nitrogen from the Nuse River. Actually, we have three rivers now that have done that. Farmers have three choices. They have got to reduce it by 30%. Choices are Nutrient management, riparian buffers, or nutrient management and controlled drainage. Controlled drainage is very popular w/ farmers. They get a better yield from it and get it put in for free. There are 350,000 acres in crop land and 300,000 in forest land. Our recommendation in North Carolina is for a grass buffer when you have a sediment problem, 25ft wooded buffer for nitrate, if you do not have an erosion problem, with recommend 25ft buffer for nitrate and subsurface flow. We recommend a 15 ft buffer for grazed land with less nutri-

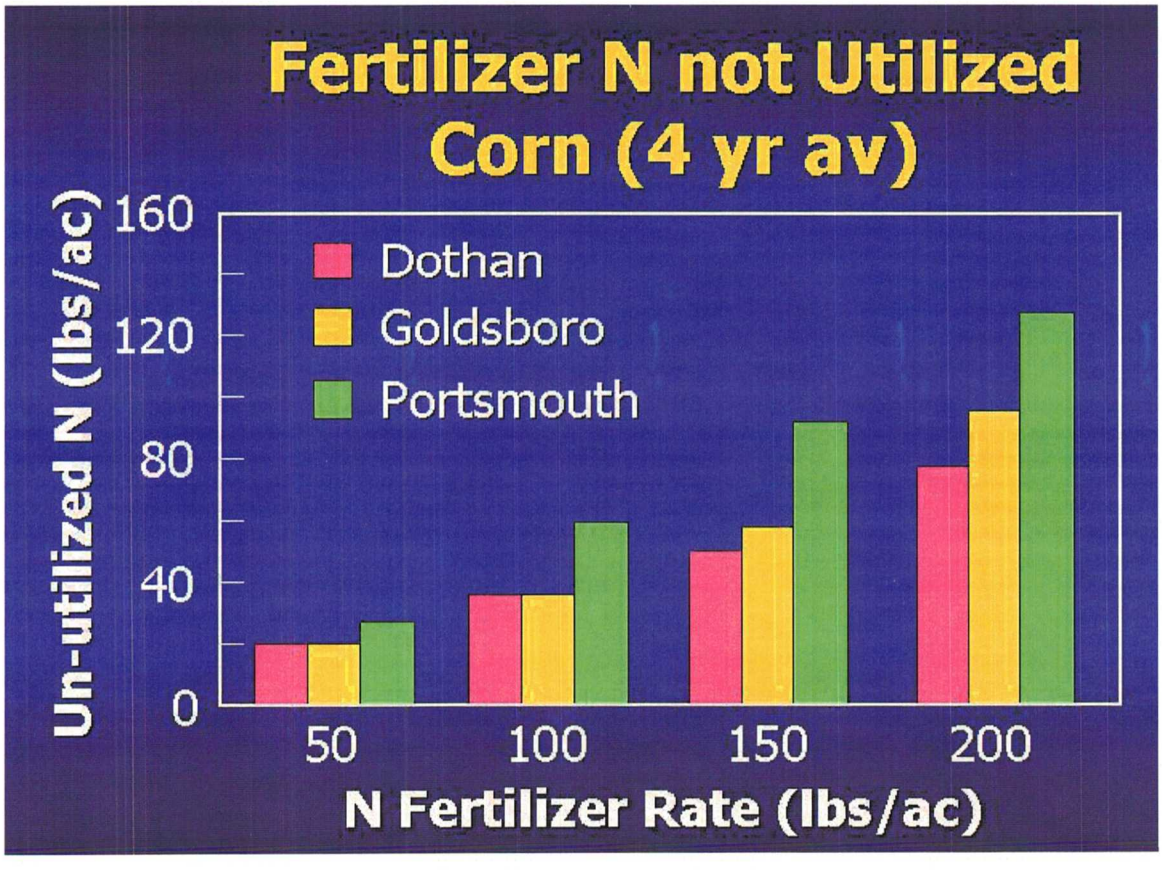
ents. There are some places that buffers are not recommended, deep stream 4-5 feet below root surface. Where the water flow is deep.

I will tell you that buffers are important for water quality. They are not needed for all areas and the need for regulations in places where they will not work does not make any sense to me.




2 14 '98

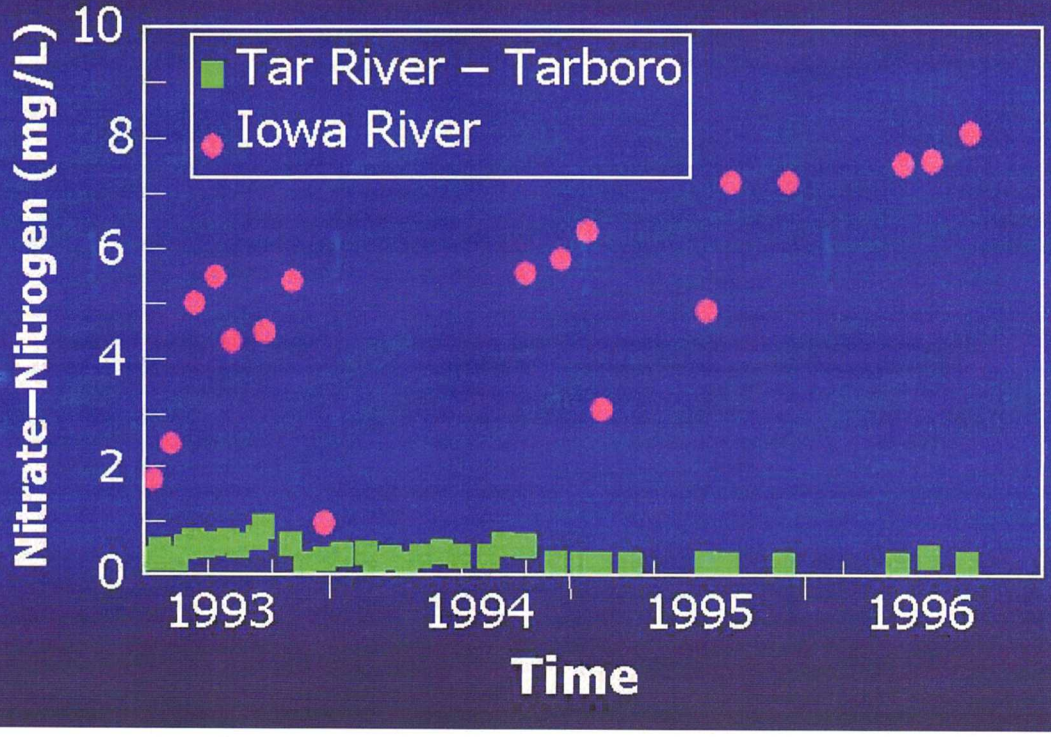
AGRICULTURAL SYSTEMS ARE VERY LEAKY, PARTICULARLY WITH REGARD TO NITROGEN



Nitrate in Groundwater

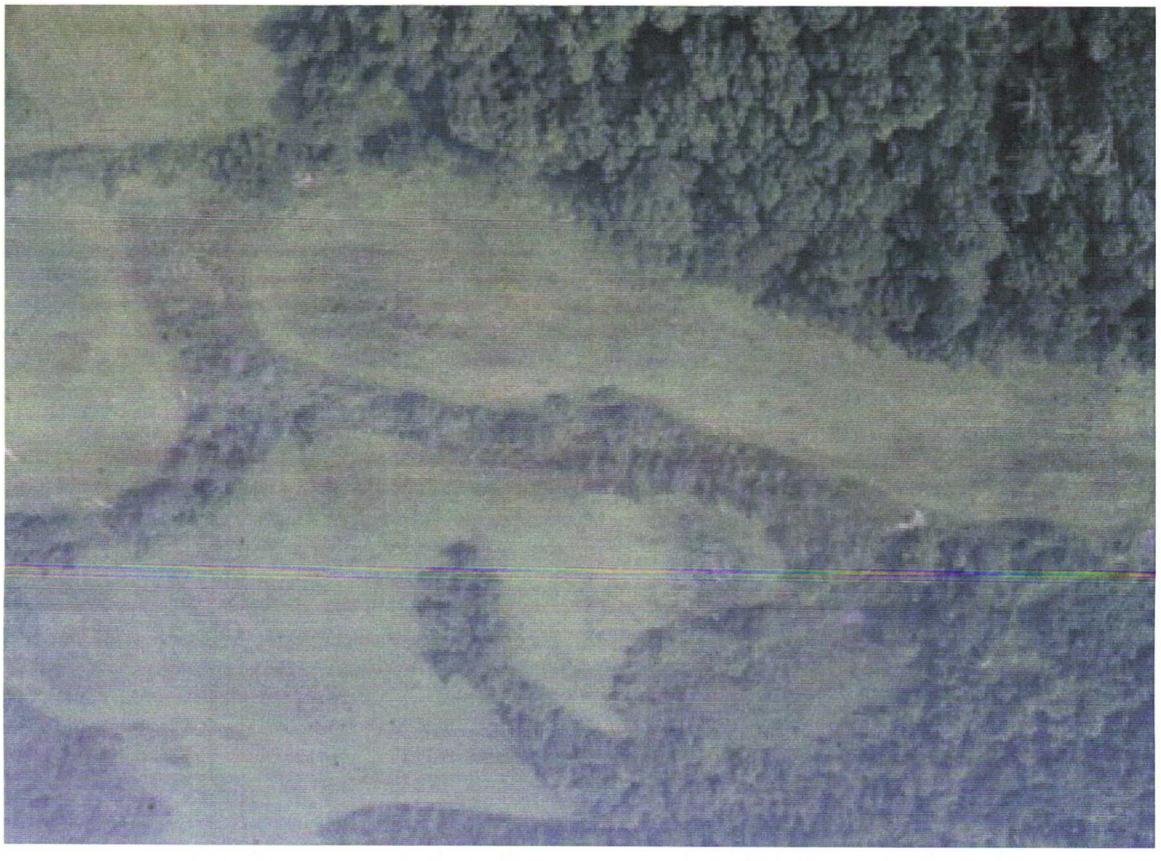
Shallow groundwater below most agricultural fields in North Carolina contains over 10 mg/L of nitrate-nitrogen.

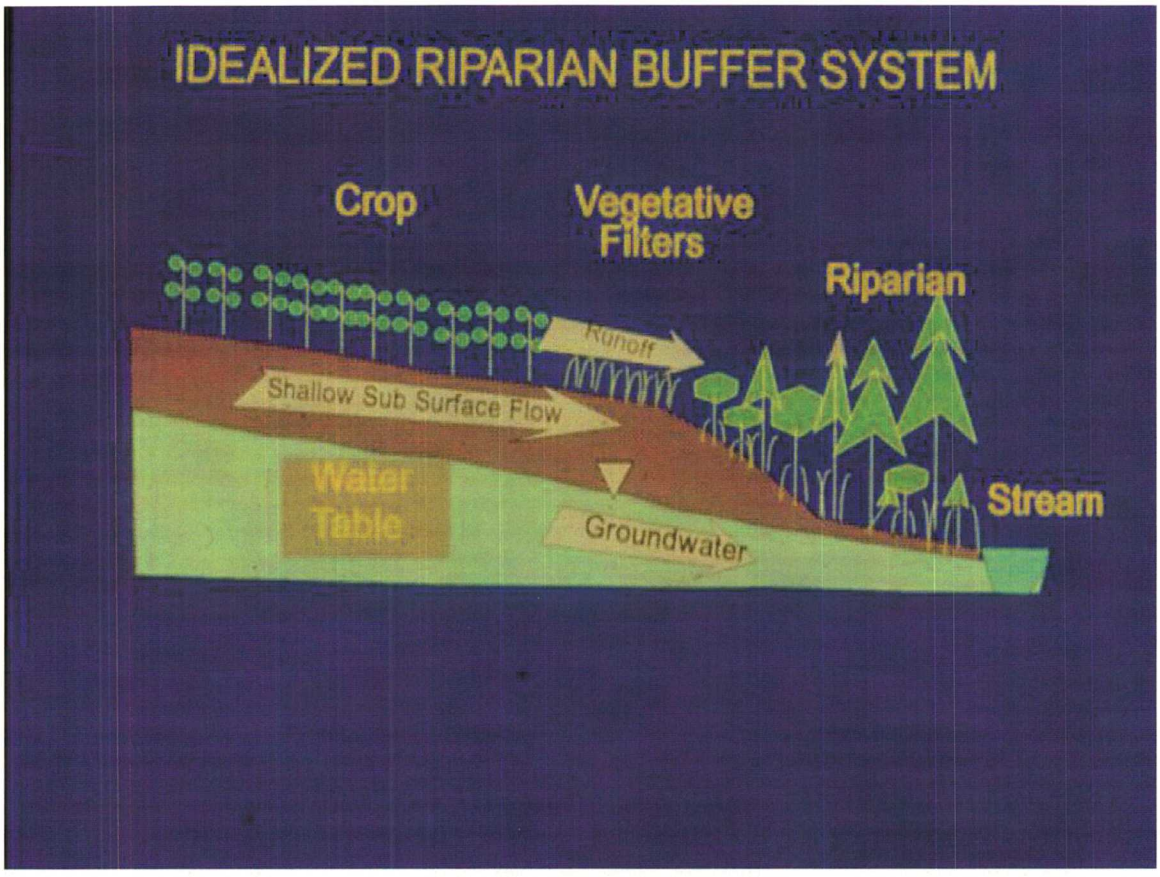
NITRATE in STREAMS

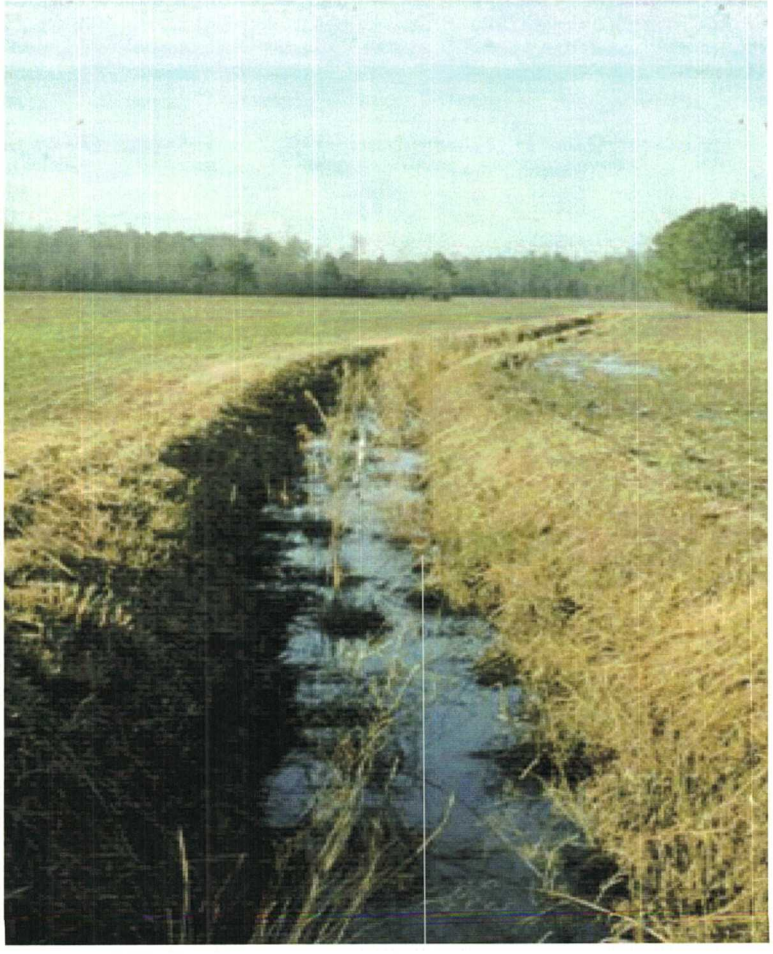


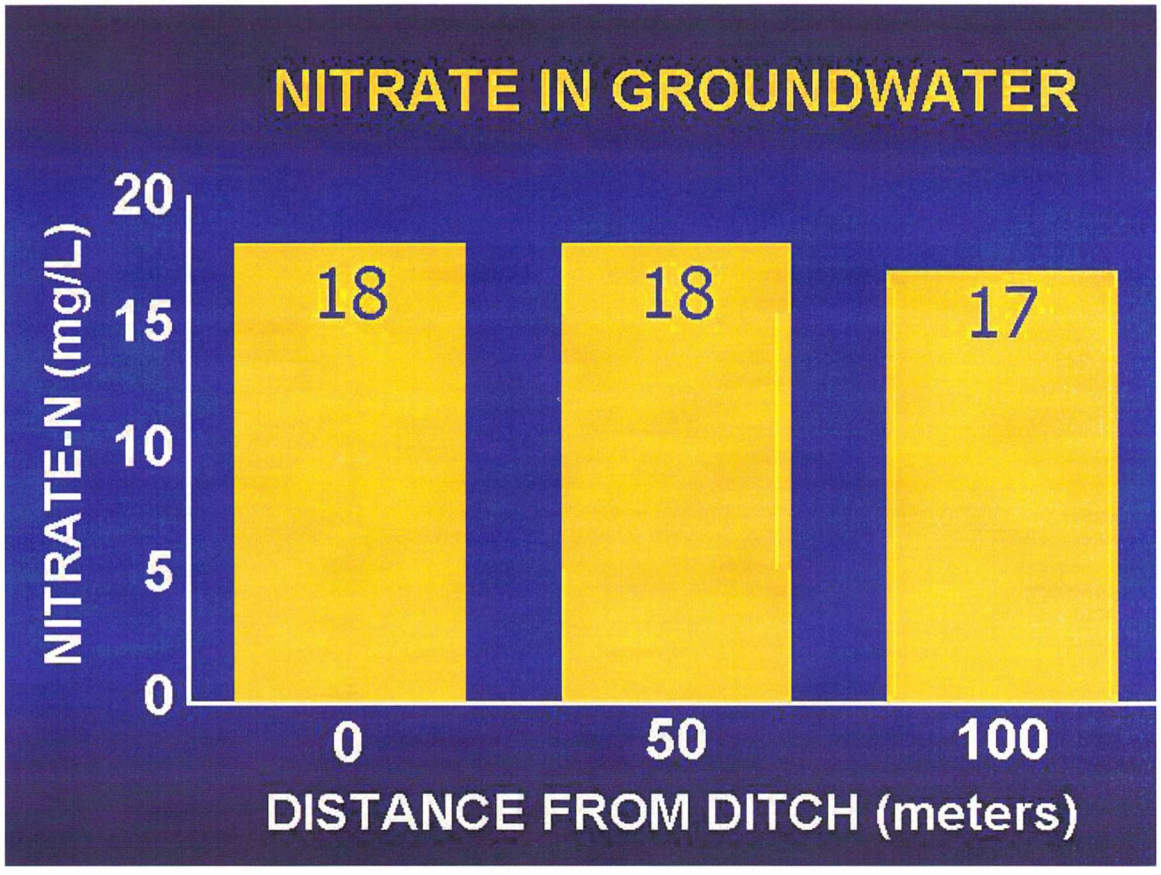
Riparian Buffers

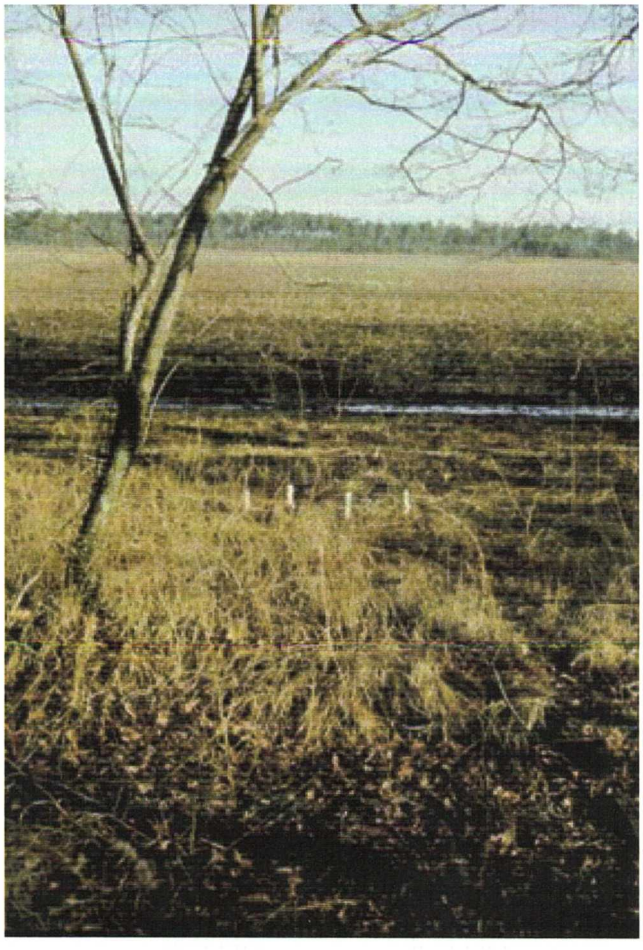
Riparian Buffers are the single most important factor controlling nonpoint source pollution in humid regions.

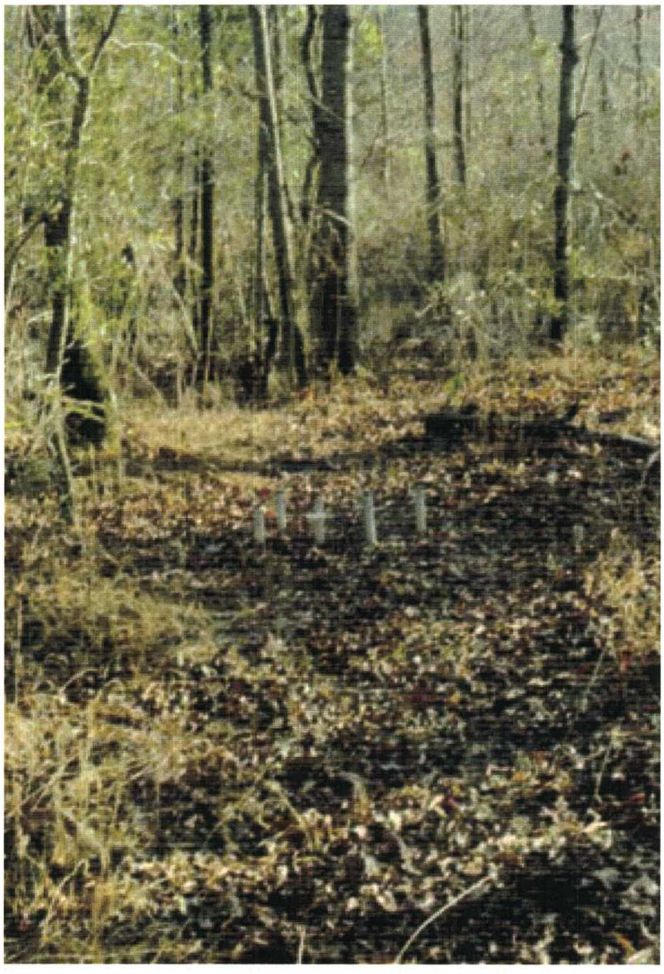


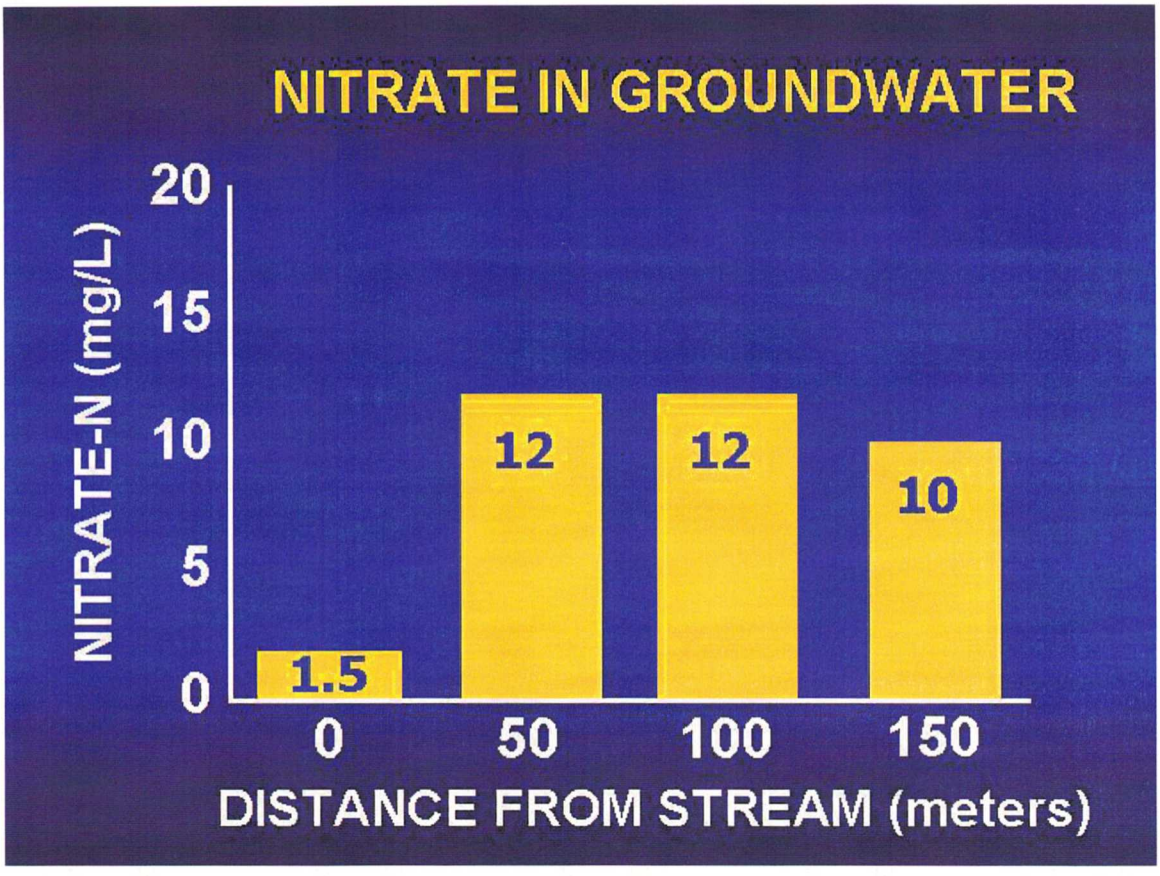

IDEALIZED RIPARIAN BUFFER SYSTEM
Crop
Vegetative Filters
Riparian
Runoff
Shallow Sub Surface Flow
Water Table
Groundwater
Stream




NITRATE IN GROUNDWATER
NITRATE-N (mg/L)
20
15
10
5
0
18
18
17
0
50
100
DISTANCE FROM DITCH (meters)

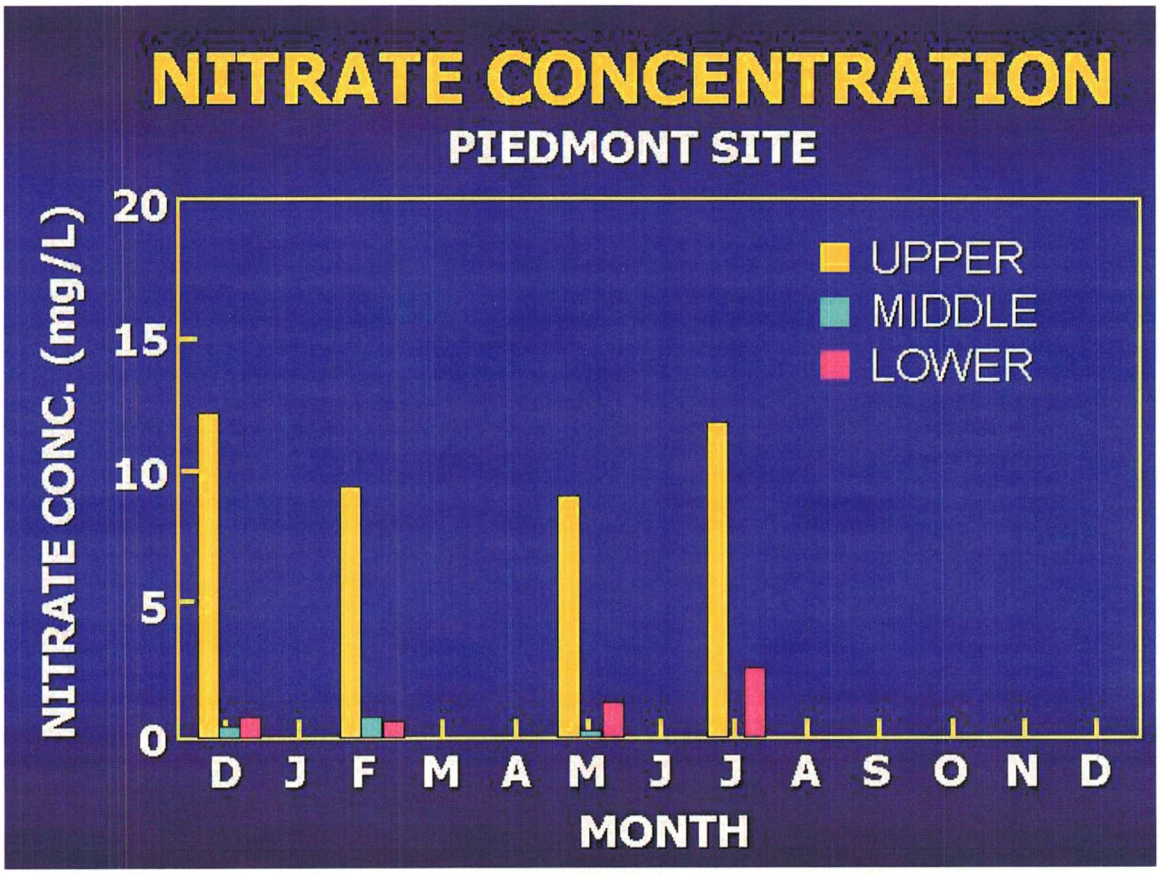


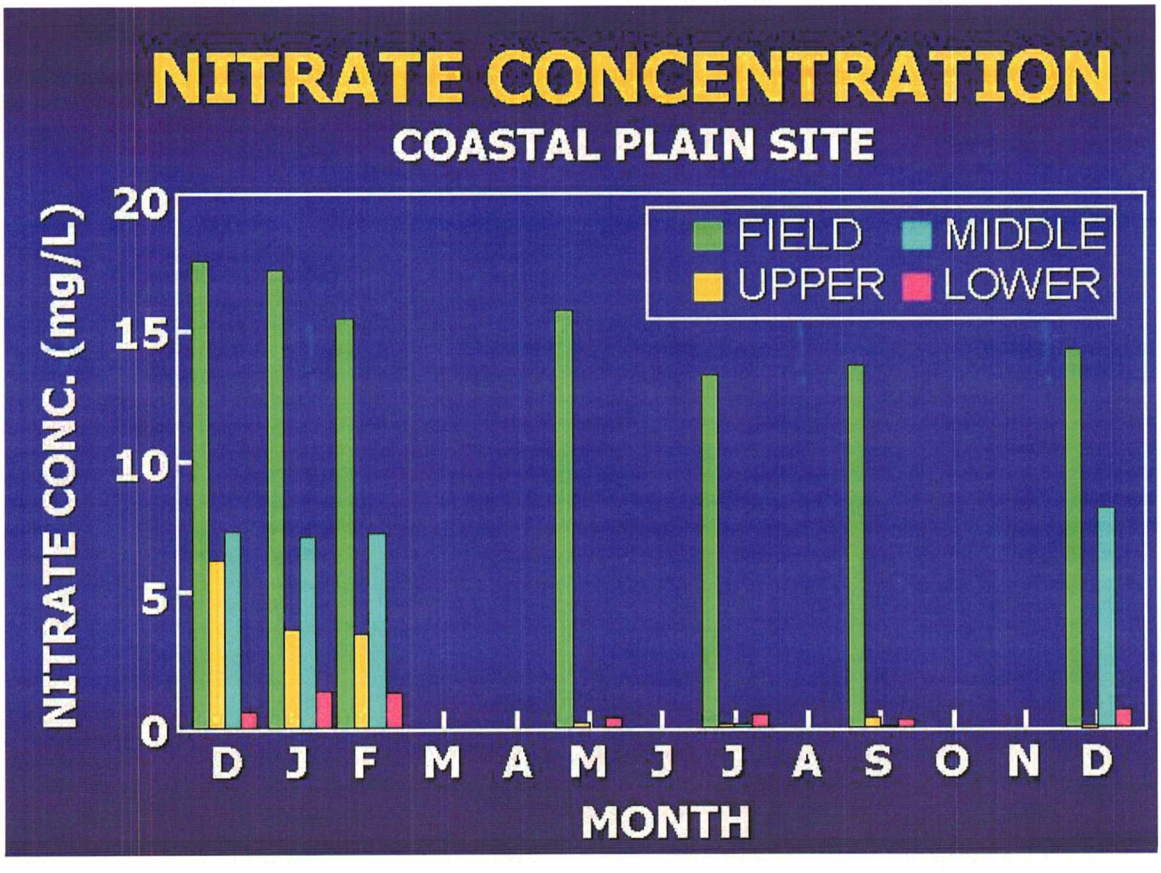




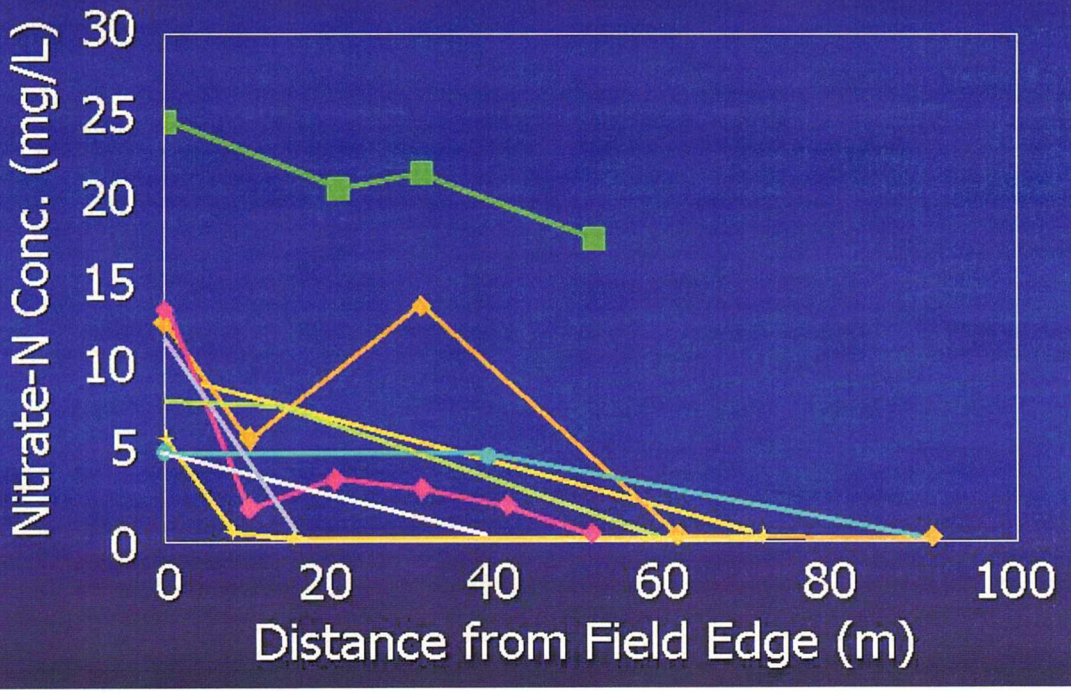
Nitrate-N in Streams (mg/L)

Date	Open Ditch	Natural Stream
2-09	5.7	1.1
2-18	7.1	1.1
3-03	5.2	1.8
3-11	5.1	1.2
3-18	4.9	1.8
4-29	7.8	1.0
5-19	5.2	2.7


NITRATE CONCENTRATION
PIEDMONT SITE
NITRATE CONC. (mg/L)
20
15
10
5
0
UPPER
MIDDLE
LOWER
D J F M A M J J A S O N D
MONTH


NITRATE CONCENTRATION
COASTAL PLAIN SITE
NITRATE CONC. (mg/L)
20
15
10
5
0
FIELD
MIDDLE
UPPER
LOWER
D J F M A M J J A S O N D
MONTH

GROUNDWATER NITRATE WITH DISTANCE FROM FIELD EDGE

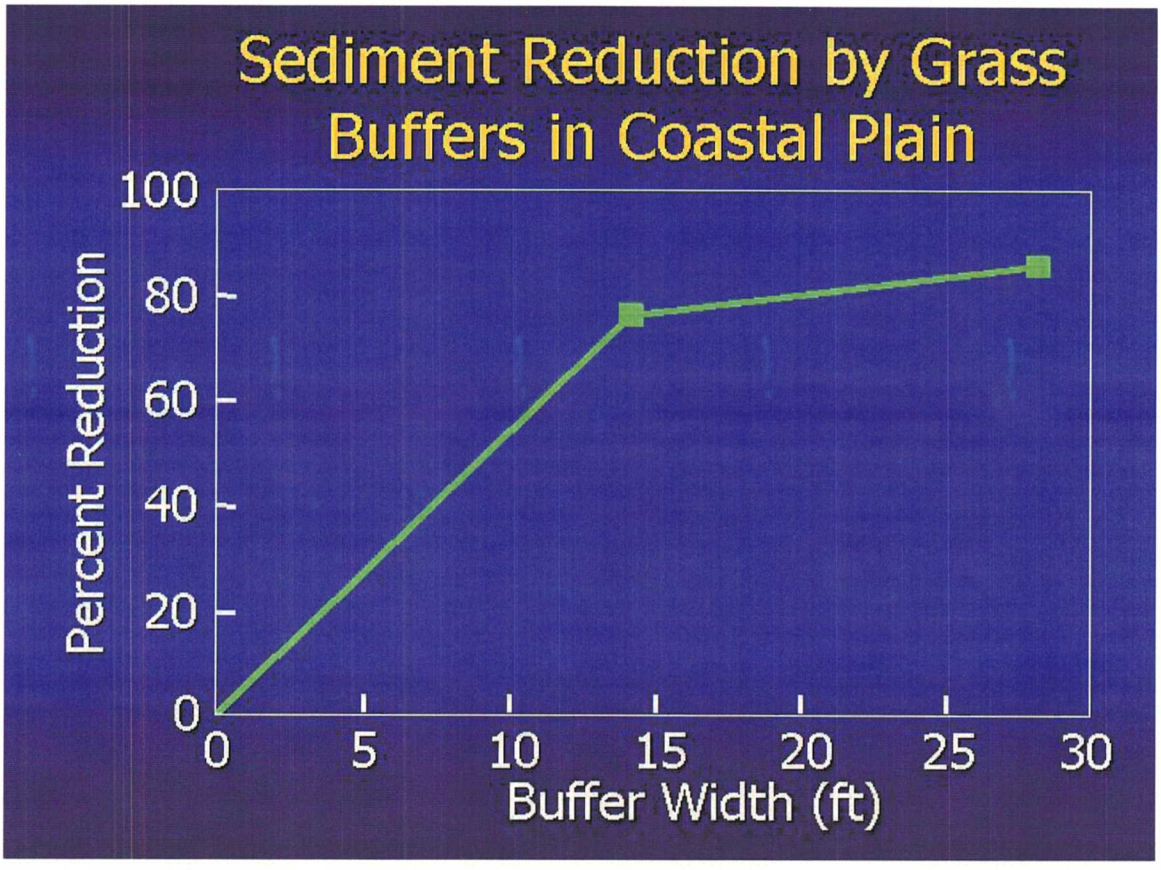


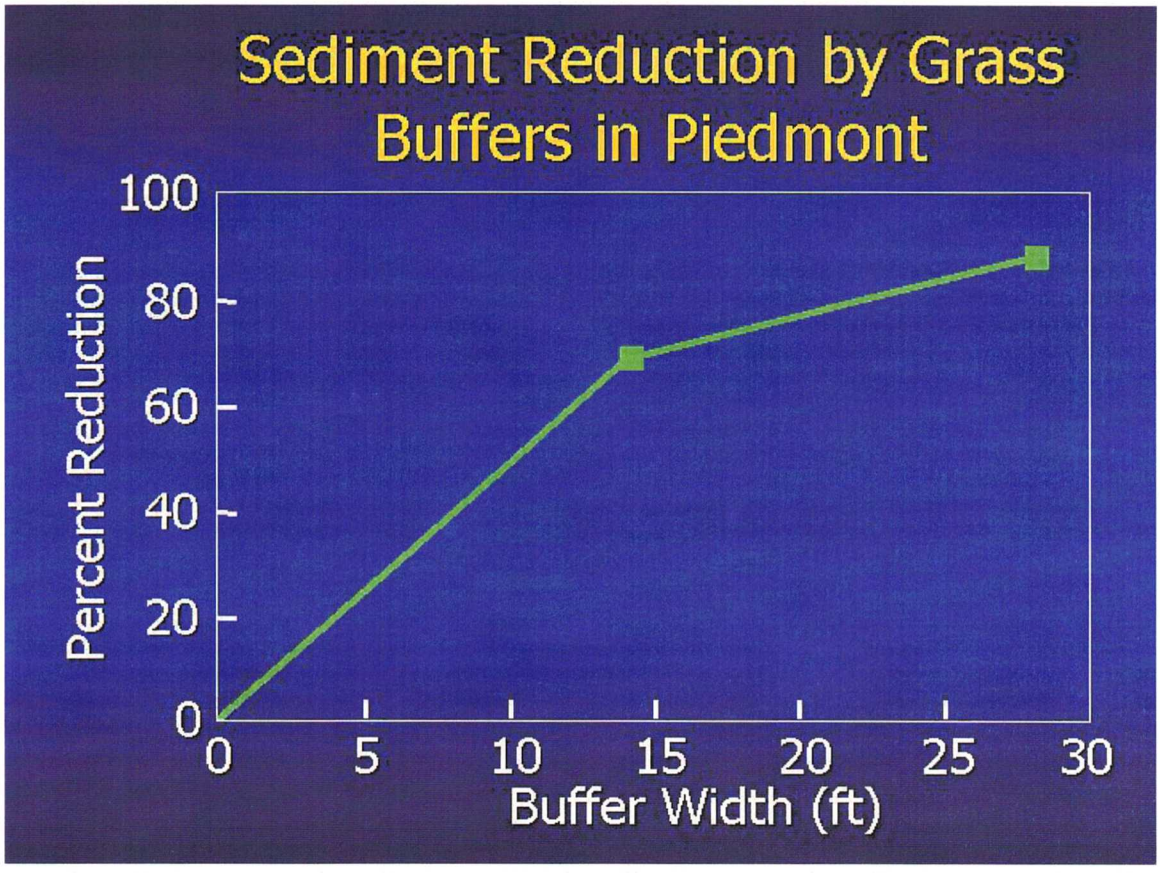
Removal of Sediment

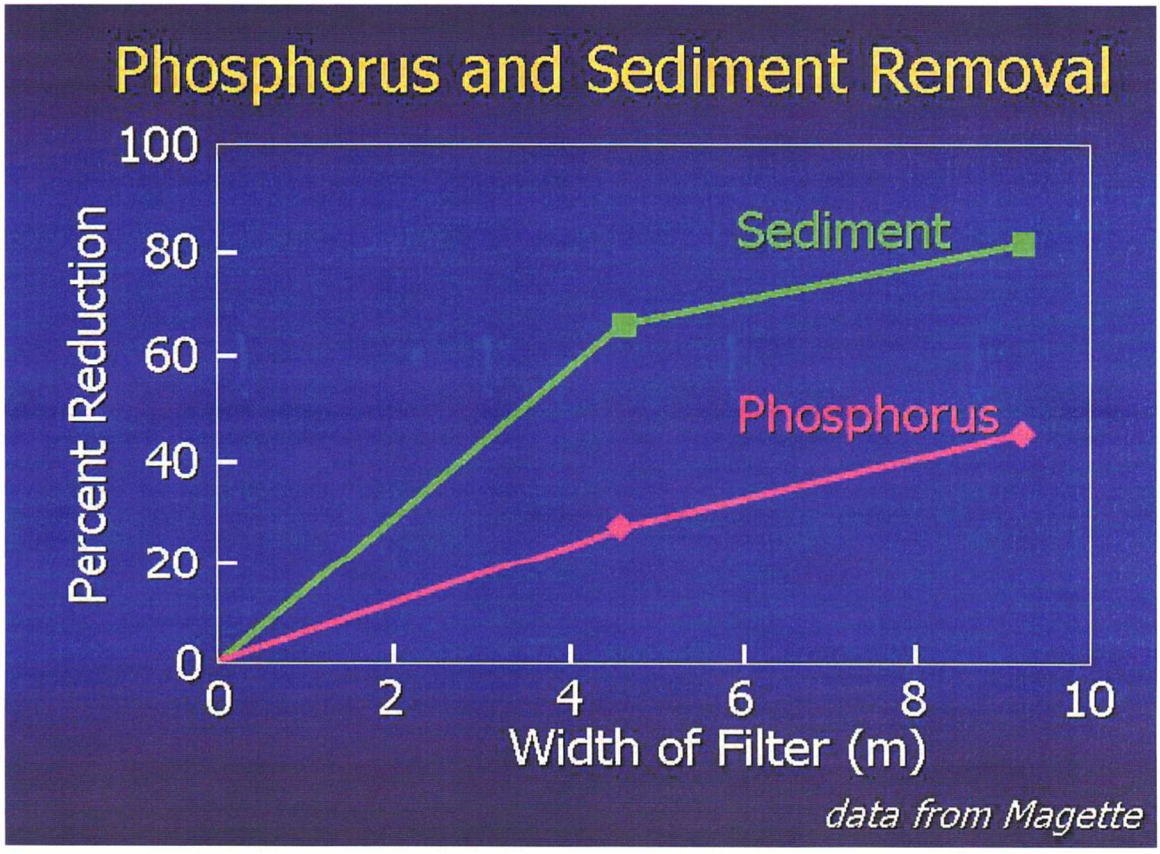
This is what riparian filters do best.

Removals > 90% are common.

Channelization can be a problem.


Sediment Reduction by Grass Buffers in Coastal Plain
Percent Reduction
100
80
60
40
20
0
0
5
10
15
20
25
30
Buffer Width (ft)


Sediment Reduction by Grass Buffers in Piedmont
Percent Reduction
100
80
60
40
20
0
0
5
10
15
20
25
30
Buffer Width (ft)

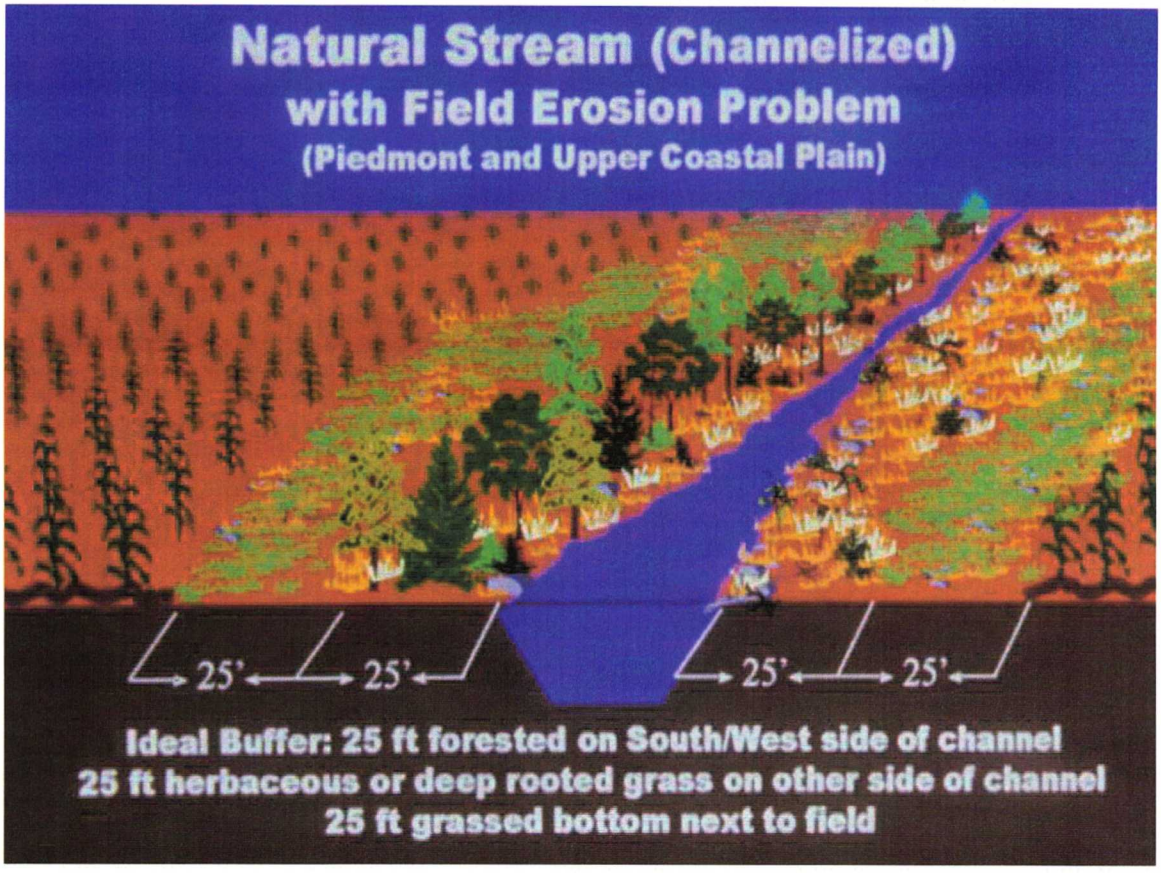

Phosphorus and Sediment Removal
Percent Reduction
100
80
60
40
20
0
Sediment
Phosphorus
0
2
4
6
8
10
Width of Filter (m)
data from Magette

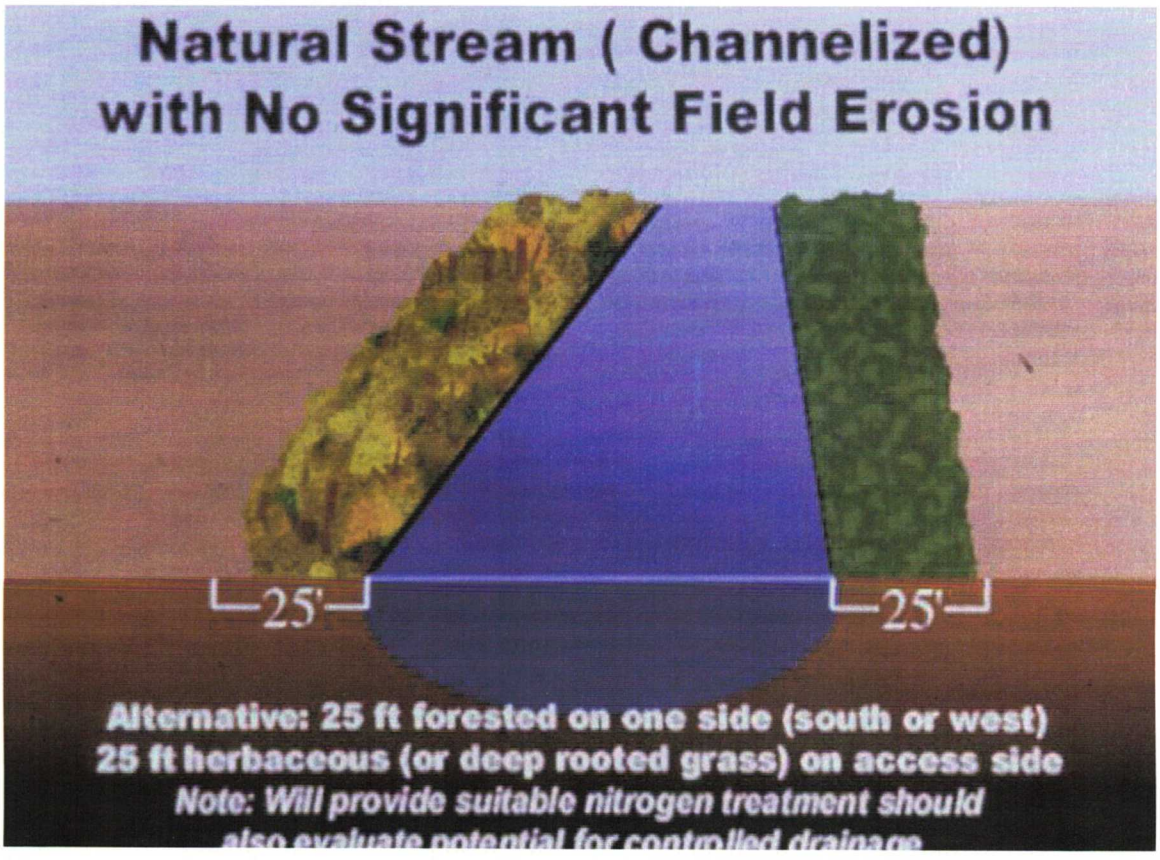
MANDATE

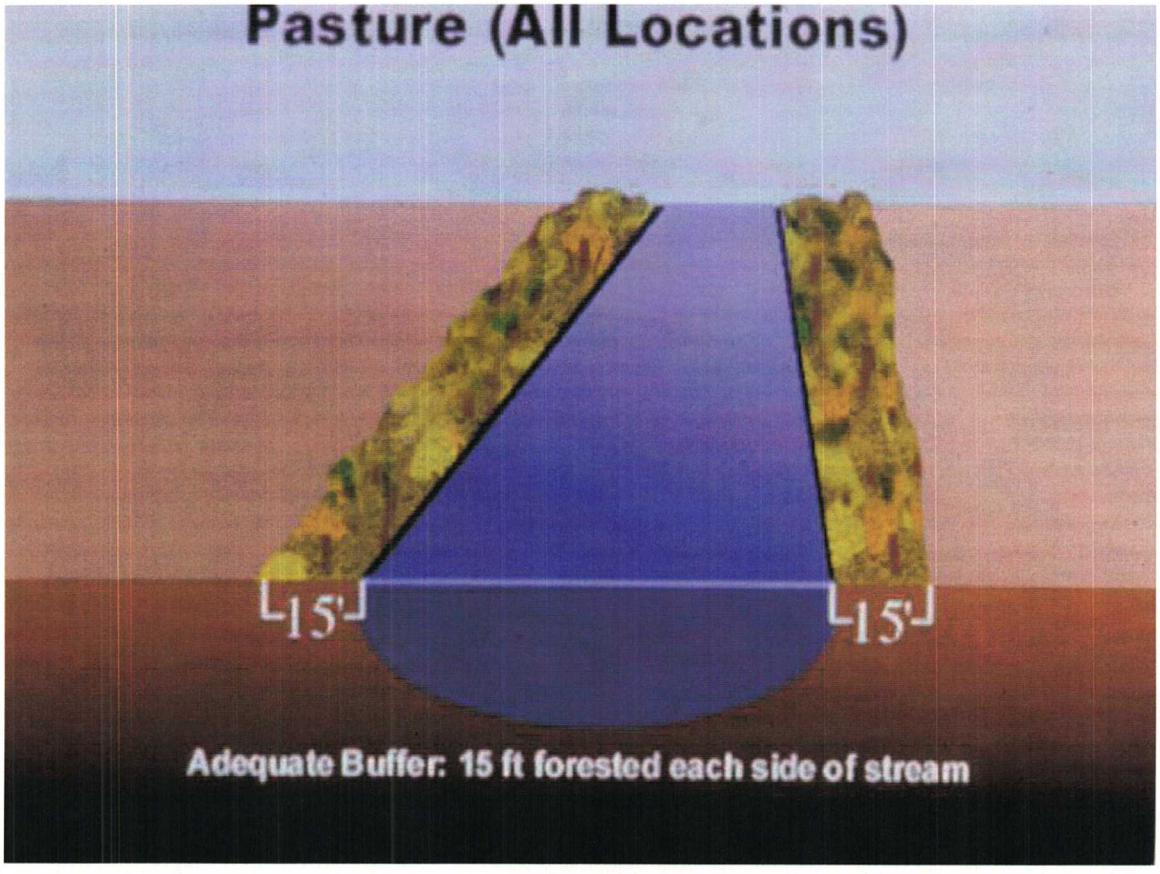
REDUCE N ENTRY INTO NEUSE RIVER BY 30%

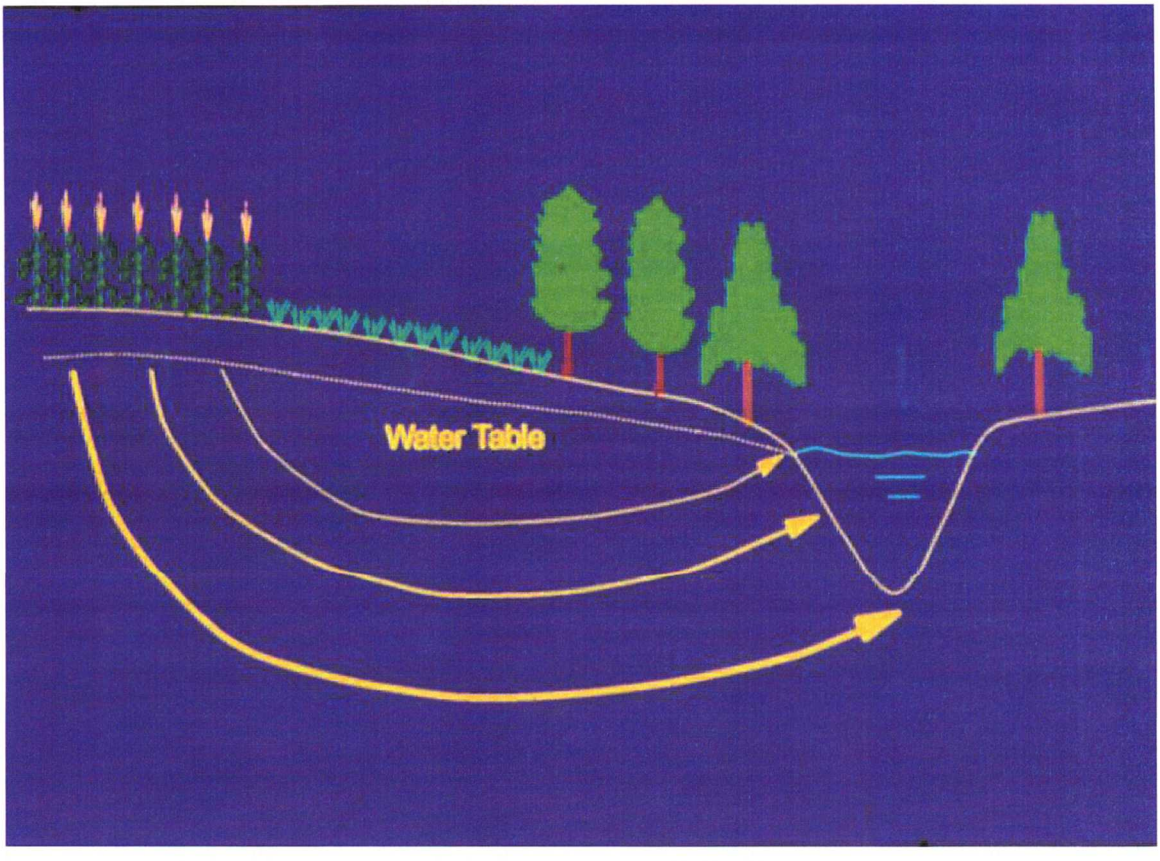
AGRICULTURE'S CHOICES

- ✓ NUTRIENT MANAGEMENT AND RIPARIAN BUFFERS
- ✓ NUTRIENT MANAGEMENT AND CONTROLLED DRAINAGE


Natural Stream (Channelized)
with Field Erosion Problem
(Piedmont and Upper Coastal Plain)
25'
25'
25'
25'
Ideal Buffer: 25 ft forested on South/West side of channel
25 ft herbaceous or deep rooted grass on other side of channel
25 ft grassed bottom next to field


Natural Stream (Channelized)
with No Significant Field Erosion
25'
25'
Alternative: 25 ft forested on one side (south or west)
25 ft herbaceous (or deep rooted grass) on access side
Note: Will provide suitable nitrogen treatment should
also evaluate potential for controlled drainage


Pasture (All Locations)
15'
15'
Adequate Buffer: 15 ft forested each side of stream


Water Table

CONCLUSION

Riparian buffer preservation and restoration is in the public's best interest.

However, requiring them to be installed in areas where they have little value for water quality is a questionable policy.

Plant-Bio-Medical-Health
Dr. Leonard Pike – Texas A&M University

Food for Health - The Development of New Plants to Prevent Disease and Aging: The development of fruits and vegetables with new improved health benefits.

Recent surgeon general's report says the ten leading causes of death were diet related. I am not too sure if that is because we are eating something we should not be eating or we are not eating something that we should be eating. Looking back on disease prevention in food you will find out that early man used food to prevent disease. When the medical profession came along they got smart and started treating disease with surgery and drugs and things like that. That shows the progress of what we did about food. Now the current thought is returning to curing disease with food. It is recommended to eating more fruits & vegetables.

Antioxidants and oxidants, Atmospheric gases, Nitrogen Oxide, Car fumes. Rubber tires oxidize very badly. The first work on antioxidants was with keeping tires from rotting.

Scientists have found that plants that have more drought resistance had more antioxidants than those that don't. Plants that have more vitamin C are more resistance to certain herbicides. This goes to say that plants contain a lot of good things. Salt stress in plants has been found to be related to the compounds found known as antioxidants.

We are trying to prevent aging through what we eat, to help prevent disease and so-forth. Those of you interested in expanding some of the types of research your scientists are doing might think about getting into the area of improving plants for health. Plants have evolved in nature through millions of years because of enzymatic systems they have developed. They did not do this for you and me they did this for themselves. But fortunately when we consume the plants we do get some of the same benefits. On a trip to the Soviet Union I saw how plants evolved in a lot of stressed areas. These plants evolved in cold. It snowed in early august, but these plants still thrived. There are a lot of compounds found in plants that we consume daily. Vitamin E & C help prevent herbicide damage. These are fruit & vegetables that help the medical society, crops that have color and leafy vegetables. Colors are related to antioxidants. The vegetable industry has bought into this study much faster than the administration did. We started in 1987 but didn't get much going until 1992. We started with funding from private industries. We keep in touch with the industries on a first hand basis. You cannot imagine how many people in industry are interested in food for health. We have 17 states in the US. 2 in Australia, 2 in the UK that are funding our research up-front on an annual basis. To let you get an idea of the companies in there, they are biotech, and baby food (like Gerbers). A lot of these are growers and shippers from a lot of different places. Others are HEB grocery stores, Krogers, Sun Seeds, Novartis Seeds, etc. Strongest supporters are Wal-Mart. How are we doing this research? We used to work on carrots for carotene, now we work on carrots for beta sweet carotene. This gives it its dark purple color. Carrots are a big industry for us. We use a lot of graduate students in the program. It is a good experience for them and us. We bring the breeding lines back to the lab. It is very time consuming and expensive because each plant is dealt with through analyzing each plant as a single carrot or potato. We select only the ones that have the highest levels. If you buy supplements at the pharmacy you want to buy the ones that say 250 mg to 400 mg per tablet not the ones that are show 0 mg. The onions are done the same way. We go through the entire crossing, analyzing for the different compounds. Dr. Lu and some of the grad students are working on short cuts by developing diploids and half-diploids within the plants. This shows the type of research we are incorporating to help move this food for research project on.

The allyl sulfides and quercetin found in onions are cancer-fighting compounds. The white onion has found no quercetin.

The yellow and red onion have varied amounts. That is why we have to select each onion to find each compound. The milder the onion the more you can eat, because the more you cook them you start losing compounds. The red onions have the sulfur compound and the enzymes. We call this the ultimate onion, which is a mild red onion. Peppers are another crop that is very high in all the compounds that are good for you. If any of you work with peppers you might think about this in your research. Additional benefits beside just food for health are the new products. I have mentioned natural food coloring, healthy snack foods, chips juices etc.. and extracts for natural supplements. Many of these can come from what is not considered a cosmetically great crop or market ready produce. For the extracts and other things it makes no difference, because the quality is still very good. We spend most of the money we make. In addition, we depend on graduate students because when you start to talk to private companies about what they want and what they want you to do, most of them will tell you that they want you to train people that they can hire. This really surprised me because I thought that everyone would say to develop new products for us. I am sure that is coming but they will tell you.. at least five out of six people will tell you that they want you to train people to work for them.

The last thing I want to tell you is that we have developed a concurrent program called The Big Kids Program where we bring kids K through the 3rd grade into our labs and bring programs to them about what we are doing. At the end of our program we give out big trays of fruits and vegetables. You will be surprised how well kids like fruits and vegetables if they are offered to them. You don't normally think of scientists as working with little kids. Maybe it is because I have grandkids now and I relate to them a little better, but this is one thing that probably more of you need to do in your research.

WORKING WITH OTHERS

Joan Imlay Gillespie, PhD
Tarrant County Extension Director
Texas Agricultural Extension Service

Today I'm going to share some practical strategies for you in "Working with Others". These ideas can potentially reduce personnel issues and enhance the quality and efficiency of your organization through working with others of different cultures. I believe there is an analogy to be made between cultural and gender differences.

There are four main ideas in working with folks from other cultures that I want to share with you today:
Respect
Understanding
Communication and
Involvement
Joan Gillespie

RESPECT

Issue of trust. History. Effect of past discrimination is not easily overcome.
Lack of respect and dignity most common complaint
Visible Ways:

1. Manners
2. Use proper name not "that lady", titles
3. Greet each person individually when enter room or pass in hall
4. Giving "back"
5. Use of words "stupid" or "idiot"
6. Talk personal first, then business
7. High expectations

I think Respect is really important and is what I hear most from people. When non-Anglos work with Anglos they talk of the Anglos not having any respect and I think people are not aware of how much that has an affect on others. There are some real visible things we can do to develop trust and a relationship. A real important thing we can start with is manners. People all have different life experiences. When introducing people, use the same respect to all people regardless of their race or background. In the Hispanic room it is very important to greet everyone in the room. It is important to acknowledge everyone. Sometimes we think we do not have to time to do all of that but we need to remember how important that is for people. When meeting someone in the hallway it is important to greet everyone. Always try to face people and not get your back to someone else. That is impolite. When talking about a personnel issue, even behind closed doors, if you add a little personal information first, (like how is your family) it will be more helpful in the outcome. We have a tendency to expect some people to perform below level. Having a higher expectation for people shows respect and makes them tend to perform better. They will appreciate your expectations of them. Showing people that you will take the time to acknowledge them and to remember their birthday will show them that they will feel much more respected by you. When you really respect your personnel it will reduce the problems because they will feel better about themselves and the way you feel about them and it will make your business a better place.

UNDERSTANDING

Its important to develop an understanding of your staff also, especially those from other cultures that may have different life experiences than your own.
Visible Ways:

1. Read, learn, "Hispanic" magazine subscription

2. Spend time on their turf. Community activities, parties
3. Eat lunch with staff
4. Make friends. Invite to your home. Difference between reciting information and knowing folks.
5. Appreciate values: Faith, Family, Friends.

Next is Understanding. Some ways to improve your understanding of people is to learn about them. Learn about their faith, their cultures, and family things that are important to them. Spend time with them on their turf. Go out into the community events, church stuff, etc. Spending two hours of your time could pay big dividends in understanding other cultures and people. Eating lunch with different members of your staff helps. Make friends. Get together once a month and learn about each other. It will close gaps between you and your staff. As you build your understanding of others you will know how they react to a situation. You will be able to know when they have handled a situation out of character and you can understand and see when things are not at the normal. Understanding your staff personally and professionally and anticipating how staff will react to different situations can help reduce personnel issues and enhance the quality and efficiency of your organization.

COMMUNICATION
Especially important when working with folks with different life experiences
Visible Ways:

1. Active listening, eye contact
2. Check for understanding – clarify your message, clarify their message
3. Learn a few words and phrases in Spanish. New word every day. Gringo cavarone does not mean nice boss.
4. Disparaging remarks

Communication: Listen, make eye contact, check for understanding. Make sure they are on the same page as you and that they understand what it is that you want from them. Also, it is helpful when someone brings a concern to us, that we understand exactly what it is that they are trying to say. It also re-inforces to them that we understand what their concern is. Learn to read what people are really saying instead of their actual words. Learn effective communication. Effective communication is essential to limit personnel conflicts and enhance the quality and efficiency of your organization.

INVOLVEMENT
Engage, not invite, engage staff in the Center. Feel ownership.
Visible Ways:

1. Meaningful roles on committees
2. Voice – venue to share ideas
3. Decision making in scope of responsibility

Involve staff members in meaningful committees. This makes them feel that their input is important to your center. Having people work with you that understand others enhances your work atmosphere. These people help to reduce work problems. The bottom line is that if you really care about your staff they will know it. Them knowing you care is not enough. You have to show it.

You can do this. Respect. Understanding. Communication. Involvement. These are some practical strategies for working with others that will have big payoffs in reducing personnel issues and enhancing the quality and efficiency of your organization.

The bottom line is: If you sincerely care about the individuals on your staff, they will know that, they can sense it, feel it. But they need you to show it....in visible ways.

NATIONAL TOBACCO OUTLOOK

William Upchurch

N.C. Dept. of Agriculture and Consumer Services

January 30, 2001

ISSUES IN TOBACCO

- Master Settlement Agreement
- Lower Quotas
- Contracting
- Barn Conversions in Flue-Cured Tobacco

SETTLEMENT PROCESS

- Mississippi in 1994
- State AG's vs. Big Tobacco
  - June 1997 for $368.5 billion
- Congress and the McCain Bill

MASTER SETTLEMENT AGREEMENT "MSA"

- **Completed during the Fall of 1998**
- **Agreement between 46 states and the tobacco companies**
- **$206 billion over 25 years**
- **PHASE I of the MSA**
- **Sets stage for PHASE II**

PROVISIONS OF THE MSA

- Prohibits marketing towards youth
- Bans use of cartoon characters
- Restricts brand name sponsorships
  - allows one non-youth/ non-team sponsorship
- Bans outdoor advertising

PROVISIONS continued....

- Bans payments to Hollywood
- Bans promotional items (hats,etc..)
- Disbands certain organizations
- Creates groups and money to fight smoking
- Provides no liability protection to companies!!!

PHASE II

- Economic loss due to MSA
- $5.15 billion over 12 years
- Farmers and Quota Holders
- Cigarette tobacco growing states

STATE MSA SPENDING

- 7 to Early Childhood Development
- 16 for Elderly Programs
- 12 to Medicaid Funds
- 5 to Improve Criminal Justice Systems
- 20 for Education
- 3 to Natural Resource Projects

MSA IN TOBACCO STATES

- KY - 50% to AG Development / PII
- VA - 50% to Farmers / Community
- TN - 50% to Agriculture
- SC and GA to various programs

MSA in NORTH CAROLINA

- Phase I
- Phase II

N.C. PHASE I

- $4.6 billion over 25 years
- 25% farmers/quota holders
- 25% health related issues
- 50% to tobacco dependant communities
  - court ordered decree
  - GOLDEN LEAF FOUNDATION

N.C. PHASE II

- **$1.95 billion over 12 years**
- **NC Phase II Tobacco Certification Entity, Inc.**
- **Phase II Settlement Administration Services**

FEDERAL TOBACCO PROGRAM

- Since Late 1930's
- Two Parts
  - Quota
  - Price Support
- Current Referendum

LOWER QUOTAS

- Over 50% Reduction in 3 yrs.
- Losses in Export Markets
- Reduced Domestic Consumption
- Higher Storage Amounts

POSSIBLE REPRIEVES

- Sales of Tobacco to China
- Removal of 1999 Stocks
- Zimbabwe Situation
- Lower Company Stocks

CONTRACTING

- Steadily Increasing
- 60-70% in Flue-Cured for 2001
- Hurts Smaller Operations
- Weaken Price Support Program
- Reduction of Auction Warehouses

CONVERSION OF FLUE-CURED TOBACCO BARNS

- Tobacco-Specific Nitrosamines
- Public Perception
- Requirement by July 1, 2001
- Average Cost: $4,000 per barn
- Reimbursement Program

TOBACCO'S FUTURE

- Continued Production
- Adjustment to Current Practices
- Diversification
- Biopharmaceuticals

IN CONCLUSION……

"If you find a path with no obstacles,
it probably doesn't lead anywhere."

Frank A. Clark

Value Added Products

Joe K. Hampton - Superintendent
Upper Mountain Research Station
Laurel Springs, NC

This is an excellent topic. My example is the cost of wheat in a loaf of bread. In this past year we had four cents of wheat in a loaf of bread. Eighteen to twenty percent of the cost is returning to folks producing this product. I am not going to talk about what I was asked to speak on. I want to talk about something else. I am going to ask you all some questions. What are your concerns about regarding the global population problem? After considerable discussion it is noted that no one mentioned food as an issue.

The fact that we have increased food production by 200% is why we do not have problems today. In 1900 more than 50% of the population were producing food. Today, less than 1% of the U.S. population produces all the food for all the people.

We produced it for less to make the cost less. We increased production and decreased the cost.

These solutions have served us really well. What it has not done is insured the profitability for the producers. One of the most significant events of the 20th century was agricultural research and the use of fertilizer.

We have a responsibility to increase profit for producers. It is difficult to sell people what they need. It is much easier to sell them something that they want. In agriculture we do not understand that. We have to get in touch with what people want instead of what we think they need. The average consumer believes that there are enough grocery stores so that we do not need farming. We have to develop the mentality to develop the things that consumers want instead of the things we think they need. I think we have an obligation to find ways to be more profitable in farming. We are great producers. We are very poor marketers. When I talk about marketing I am not talking just about selling.

Look at beef production as an example. Production has steadily increased for production per cow. Progress has been made with about 35% increases. With nutrition and health a major concern, people today are spending less on beef today than in the past. A suggested solution is to decrease the production cost. This will not work. Why is it today that the consumer is not satisfied with beef? We could say diet, or health reasons. We have regarded our success by yield per cow and not by quality. Look how the grade of meats has changed. In 1975 75% or more of the meat was graded at A or better. Now the same meat is at 40% or better for the same grade. Cattle producers lobbied the USDA to lower the standards for choice beef. These numbers do not reflect that between the years we actually lowered the standards. These numbers do not show this. The numbers are actually greater than this. We forgot that we were producing food.

I want to show you that I do not believe that we understand our consumers. Laura's Lean Beef is a product that had no growth regulators and no antibiotics. They preferred that the animals came from family farms, not feeder lots. This program was started in 1985 when they sold $10,000 dollars of that product. This same product sold $55 million in 1999. Remember this was during the time that we said consumers are eating half as much beef. But this product went from $10,000 to $55 million in sales. Laura's Lean and Certified Angus Beef are at totally different sides of the spectrum pole but there is a demand for both of them. What there is not, is a demand for generic beef. In 1995 the cattlemen's association did a survey and found that 15% of all steaks sold were unacceptable to the consumer. We have a problem and I would think this problem is throughout all agriculture. We want to sell a generic product. Our population no longer wants to buy food. They want an eat-

ing experience. People are not concerned about food. They buy it for entertainment, and they want to buy food to satisfy their hunger pains. Certified Angus and Laura's Lean both provide the same thing. If we identify a specific product and market it appropriately there is an opportunity to make a profit. I should point out that this year in 2000 those numbers were just released.

Consumption of Certified Angus Beef last year had a similar consumption level. Just over 560 million pounds of certified beef were sold last year. At a wholesale value that would be just a little over $2 billion dollars worth of product. I think we need to refocus on how we produce cattle. Beef producers and beef researchers are very good at producing lots of a product a consumer does not want to buy. Our future is in developing the expertise in marketing products that the consumer wants to buy. If people thought that food was going to run out it would work for us to tell people that we know what is good for them and they have to buy what we market. This philosophy will not work because people do not consider food an issue. We have to become better at marketing our products. Every research program should have a marketing aspect. Technology can be used to identify and use those products that have been identified to be in demand. We like to produce a tremendous amount of product and dump it and be through with it. That is the mentality of agriculture production. This has gotten us where we are today, but it will not take us further down the road.

We have to develop expertise in producing what people want, not what we want to produce. I hope that we do not look at production as "Good Enough". I hope we always will have high expectations. If we are not helping we are hurting. If you are not part of solution you are part of the problem. I thank you for your time.

Value Added Products

Joe Hampton

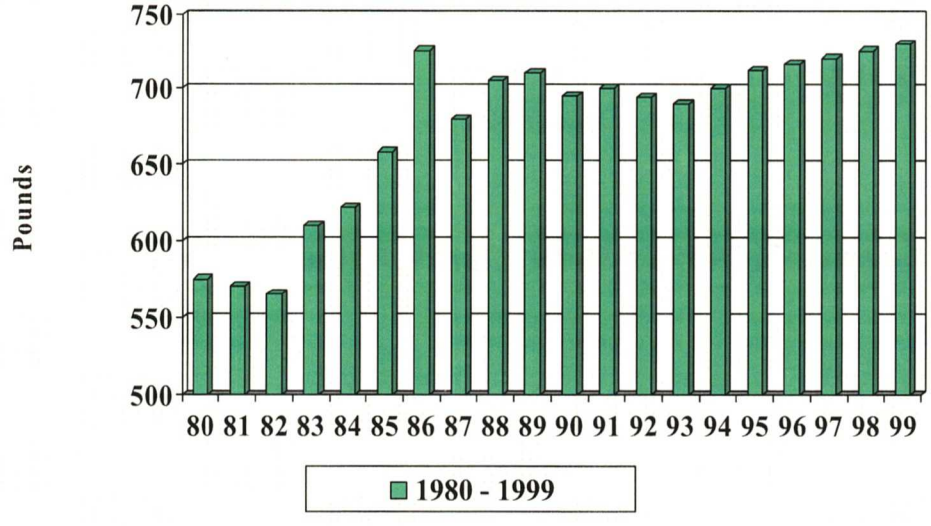
View of the World by Joe Hampton

- **The world is Flat**
  Class of 1491
- **Good Enough is the Opposite of Best**
- **If You are not Part of the Solution You are Part of the Problem**

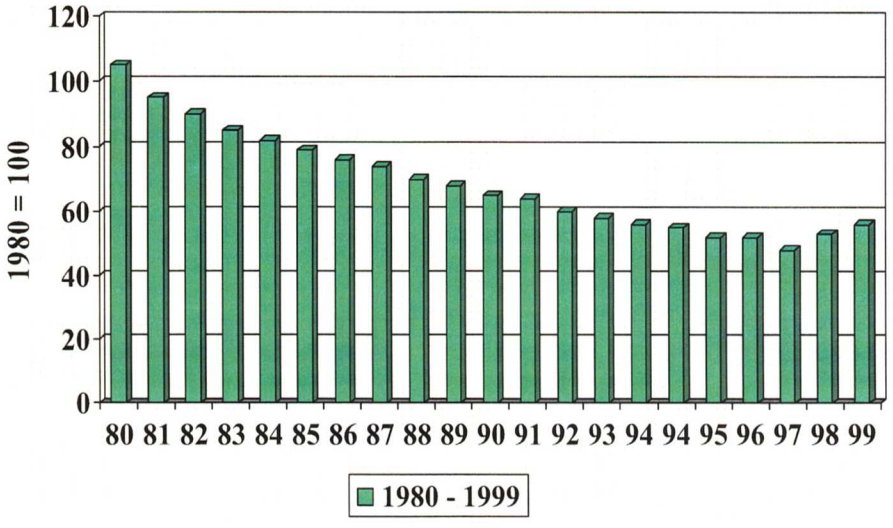
Solutions to Agricultural Problems

- **Increase Production / Unit**
- **Decrease Cost of Production / Unit**

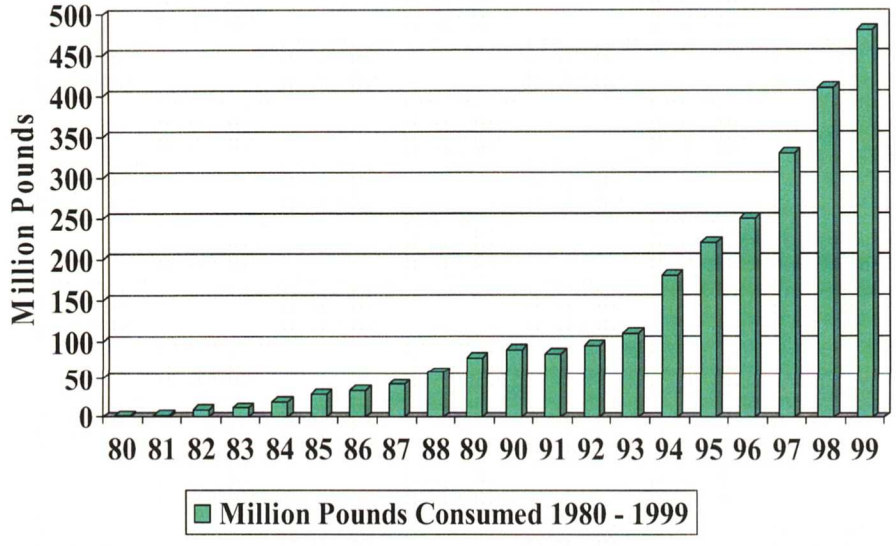
Beef Production Per Cow



Beef Consumption Index



Certified Angus Beef™



Laura's Lean Beef

- 1985 $10,000
- 1999 $55,000,000

Percent Carcasses Grading Choice or Better

- 1974 76%
- 1995 48%

Percent Consumer's Dollar Spent on BEEF

- 1974 15 %
- 1996 7 %

Solutions to Agricultural Problems

- Increase Production / Unit
- Decrease Cost of Production / Unit
- Increase Income / Unit

Description of Joe Hampton

- **Religion**
- **Family**
- **Agricultural Research Worker**
- **Agricultural Producer**
- **Tax Payer**
- **Consumer**

Value Added Products

- **What They Say When We Leave the Room**

Joe Hampton

- **Upper Mountain Research Station**
- **NCDA & CS**
- **Laurel Springs, North Carolina**

Farm Economic Outlook in U.S.
Mr. Fred Vogel

I am going to talk to you this morning on changes in Agriculture. These changes involve concentration that is involved in agriculture both on the production and structure side.
Changes in technology are changes occurring because of the Global Economy
We have 2.1 million farms in the US. Four years ago we had about 30 million farms. We lost a lot of farms since 1960 until now. What is happening is that 51% of farms had sales of under $10,000. I you took every commodity of the 3-400 items and added them up. There are some farms that have about $1 million or more. That counts for about 40% of the farms that make up sales for agriculture. If you look at the total of sales and you look at the number of farms that count for the 75% of the sales. About 180,000 farms account for all the sales in agriculture. Only 5,062 farms count for ¼ of everything that is sold. These are true figures that the Dept. of Agriculture developed.

The flip side of sales for agriculture are production expenses. These include feed, fuels, fertilizer, seed, etc., what the farmers purchase to do their work.

On the processing side the four largest processors process 79% of the beef. That means there are four (4) companies slaughtering 79% of the beef. Do these companies have control over the price of beef? That is why there was a law passed called mandatory pricing. Another thing that is happening is that these four companies are having an impact on where they get their beef for slaughtering. They don't want to go to the little auctions. They want to make agreements with the biggest farmers, so they have a major impact on production that way.

The next thing I want to talk about is the way that farmers do their business. Basically, farms are organized as individual organizations, partnerships or corporations. About 60% of sales come from farms that are individually operated. While the rest comes from the others. They are partnerships or corporations. An amazing thing is happening on hog farms right now. About 85,000 farms have hogs on the premises right now in the US. About 83,000 of the farms are classed as small farms. The other 2,000 farms are large farms.

Now I want to talk about definite trends in technology going on. There are some different trends going on here in crop fields, livestock productivity, biotech, and computers. Corn yields are trending upward in the last few years above the trend lines. We do surveys in cornfields to broadcast future production. Every year for the last couple of years the plant population is at new records. These are always larger than the year before. The ear population is going up but the ear weight is not going down and this affects our forecast models. In cotton we look at the last ten years. The trend is kind of flat. Soybean is the same as corn. There are record numbers of pods and pod weights. Pigs per litter? Cattle is about 97 million. We are producing records supplies of beef. We have 15 million fewer animals that are not out on pastures but we are producing record meat supplies. Milk production per cow is 12,000 to 18,000 lbs. There is really incredible technology that is going on.

For the first time last year when we did our crop surveys and we asked our producers what they were planting, we asked them to tell us what variety they were planting, (biotech)? Twenty five percent of the corn acres were planted with some gene added to it. Sixty one percent of the cotton had something in it for herbicide resistance or insect resistance, and 54% of the soybeans also had these biotech genes in it. This seems to be a trend that is coming. Every June we do a survey of farmers of what crops they planted and their livestock inventories. In 1997 and 1999 we asked them if they used a computer for their farm business and if they had Internet access. Fifty three percent of the farms used a computer and forty three percent had Internet access. We do not yet know how important this is to us but we do know that we are going to have to catch on to this with our data collection. The next issue that is happening in agriculture is the facts that we are in a global economy. Our crop reports are not nearly as important today as they were years ago. Every report today has information about

reports from China and surrounding countries. These have an impact on our reports and statistics for today. Before, if we reported that crops were small the prices would go up. Today that is not the case.

I have taken you through a lot of things that are going on in agriculture. Half of the people that are farmers today have another occupation. Their primary occupation is something else. Almost ½ of all farms have more than one-decision making operator. So where is the future? Unless something dramatic happens I think everything will continue. I think we will see more contracting. I think we will see more biotech varieties.

Now let us look at a chart and talk about what is up and down on exports related to the colored lines.

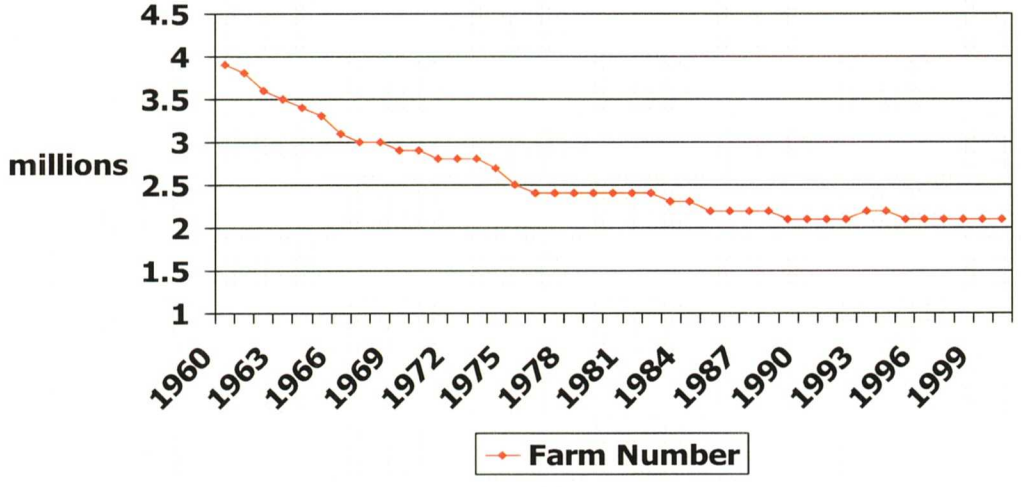
Corn production up. A lot of corn is in storage. Wheat supplies should go up this year. Soy Bean prices will be down. Like corn it is in great supply and there is a lot in storage. Cotton prices have been going up. The production is up. This depends on China's production. Milk production is going up. Prices are rocky. Prices here depend on the economy. Almost half of the milk that is produced goes into cheese.

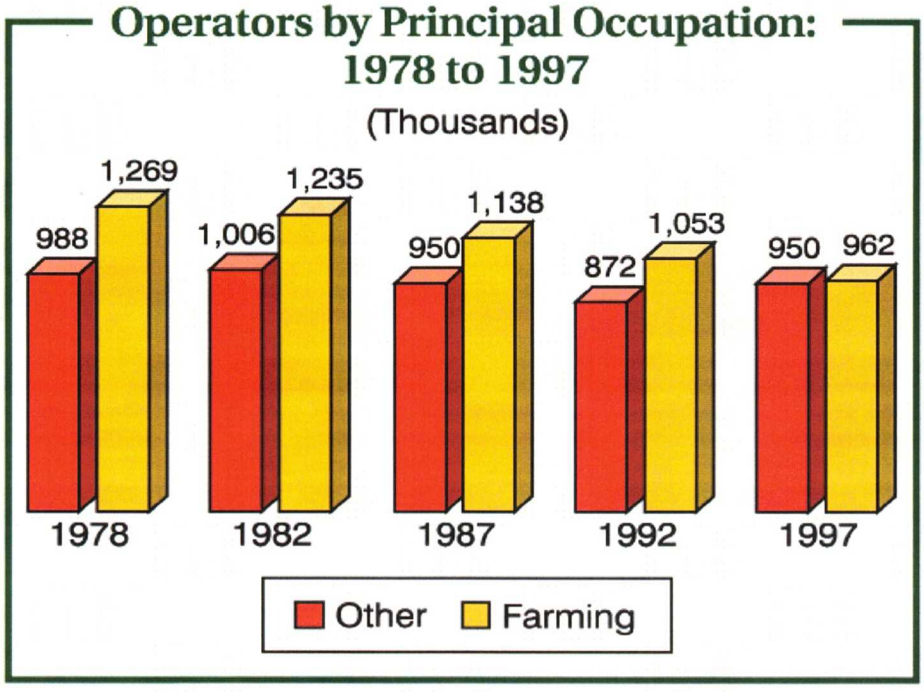
After questions we can follow up and keep up to date with the USDA web site. www.usda.gov/nass

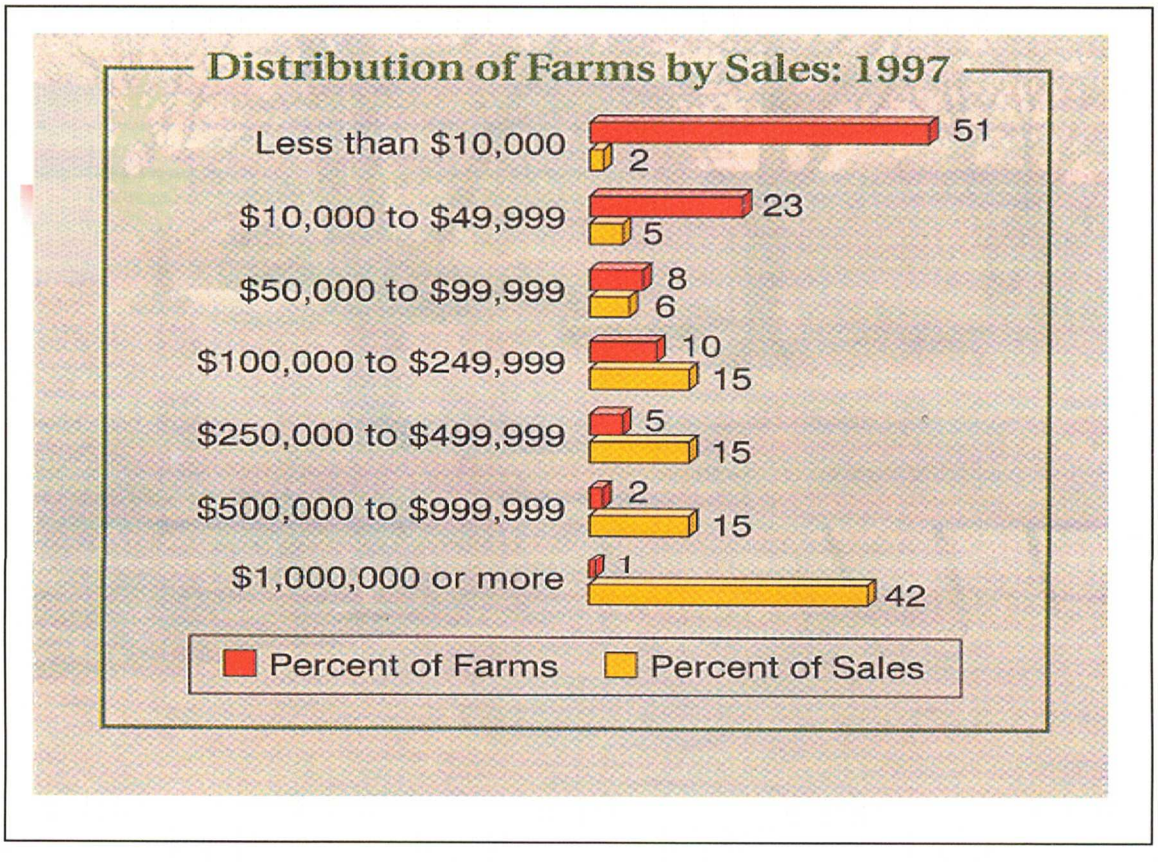
Changes Occurring in U.S. Agriculture

- Concentration
  - Production
  - Processing
- Structure
- Technology
- Global Economy

Total Number of Farms in the U.S.




Operators by Principal Occupation: 1978 to 1997
(Thousands)
988
1,269
1,006
1,235
950
1,138
872
1,053
950
962
1978
1982
1987
1992
1997
Other
Farming


Distribution of Farms by Sales: 1997
Less than $10,000
51
2
$10,000 to $49,999
23
5
$50,000 to $99,999
8
6
$100,000 to $249,999
10
15
$250,000 to $499,999
5
15
$500,000 to $999,999
2
15
$1,000,000 or more
1
42
Percent of Farms
Percent of Sales

Measure of Concentration based on Number of Farms Accounting for 25% OF Sales and 75% of Sales U.S. Census of Agriculture, 1997

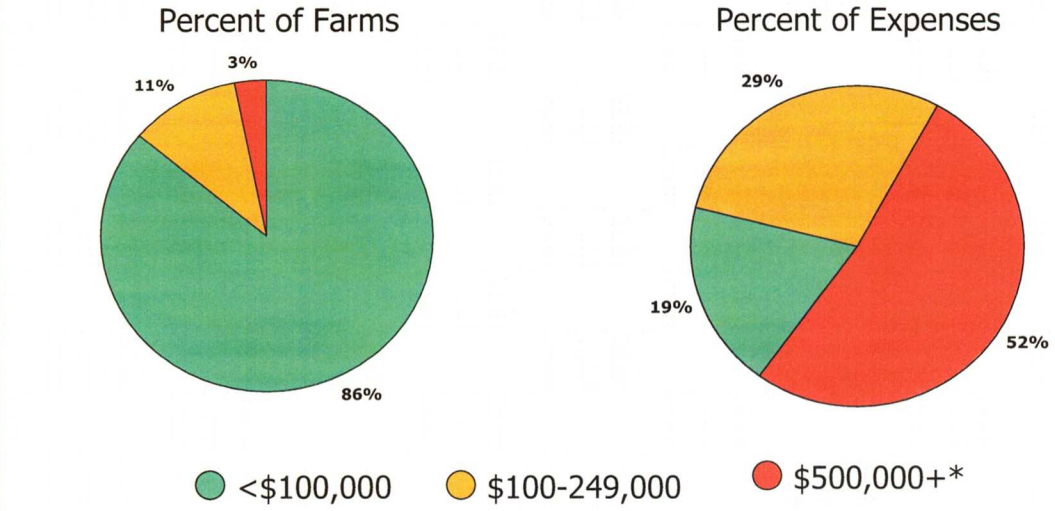
	Number Accounting for 75%	Number Accounting for 25%
Total Sales	180,867	5,062
Value of Land and Buildings	198,516	5,062
Grains	113,049	1,412
Cotton	14,193	339
Fruits, Nuts, Berries	12,461	825
Dairy	25,750	657
Cattle	85,286	2060
Hogs	26,100	559**

** In 2000 110 ownership entities account for 45% of the inventory

Contribution of Large Farms to Vegetable Production – 1997 Census

	# Farms	% of Acres
Asparagus	352	83
Snap beans	1,269	86
Broccoli	268	93
Cantaloupe	188	75
Carrots	235	91
Cauliflower	110	82
Lettuce	167	79

Distribution of Production Expenses - 1997



Concentration*

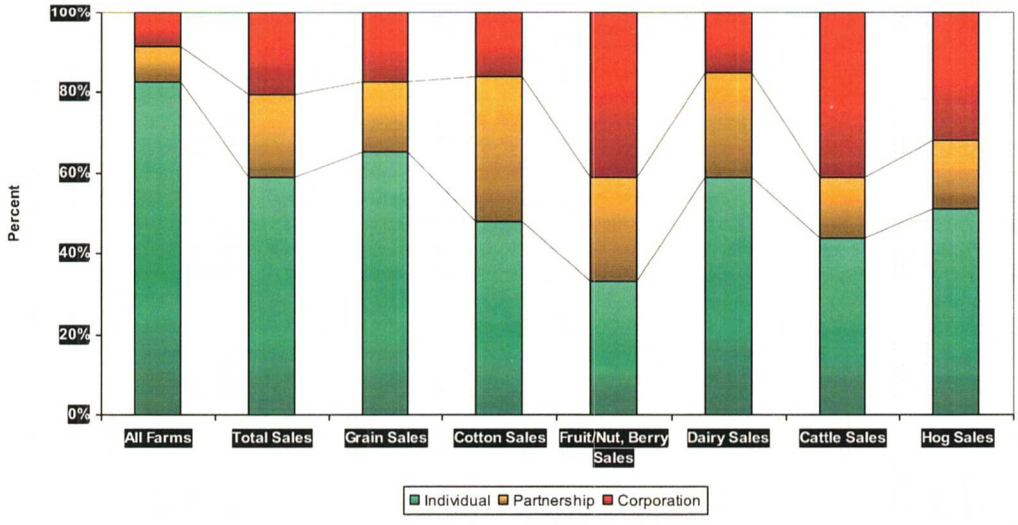
Percent of Market Share of Four Largest Processors	
Broilers	49%
Beef	79%
Pork	57%
Sheep	73%
Flour Milling	62%
Soybean Crushing	80%

*W.D. Heffernan – University of Missouri

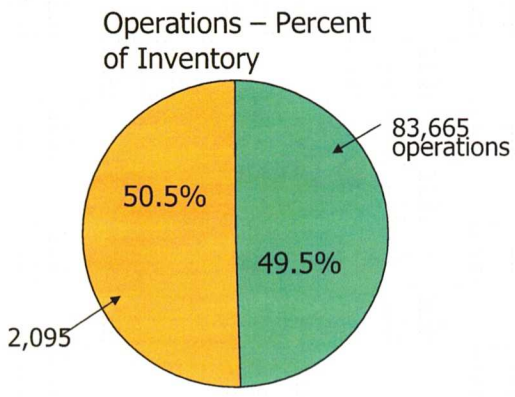
Changes Occurring in Agriculture

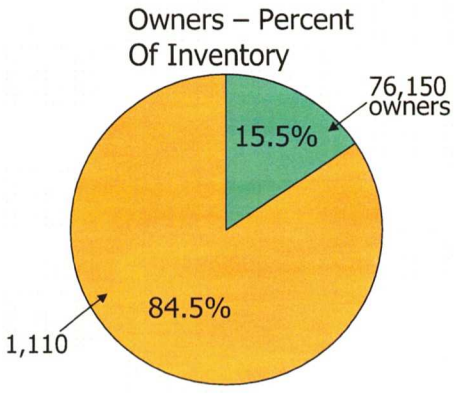
- Concentration
- Structure
  - Farm Structure
  - Business Arrangements

Overview of Agricultural Sales by Type of Organization, U.S. Census of Agriculture, 1997



Hog Operations/Ownership Entities by size*





*110 Ownership Entities have inventories greater than 50,000 head and account for 45% of the inventory

Farm Operation Business Arrangements – 1998 - USDA

	Limited Resource Farm	Retirement	Residential Lifestyle	Farming/ Lower sales	Farming/ Higher sales
Number of Farms	150,300	290,938	834,321	422,205	366,900
Percent of value of production	.8	1.8	6.0	7.8	83.5
Had Marketing Contracts	-	-	3.4	7.2	31.5
Had Production Contracts	-	-	.5	1.2	11.5

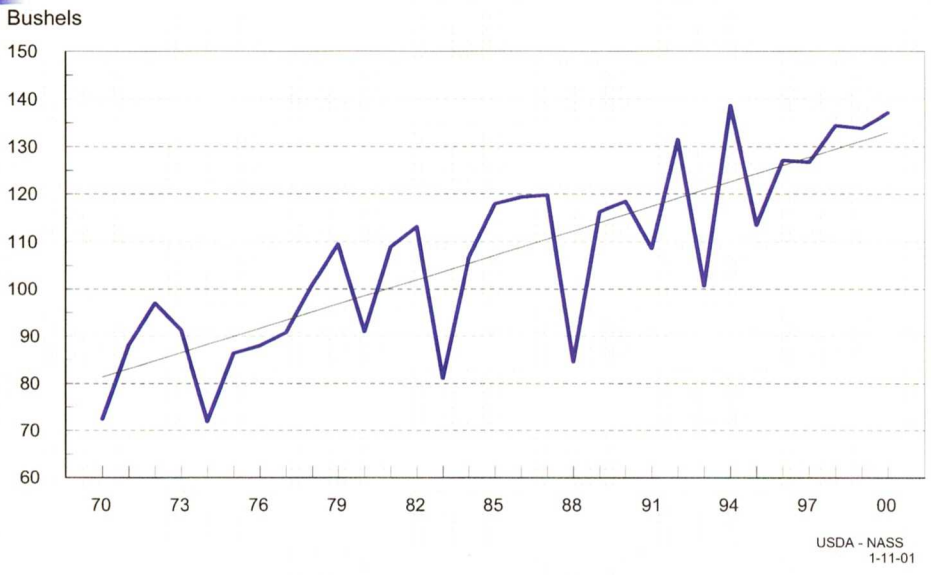
Issues

- Feed manufacturers & meat processors
  - Own the animals
  - Pay some/all production costs
  - Pay operator fee per head to produce/raise animals
  - Retain profits – sales minus expenses
- Who is the farm? – Both?
- What is farm income?
- Multiple contractors – each a farm?

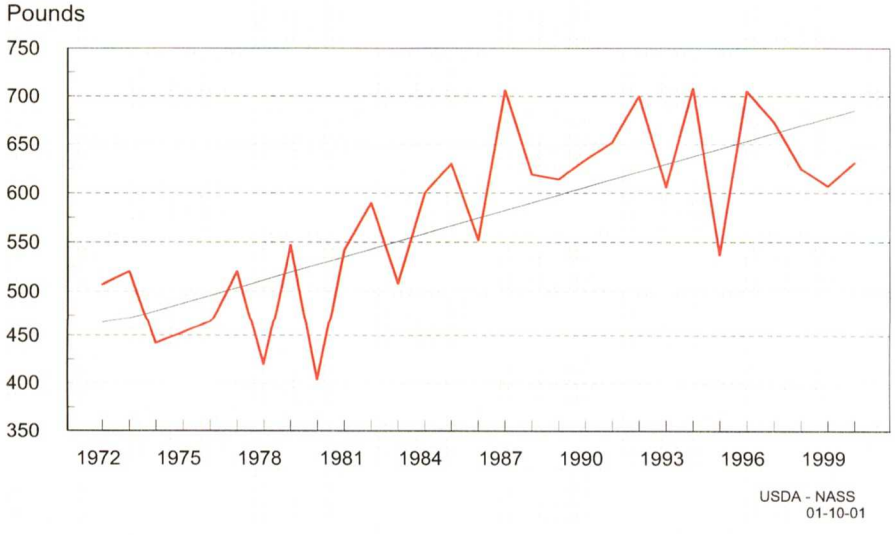
Changes Occurring in U.S. Agriculture

- Concentration
- Structure
- Technology
  - Crop Yields
  - Livestock Productivity
  - Bio-Tech
  - Computers

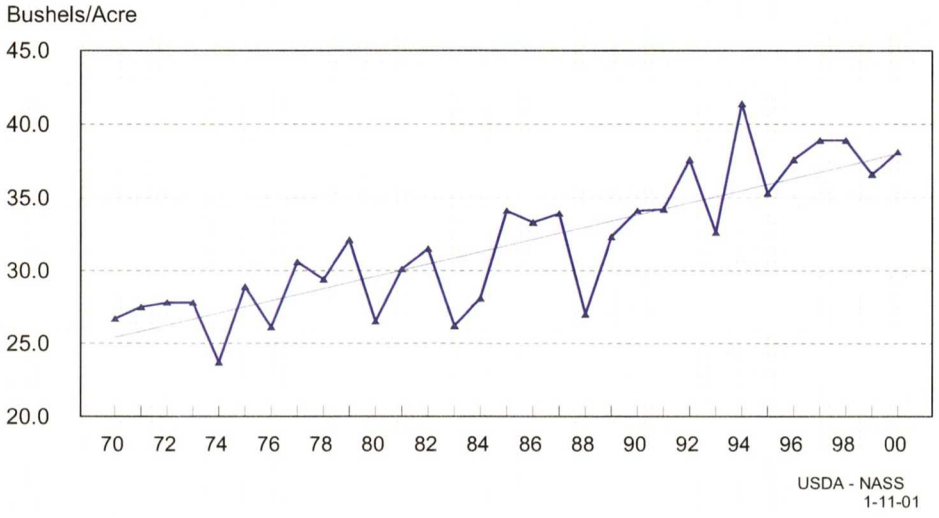
U.S. Corn Yield



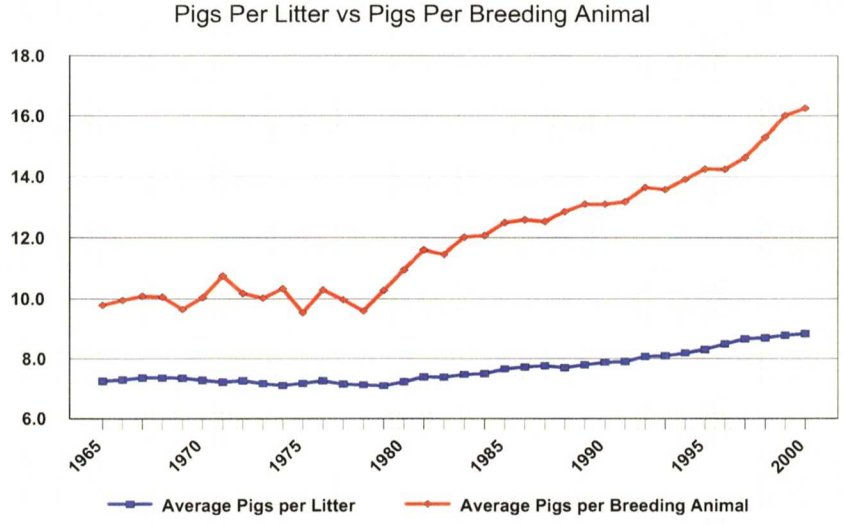
U.S. Cotton Yield



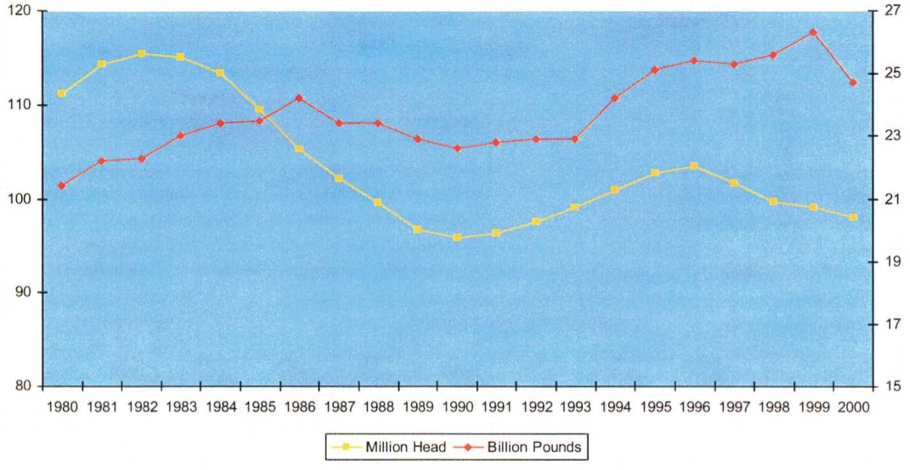
U.S. Soybean Yield



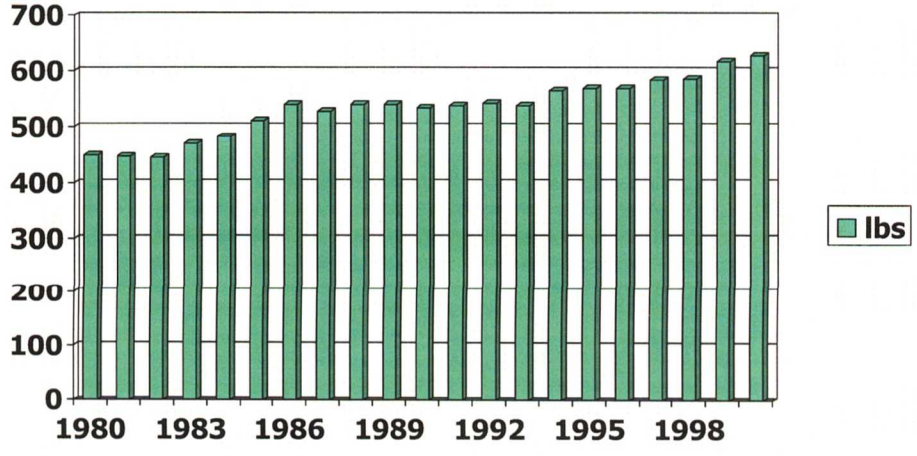
Hogs and Pigs



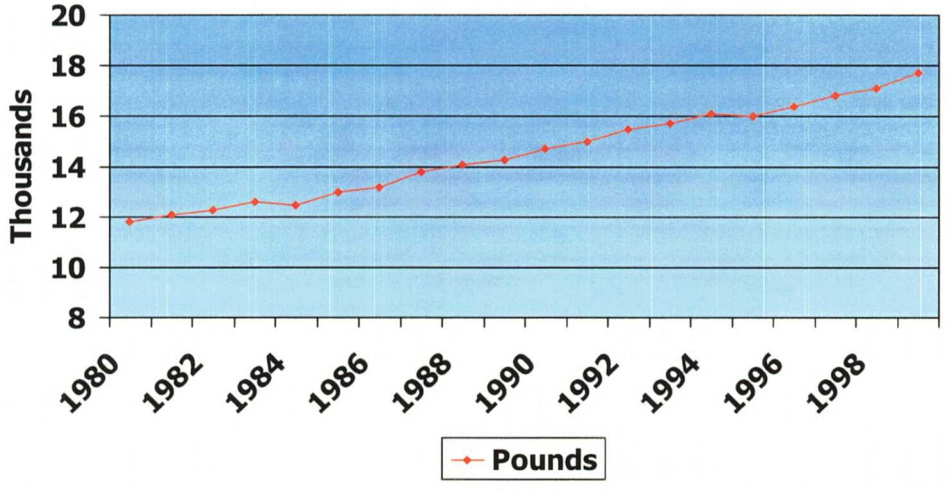
January 1 U.S. Cattle Inventory & Annual Beef Production



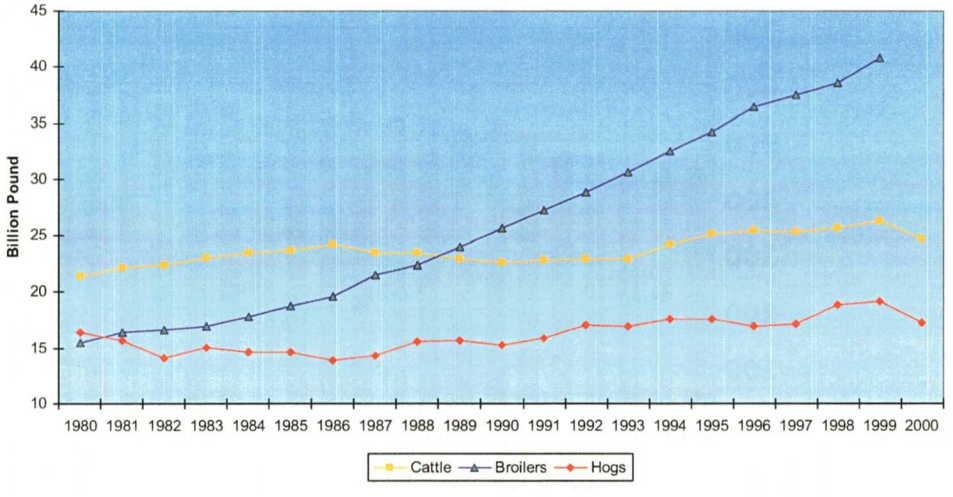
Beef Production per Cow



Annual Milk Production Per Cow



Pounds of Meat Produced Cattle, Broilers & Hogs



U.S. Bio-Tech Crop Varieties 2000 Crop Year

	Insect Resistant (BT)	Herbicide Resistant	Stacked	All Bio-Tech Types
	Percent of Planted Acres			
Corn	18	6	1	25
Cotton	15	26	20	61
Soybeans	-	54	-	54

Computer Usage

	Percent of Farms	
All Farms	1997	1999
Use Computer for Farm Business	20	24
With Internet Access	13	29
Farms with >$100,000 Sales		
Use Computer for Farm Business	47	53
With Internet Access	20	43

Changes Occurring in U.S. Agriculture

- Concentration
- Structure
- Technology
- Global Economy

World Supply and Demand

- Wheat - Russia and Ukraine crop smaller
- Corn - Projected U.S. exports down because of competition from Argentina and Brazil
- Rice – China Production is down
- Cotton – World production and stocks up – China increase more than offsets decreases in Pakistan

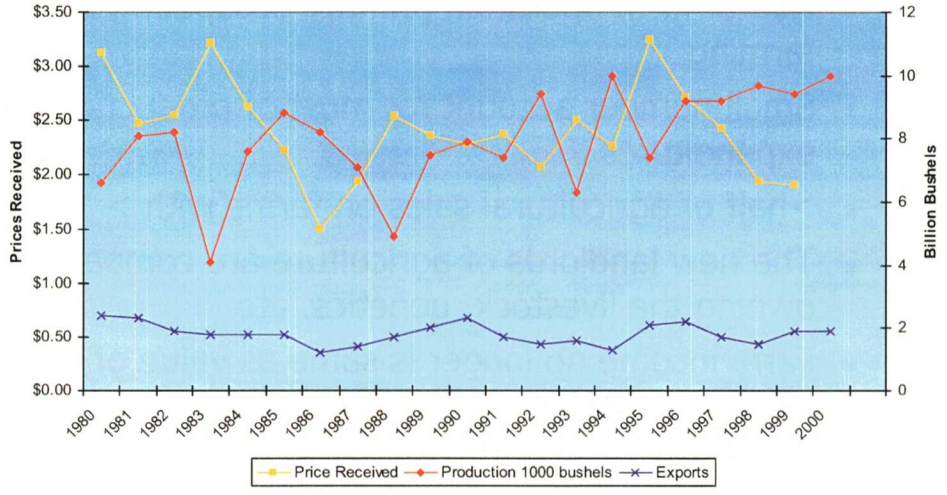
What does this mean?

- Half of farm operators primary occupation is not farming
- Small number account for most of production and expenditures
- >half of agricultural sales on farms with > 1 operator
- The new landlords of agriculture are companies, owning the livestock, genetics, etc.
- Farm income no longer is same as value of production minus expenses with contract agriculture

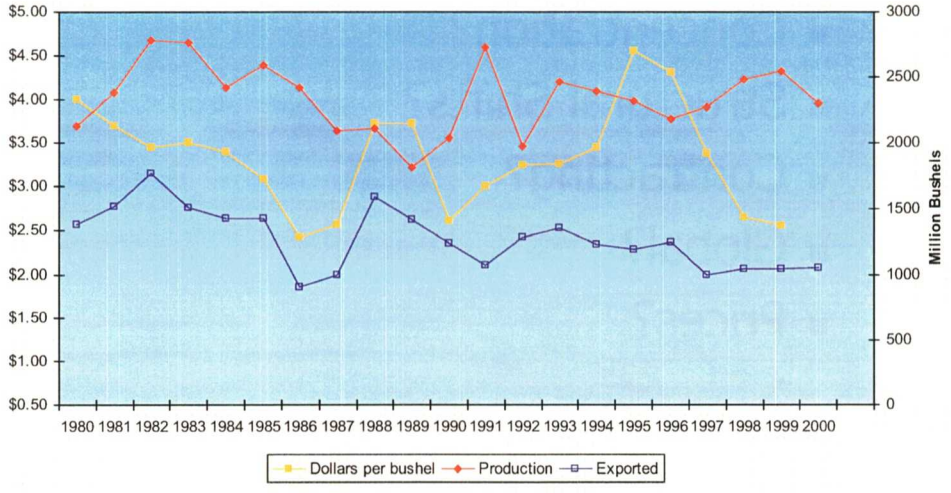
What about the future?

- Concentration?
- Structural Shifts?
- Contracting?
- Global?
- Prices?

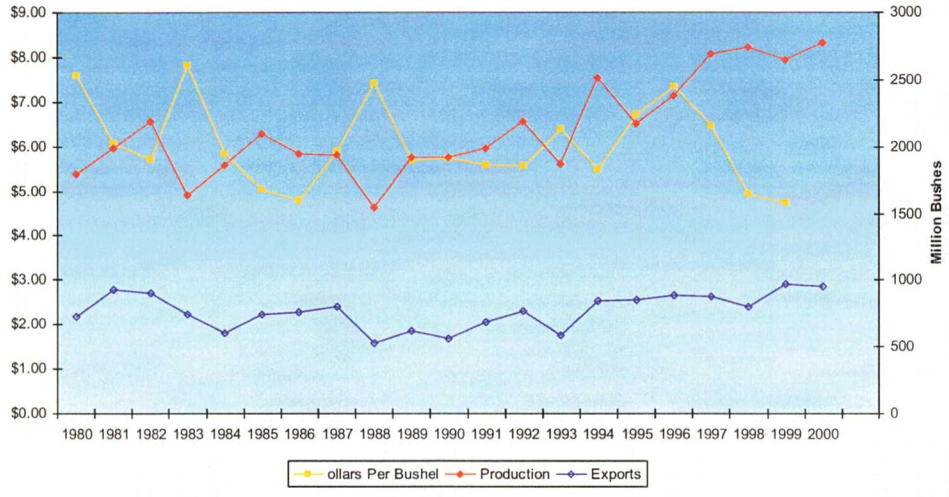
U.S. Corn Production, Exported, and Prices Received



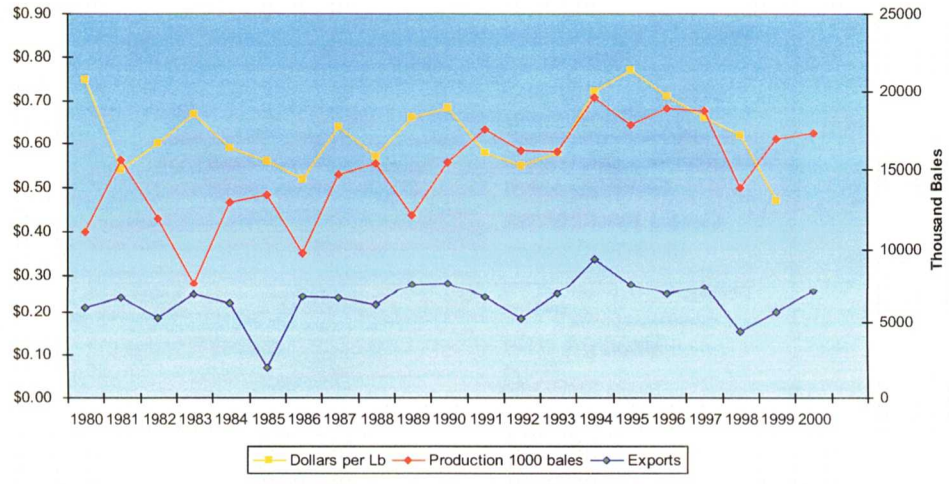
U.S. Wheat Production, Exported and Prices Received



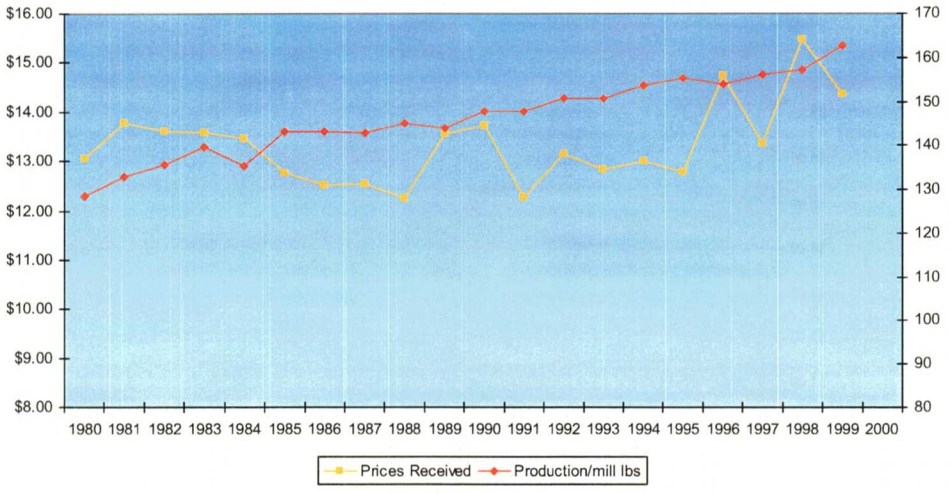
U.S. Soybeans Production, Exported, and Prices Received



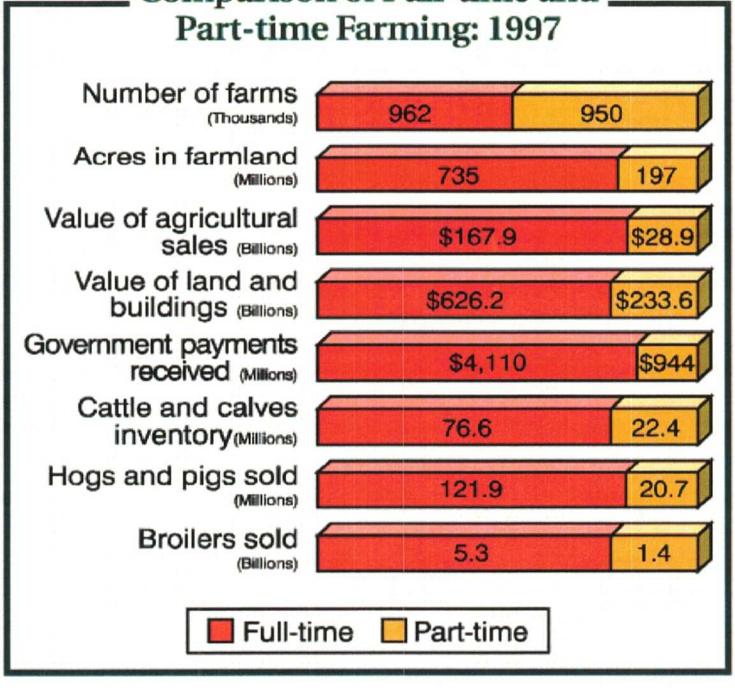
U.S. Cotton Production, Exported and Prices Received



U.S. Milk Production/Prices Received



Comparison of Full-time and Part-time Farming: 1997



GPS

Dr. John Havlin, Department Head, Soil Science, CALS
NC State University, Raleigh, NC
Rob McBride, Graduate Student
NC State University, Raleigh, NC

There was a short presentation concerning the use of the Global Positioning System as it relates to research plot-work. Most of this presentation was a hands-on activity. The attendees divided into small groups, went out in the parking lot, and collected geographic coordinate data from satellite information.

Why Me?

Dr. William "Bill" Fike, Professor, Crops Science, CALS
NC State University, Raleigh, NC

A transcript of this presentation was not provided as it was a motivational, from the heart, talk involving real life experiences of Dr. Fike with dealing with station personnel through the years. Dr. Fike considers research staff part of his family. He brought the perspective that relationships, both work and personal, are a key to life.

Research Center Administrators Society

Minutes – Summer Meeting

July 30 – August 2, 2000
Logan, Utah

The West! The Research Center Administrators Society held the summer meeting at Logan, Utah July 30 through August 2, 2000. The meeting was very graciously hosted by RCAS member Ray Cartee and his wife, Ruth. After a wonderful cookout at the Cartee gardens and residence, the summer meeting got under way at the Sherwood Hills Resort in the beautiful Utah mountains.

President Denny Thompson called the meeting to order at 1:30 p.m. on Sunday, July 30, 2000. There were 26 members present when the meeting started. Dr. Jere McBride presented the background and early development history of the Superintendents Section, which was named the Research Center Administrators Society in 1985. Dr. McBride commended the early efforts of Dr. Norman Justice of Missouri and Dr. Will Waters of Florida, among others.

Dr. Lyle Lomas distributed minutes of the meeting in Lexington. Motion by Dr. Ben Kittrell to suspend the reading of the minutes and approve the minutes, motion was seconded by Dr. Paul Sebesta. The motion was approved by unanimous voice vote.

Dr. Jere McBride gave a Treasurer's report, which included a deficit of $1,400.00 from the Lexington meeting, most of which were refunds of registrations to those who couldn't make the meeting due to bad weather. Motion by Carl Tart to approve the Treasurer's report, seconded by John Robinson. The motion was approved unanimously by voice vote.

Dr. Lyle Lomas reported that the newsletter was currently being mailed to over 300 and there was a discussion regarding future electronic communications in lieu of a hard copy. Dr. Thompson suggested that there should be a future discussion on this matter.

There was a motion by Ben Kittrell, seconded by John Robinson to consider Virginia for the summer meeting. After some discussion, Dr. Kittrell withdrew the motion and President Thompson requested a written ballot (no chads!) to select a location. The ballots were counted and Virginia was selected for the summer 2001 meeting. Dr. Jim Jones will host us at the Southern Piedmont Agricultural Research and Extension Center in Blackstone, Virginia.

There was a discussion relative to the role of state directors in our organization and the list of state directors can be found attached.

Alabama – Brian Gamble
Arkansas – Mike Phillips
Arizona – Bob Roth
California – Paul Sebesta
Florida – Ed Hanlon
Georgia – George Granade
Indiana – Jim Beaty
Illinois – Bob Dunker
Iowa – Wayne King
Kansas – Lyle Lomas
Kentucky – Bill Peterson
Louisiana – Alan Nipper
Michigan – Bernie Knezek
Mississippi – Jim Smith
Missouri – Jake Fisher
North Carolina – Carl Tart
North Dakota – Paul Nyren
Oklahoma – Mike Bourne
South Carolina – Ben Kittrell
Tennessee – Phil Hunter
Texas – John Sweeten
Utah – Ray Cartee
Virginia – Jim Jones

A roundtable discussion followed relative to planning the program for the winter meeting in Fort Worth, Texas. There was no shortage of program topics and a lively discussion of the topics resulted in a great lineup of topic suggestions for the program committee. The Sunday afternoon session adjourned at 4:40 p.m.

On Monday morning, the financial condition of our organization was discussed. There was general agreement that meeting registration fees would need to be increased for future meetings to maintain financial solvency. The bad weather for the Lexington, Kentucky meeting actually reduced the Society's cash reserve.

Dr. Jim Smith gave a presentation explaining the information available on the RCAS website. Included on the website are membership lists by state, calendar of events, and many other resources and links to other sites of interest to RCAS members.

Dr. Ben Kittrell reported from the RCAS expansion committee that the expansion of the organization is well underway and beyond the Southeast region of our birth. Twenty-three states are now represented in the organization. There was some discussion regarding

continued alliances with the SAAS winter meeting but no action was taken in this regard.

Tim Davis will be local arrangements chairman for the Ft. Worth meeting. Forty-four members attended the summer meeting in Logan, Utah. A most enjoyable and interesting lineup of tours and entertainment was conducted by the Utah State University staff following the meeting.

Respectfully submitted,

William O. Peterson

The Research Center Administrators Society
Executive Board Meeting Minutes
January 28, 2001

The Research Center Administrators Society Executive Board met on Sunday, January 28, 2001 at Fort Worth, Texas. Denny Thompson, President, presided at the meeting, which commenced at 2:30 p.m. local time.

RCAS members present at the meeting were Ben Kittrell, Jere McBride, Jim Jones, Paul Sebesta, George Granade, Jim Smith, Denny Thompson, Jim Beaty, John Robinson, Bill Peterson, Merritt Taylor, Ed Hanlon, Carl Tart, Eddie Pitzer, Phil Winslow, Lyle Lomas, Bob Dunker, Clyde Bogle, Mike Bourne, Bob Roth, Phil Hunter, Alan Niper and Wayne King.

Dr. Jere McBride conducted a discussion preliminary to the board meeting on society by-law changes, which were discussed when a special meeting was held in Raleigh, North Carolina on October 4, 2000. Dr. McBride reported that after a lengthy discussion in Raleigh, a recommendation for a new officer structure is being posed. The new officer structure is President, 1st Vice President, Secretary, Executive Business Manager, Communications Officer and Newsletter Editor.

Minutes from the summer meeting in Utah were distributed and discussed. It was moved by Dr. Jere McBride, seconded by Ben Kittrell that minutes be approved. Passed by unanimous voice vote.

Dr. Jere McBride presented the Treasurer's report, which showed a decline in fund balance for the organization from the prior year. A discussion followed and the issue of setting registration fees to adequately cover expenses when adverse conditions affect attendance was recognized as a difficult situation. It was suggested that setting registration fees be referred to the finance committee.

It was moved by George Granade, seconded by Ben Kittrell that the treasurer's report be approved. Passed unanimously.

President Denny Thompson announced that he was adding the immediate past three secretaries as members of a financial review committee.

A discussion ensued regarding the need for and role of a communications officer. Jim Smith agreed to serve as web-master and communications officer.

Carl Tart announced that members should sign up for copies of last year's proceedings. The group offered their sincere thanks to Carl for the fine job of preparing and printing the proceedings. Carl stated that much of the thanks should go to Dennis Onks and his staff.

A question was raised as to whether we should change the name of our organization to reflect the national scope – no action was taken.

Jim Jones presented a report of the finance committee and it was decided that his committee should study the question of setting meeting registration fees and also obtain a federal I.D. # for RCAS.

Awards committee – Dr. John Hodges was unable to attend, but it was reported that Joe McFarland is to be recognized for his distinguished service to RCAS.

New business – Dr. Ed Hanlon asked that members consider being members of CAST (Council of Agricultural Sciences and Technology). He said that RCAS could become an associate member for $200.00 per year. Paul Sebesta moved and Ben Kittrell seconded a motion to favor joining CAST and that Ed Hanlon present the case for joining to the membership. Motion passed.

Carl Tart announced that the session on GPS and demonstration would be Tuesday at 1:30 and would be held outdoors.

Dr. Jere McBride offered motion for adjournment.

Minutes of Business Meeting of Research Center Administrators Society
Annual Business Meeting
Fort Worth, Texas
January 30, 2001

The business meeting was called to order by President Denny Thompson at 10:50 a.m. on Tuesday, January 30, 2001 at Fort Worth, Texas.

Ben Kittrell offered a motion to approve the minutes of the previous meeting held in Lexington, KY without a reading but with the caveat that any discoveries during the meeting will be added to the minutes. Motion approved.

Bill Peterson – Secretaries Report

It was reported that 77 members are paid and registered here in Fort Worth.

Dr. Jere McBride – Treasurer's Report

Dr. McBride presented the treasurer's report, which showed a balance decline for the year of $1,008.68, as of December 31, 2000. The treasurer's report was approved by a unanimous voice vote.

Jim Smith – RCAS Communications

Mr. Smith said a member of his staff has developed the RCAS website and that they intend to expand the site to include any organizational news.

Phil Hunter – Directory Report

A discussion followed as to whether to continue the hard copy of the directory. It was moved by John Robinson and seconded by Ben Kittrell (two old-timers) that we continue the hard copy of the directory. Motion carried.

Ben Kittrell – Expansion Report

Ben reported that we now have half the states as active participating members in RCAS. It was suggested by Ron Robbins that we reach out to the non-participating states by contacting the Experiment Station Director of each state and ask them to send a representative to our meeting.

It was suggested that an official letterhead be developed for RCAS. Carl Tart agreed to develop one and get some printed.

Jim Jones – Finance Committee Report

Dr. Jones reported that we are one or two ice storms from a financial disaster. A discussion followed. Ray Carter said that he could have saved several hundred dollars if he had been able to better coordinate the Utah meeting attendance for the purpose of buying tickets, etc. Jim Jones reemphasized the importance of local arrangements persons to work with Jere McBride to establish meeting registration fees. Denny Thompson appointed Jim Jones, Jack Davis, and the three immediate past secretaries to serve on a financial oversight committee.

New Business

Dr. Ed Hanlon spoke to the membership regarding a recommendation that RCAS become an associate member of CAST (Council of Agricultural Science and Technology). Dr. Hanlon is on the board and could be our representative at CAST for the next three years. It was moved by Ben Kittrell that RCAS join CAST as an associate member and pay the $200.00/per year membership fee. Motion seconded by Paul Sebesta. Motion passed.

Summer Meeting

The summer meeting will be held in Virginia. The Virginia group is looking toward Williamsburg for a center, and they report several research centers within easy driving distance. They also are thinking a date after Labor Day might keep the schedule away from any field day conflicts. The group agreed to try a later date than in the past.

Jere McBride – By-Laws Change

Dr. Jere McBride reported that RCAS representatives from Louisiana, North Carolina, Arkansas, Tennessee, California, Virginia, Georgia and South Carolina met in Raleigh, North Carolina on October 4, 2000 to discuss changes to the RCAS by-laws. The by-law changes involve a change in officer structure and a new wording of our membership definition, the details of which are published elsewhere.

It was moved by Jere McBride and seconded by Phil Utley that the recommended by-law changes be approved.

A discussion followed:
Paul Sebesta accepted the floor to offer five "friendly" amendments to the by-law change motion. The are as follows:

1. Membership – new wording
2. Officers – new wording combines Communications Officer and Newsletter Editor
3. Remove –
4. Removes "Newsletter Editor"
5. Winter changed to "next"

The motion passed by unanimous voice vote.

Paul Sebesta invited the group to visit the desert southwest at a winter date different from the SAAS Winter meeting date.
Ben Kittrell renewed his invitation to RCAS members to join the "Plow and Owl" Society.

John Robinson – Nominating Committee

John Robinson reported that the nominating committee recommends the following slate of officers for the 2001-2002 year:

President – Carl Tart
1st Vice President – Lyle Lomas
2nd Vice President – Bill Peterson
Secretary – Paul Sebesta

It was moved by Mason Morrison and seconded by Joe Musik that nominations cease and the proposed slate be elected by acclamation. Motion carried.

Research Center Administrators Society
Executive Committee Meeting
September 8, 2002
West Lafayette, Indiana

The meeting was called to order by President Lyle Lomas at 1:20 p.m. President Lomas welcomed everyone to Indiana.

Members in attendance: Denny Thompson, Bill Peterson, Ken Scaife, Randall Rawls, John Hodges, Paul Nyren, Jim Bannon, Jim Smith, Fred Swanson, Lyle Lomas, Bob Dunker, Ray Cartee, Wayne King, Dennis Shannon, Jim Beaty, Bill Klein, Chuck Reide, Larry Earnest, Mike Phillips, Paul Sebesta.

MINUTES:

Minutes of the last Executive Committee Meeting were distributed, discussed and approved as circulated.

Minutes of the last Annual Business Meeting were distributed for consideration. After an omission was pointed out, the minutes were approved and corrected.

There was a discussion about the desire to post the minutes of the previous year's meetings on the web site prior to their approval in order for the members to have the ability to review them prior to the next meeting.

A motion was made to post the minutes on the web site by John Hodges and seconded by Paul Nyren. It was approved unanimously.

COMMITTEE REPORTS:

Treasurer:

Denny Thompson gave the Treasurer's Report and indicated that with the transition to a new treasurer, Allen Nipper conducted an audit and found everything to be in good order. Denny also indicated that a new bank had also been selected. John Hodges made a motion to accept the Treasurer" Report, seconded by Bill Peterson, and approved unanimously.

Financial:

Denny Thompson continued with the Financial Committee Report in the absence of the committee chairman. RCAS ended up the year in good shape after the Orlando meeting. There is a desire by the Society to recognize Jere McBride for his years of service to RCAS as the Business Manager. Bill Peterson made a motion to honor Jere with a plaque to be awarded at the next annual meeting in Mobile. It was seconded by Jimmy Ross and approved unanimously.

Proceedings:

There was a general discussion concerning the proceedings. Carl Tart continues to provide a great service to the Society by publishing the proceedings. There may be a need to combine the 01 and 02 proceedings and the general wishes of the Executive Committee are that Carl continue to do whatever he can to facilitate these efforts.

Membership:

John Hodges led the discussion concerning the membership directory. The Directory has been a great asset to the membership but it may become more difficult to produce annually as in the past. There was a general discussion about the need for a hard copy considering that the membership list is posted on the RCAS web site.

Jimmy Ross made a motion that the Society utilize the electronic version of the membership directory as posted on the web site, that the secretary serve as coordinator and provide updates to the RCAS web site administrator (Elizabeth Cook). Motion was seconded by Bill Peterson and passed unanimously.

Jim Smith reported that the RCAS web site is going well. Elizabeth Cook of the Stoneville REC is doing a good job with the RCAS website. She would welcome any requests, comments or suggestions to improve the web site. Some of the members indicated that they access the site regularly.

Awards:

John Hodges indicated that the request for nominations for the Distinguished Service Award had been sent out and that the Awards Committee nominated Ben Kittrell for the DSA. John so moved. The motion received a second from Paul Nyren and it passed unanimously.

Nominations:

Denny Thompson indicated that the nominations for the upcoming year include the following:

President – Bill Peterson
Vice President – Paul Sebesta
Secretary – Tim Davis

Jimmy Ross made a motion to accept these nominations. Second from Randall Rawls and motion passed unanimously.

Upcoming meetings:

Mobile Annual Meeting, February 2-4 – Randall Rawls gave a report concerning the arrangements being made for the Mobile meeting.

Summer 2003 meeting in California – Jimmy Ross gave a brief report about the plans being made for the Society's summer meeting to be held in Northern California in early September of 2003.

After a welcome by the host for the meeting in Indiana, Jim Beaty, the remainder of the session focused on program planning and was then adjourned at approximately 4:00 when the members attended a seminar about the Indiana turf program.

RCAS Committee Assignments 2000-2001

Local Arrangements (Fort Worth, TX)

Tim Davis, Texas, Chairman

Awards

John Hodges, Tennessee, Chairman
Randal Rawls, Alabama
Dave Langston, Arizona

Nominations

Findlay Pate, Florida, Chairman
John Robinson, Arkansas
Dennis Thompson, North Carolina

Membership and Internet Services

Joe McFarland, Chairman
Phil Hunter, Tennessee
Ron Robbins, Louisiana
George Granade, Georgia
Mike Phillips, Arkansas
Merritt Taylor, Oklahoma
Jim Smith, Mississippi
Paul Sebesta, California
Ray Cartee, Utah
Ed Hanlon, Florida

Proceedings

Dennis Onks, Tennessee, Chairman
Carl Tart, North Carolina
Merritt Taylor, Oklahoma

Finance

Jim Jones, Virginia, Chairman
Denny Thompson, Executive Treasurer, North Carolina
Malcomb Pegues, Alabama
Jim Smith, Mississippi
Bob Roth, Arizona
Ed Hanlon, Florida

RCAS Expansion

Ben Kittrell, South Carolina, Chairman
Paul Sebesta, California

Butch Withers, Mississippi
Findlay Pate, Florida
John Robinson, Arkansas
John Hodges, Tennessee
Lyle Lomas, Kansas
Carl Tart, North Carolina
Jim Pitts, Alabama
Chuck Reid, Michigan
Paul Nyren, North Dakota
Jim Beaty, Indiana
Ray Cartee, Utah
Robert Dunker, Illinois

2001 Distinguished Service Award Recipient

Dr. Marshall J. (Joe) McFarland
Resident Director of Research, Texas Agricultural Experiment Station
Stephenville Research and Extension Center
Stephenville, Texas

Dr. McFarland is recognized this year by the RCAS membership for his distinguished service and leadership towards enhancing the Society's mission of improving the administration of agricultural research units. During this period he has served as the State Representative for Texas, chaired the Membership and Internet Services committee, and served on multiple other RCAS committees.

Dr. McFarland attended the University of Idaho where he earned a B.S. in Geology in 1961. He then earned a M.S. in Meteorology in 1972 at the University of Oklahoma. He continued at the University of Oklahoma to earn his Ph.D. in Engineering in 1975. He is also a Professional Engineer (P.E.), State of Texas. Joe's career includes service in the United States Airforce, Active Reserve, and Inactive Reserve. He retired from service to our country as a Colonel. In addition to the military, Joe worked for the National Weather Service at the Environmental Sciences Service Center in College Station, Texas. He served as Associate Professor for the Department of Agricultural Engineering at Texas A&M University and was Resident Director of Research at Texas Agricultural Experiment Station, Stephenville Research and Extension Center.

Although retired, Dr. McFarland continues assessment and planning for rural communities, serves on the USDA Resource Conservation and Development Council, and is involved in Rotary. His personal interests include lapidary, rocks and minerals, and gardening.

Past Recipients of the Distinguished Service Award for service, leadership, and outstanding contributions to RCAS over an extended period of time.

YEAR AWARDED	RECIPIENT
1987	John Ewing
1988	Robert "Bobby" Moss
1989	Joe High, Jr.
1990	Wallace Griffey & Bill Webb
1991	Norman Justus
1992	Gene Morrison & Jere McBride
1993	William Loe & Howard Malstrom
1994	James Riley Hill
1995	Edward Worley
1996	Robert Freeland & Will Waters
1997	Joe Musick
1998	Dennis Onks
1999	John "Ike" Sewell
2000	F.T. "Butch" Withers, Jr.
2001	Joe McFarland

PAST PRESIDENTS, RCAS

YEAR	PRESIDENT
1969 – 1970	Robert Moss
1970 – 1971	Preston Reed
1971 – 1972	Charles Douglas
1972 – 1973	Charles Douglas
1973 – 1974	D. M. Gossett
1974 – 1975	Henry Marshall
1975 – 1976	Tom Corley
1976 – 1977	H. Rouse Caffey
1977 – 1978	E. G. Morrison
1978 – 1979	Robert Moss
1979 – 1980	Joe High, Jr.
1980 – 1981	Julian Craigmiles
1981 – 1982	Freddy Peterson
1982 – 1983	Wallace Griffey
1983 – 1984	Bill Webb
1984 – 1985	Gary Elmstrom
1985 – 1986	Norman Justus
1986 – 1987	Robert Freeland
1987 – 1988	Jere McBride
1988 – 1989	Howard Malstrom
1989 – 1990	Bill Loe
1990 – 1991	Edward Worley
1991 – 1992	Will Waters
1992 – 1993	James R. Hill, Jr.
1993 – 1994	Joe Musick
1994 – 1995	Dennis Onks
1995 – 1996	Jim Pitts
1996 – 1997	F. T.(Butch)Withers
1997 – 1998	Ben Kittrell
1998 – 1999	Findley Pate
1999 – 2000	John Robinson