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16 MR. CARLIN: Gentleman, thank you very
17 much. Dr. Goodwin?

18 MR. GOODWIN: Thank you very much.
19 I'm handing out copies of my presentation. I
20 couldn't get it here earlier.

21 MR. CARLIN: You're all the way from
22 Stillwater?

23 MR. GOODWIN: I'm sorry?

24 MR. CARLIN: You're all the way from
25 Stillwater?

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1 MR. GOODWIN: No, I'm here in
2 Fayetteville. My degree is from Oklahoma State.

3 MR. CARLIN: All right. They hire
4 Oklahoma State grads?

5 MR. GOODWIN: They do, they do. In
6 fact, they even hire people from Tahlequah, which
7 is where I'm from. I grew up in Tahlequah, honest,
8 on the family farm.

9 I'm speaking specifically about poultry
10 litter and some things that are being done now and
11 I want to give a little bit of background that Mr.
12 Teague has already demonstrated, but this
13 includes also value added. It does not deal with
14 specifically farm sales. This is the results of an
15 economic impact study that we completed at the
16 University of Arkansas. And we do this every
17 second year and this is the most recent data. It
18 was for 2003 because the data lags two years.

19 You can see here the importance of
20 agriculture. Ten percent of the gross state
21 product in Arkansas is agriculture. That far
22 exceeds any other state in the southeastern United
23 States. If you look specifically at the sectors, you
24 can see here crops, animal production or livestock,
25 and forestry. And you can see that 85 percent of

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1 the specific livestock activity is directly
2 attributable to poultry and I would caution you,
3 again, this does not include farm receipts. This is
4 only the value added part of agriculture.

5 Just to give you an idea for the six
6 counties in northwest Arkansas, Carroll, Madison,
7 Benton, Washington, Sebastian, and Crawford, we
8 did a study and this is what you see for the
9 economic impacts of poultry just in the six county
10 area. About 12 percent of the jobs, 13 percent of
11 the wages and ten percent of value added in the
12 six county economy are directly tied to poultry

13 production.

14 Now, I want to just speak for a moment,
15 and Dr. Waldroup approached this a little bit, but
16 you can see the areas in 1982, the red dots
17 represent a million broilers and you can see where
18 broiler production was in 1982. So if you'll now
19 advance to the next slide, this is in 2002, more
20 red in the same place. And I just want to
21 elaborate on that little bit. If you notice these
22 areas include the Ozarks, the Appalachians, the
23 farming areas of south central Mississippi, the
24 thin clay soils and northern Alabama and north
25 Georgia. The only exception is the Chesapeake

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1 Bay area which is very close to some huge
2 consumer markets.

3 Why is poultry production, and for that
4 matter concentrated animal production, in these
5 areas? No alternatives for land, for crop
6 production, small farms, traditionally lower
7 educational levels back in decades past, so all
8 these things go together to spell a way for small
9 farmers to remain on their own land and keep that
10 in their family.

11 Now, I emphasize with the next slide, a
12 little bit confusing, this is USDA data and they go
13 through a lot of gyrations about one-time
14 inventory and when the inventory is taken and the
15 size of the birds, so if we go to the next one, I
16 tried to decamp it down. This specific area as
17 comprised of four basic watersheds, the Elk River,
18 it's just about like Illinois and Beaver and you can
19 see here just an accounting of the number of
20 houses, the number of birds and the tons of litter
21 for all chickens including pullets and breeder hens
22 and for also turkeys and you can see there the
23 totals for litter is about 750,000 tons annually
24 produced in these four watersheds.

25 Now, I think this slide highlights the

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1 family or the small farm nature of poultry
2 production. All poultry growers in this area
3 contract with integrators and there's been some
4 discussion on that already. You can see here,
5 though, these numbers represent the number of
6 farms in each watershed, whether it's in Arkansas
7 or Oklahoma, that have one or two houses, three
8 or four houses, or more than four houses and the
9 average number of houses for poultry farmers in
10 this area is about three houses. So they're not

11 huge farms. And there are some newer farms that
12 are 10, 12 houses, eight houses, but most of them
13 are smaller farms and they operate on small pieces
14 of land.

15 Now, these red circles here, let me
16 explain this. The red circles represent a 30 mile
17 radius around the little red hash mark in the
18 center and these represent poultry complexes.
19 Each hash mark is a poultry complex and they will
20 on average slaughter between one and 1.2 million
21 birds per week and you can see the number of
22 poultry complexes in the Ozarks region and also
23 across western Arkansas and up into the central
24 part. And this, the darker colors represent where
25 crops are grown, so actually this is pasture and

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1 hay acreage.

2 And the next slide, which we'll go to that,
3 is the grain acreage. And you can see here that we
4 have excellent soil amendment, and I'll get to that
5 in the minute, the amount of nutrients far from
6 areas where crops are produced in large
7 quantities. So that highlights what we need to do
8 with litter is to move it some.

9 And what has really happened, this is just
10 a slide to sort of point out what many of us are
11 aware of, that we've had too much of a good thing
12 for too long in the same place. Poultry litter has
13 allowed this area to transform its cattle
14 production and hay production in very thin, clay,
15 rocky soils that become extremely droughted by
16 adding nutrients and organic matter that the
17 pasture badly needed. And so cattle production is
18 increased on these family farms. Almost 90
19 percent of poultry producers also have cow/calf
20 operations or they produce hay, so they're really
21 symbiotic type of activity.

22 And so what we've got to find out is about
23 ten years ago the science advanced to the point
24 where people realized that excess phosphorus was
25 an issue. Until then farmers had applied to the

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1 nitrogen take up rate for plants and phosphorus
2 accumulated because of the amount taken out of
3 the soil by the plants was about four times as
4 much nitrogen as it was phosphorus and it appears
5 in about equal ratios in poultry litter.

6 So we've got some options. We can go to
7 on or near farm and economically is fine. That's
8 why the system has evolved like it has, but

9 environmentally it's limited based on the
10 comprehensive nutrient management plans that
11 Mr. Pharr spoke about.

12 Off-farm, environmentally that's really
13 good, but it's economically infeasible today, and
14 I'm going through a couple of things. So we look
15 at off-farm options, centrally coordinated
16 enterprises or value added manufacturing sales.
17 So what we want to try to do is what do we do with
18 the excess litter. It needs to be moved someplace,
19 but right now -- in the past export has not been
20 sustainable. We had some grants that subsidized
21 up to \$10 per ton for movement of litter and that
22 \$10 ran out at about 160 miles, but even with the
23 \$10 it wasn't economically competitive.

24 So we have some solutions here, look at
25 raw litter, pelletizing, composting, or energy

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1 production. I assume Mr. Rupert Fraser here will
2 speak about energy production.

3 This is an example of how you might
4 manage off-farm litter, and in the orange square is
5 a baler that I want to speak a little bit about. A
6 particular program here that I'm involved with has
7 funding from various sources. It's very
8 well-funded in the research arena. The small
9 business innovative research grant is looking at
10 preparing a litter baler that would compress litter
11 at about a 4:1 ratio in one and a half to two ton
12 plastic wrapped bales for shipment into crop
13 areas. And I'll show you a picture of that in a
14 moment.

15 Another thing we're looking at is where
16 would we locate this? Obviously, it has to be
17 economically located for transportation and we've
18 already done the work. We've identified two sites,
19 one at Decatur and one at Lincoln. In fact, it's
20 less than a mile from Mr. Pharr's farm.

21 We're also looking with EPA at some
22 co-processing with dewatered municipal biosolids.
23 And the compounded population growth here in
24 Northwest Arkansas is about 40 percent per
25 decade. It's been phenomenal. This is the fourth

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1 fastest growing area in the country in the past and
2 so there's a lot of people pressure. Plus, 150,000
3 tons of dewatered municipal biosolids are
4 produced in these two counties, so something has
5 to happen.

6 NRCS monies have come in to help us

7 continue this. First, we looked at developing some
8 markets with BMP's, Inc. and what we did there
9 was develop markets to ship litter out of the
10 cropping areas.

11 And the final thing that we're doing is
12 looking at developing some software packages to
13 help litter producers and purchasers match. This
14 is interactive. It's a bid system and it also helps
15 them evaluate the litter.

16 And the last couple of things I'll show
17 you, there was some talk about the value of the
18 litter. Based on January 15th prices for litter,
19 you can see there raw litter has an approximate
20 value of \$58 per ton. Raw litter combined with the
21 -- well, the biosolids have a value of about 61
22 bucks a ton, so if you combine that you get in
23 mid-50s range for actual nutrient value of the
24 litter. Historically, though, the price that people
25 pay is about 25 to 28 bucks, so the value of the

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1 litter is far greater than the price the market has
2 been willing to bear and this is just a couple
3 pictures of the baler. These bales can be stored in
4 the field without storage and it really facilitates
5 use of the litter in crop producing areas. Thank
6 you for your time.

7 MR. CARLIN: Michael?

8 MR. BLACKWELL: Thank you very much
9 for your presentation. I'd like for you to
10 summarize what I think I heard by answering a
11 question that has to do with population
12 projections for the United States. We just passed
13 300 million as a nation and most of us will see 400
14 million in our lifetime given the rates of growth.
15 If we consider a relative increase in poultry and
16 other edible protein products, what do you think
17 all of this is saying to us today, are we going to be
18 able to handle the litter for a population that size
19 given the immensity of growth on the animal side?

20 MR. GOODWIN: I'm convinced we can, if
21 for no other reason than the escalating energy
22 prices. Right now anhydrous ammonia is over
23 \$400 a ton. It's going up and up every year. And
24 we have a product here that contains an excellent
25 source of carbon, trace minerals, microbes to

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1 reinvigorate the soil in addition to the minerals.
2 So I think as we get inventive with compressing
3 into the bales and doing other things, palletizing,
4 and there are a lot of ways that we can process

5 this litter, either to use it for land application
6 growing crops or for energy purposes.

7 MR. BLACKWELL: Just one follow-up.
8 Any concerns about other problems that may come
9 with that? I mean, obviously there are uses that
10 you have identified that will continue into the
11 future and maybe new ways to process the product.
12 What should we be concerned about, if anything?
13 You've painted a rosy picture and I guess I'm just
14 trying to make sure I understand that it's all rosy
15 as you said.

16 MR. GOODWIN: Well, I'm not sure it's all
17 rosy. It's not without its challenges, but it has a
18 lot of opportunities. If you look at me, you know,
19 I could weigh 40 pounds less and probably be
20 healthier, so I'm saying the thing we have to watch
21 for is to make sure we appropriately utilize the
22 litter as science prescribes so that we won't get
23 excess usage. And that's true with any planning.

24 MR. CARLIN: Fred?

25 MR. GOODWIN: Thank you.

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1 MR. KIRSCHENMANN: I was interested in
2 your numbers in terms of smaller farms and, you
3 know, one or two or three units. Have you or your
4 colleagues done any numbers on the net return to
5 farmers, these smaller farmers that are using
6 these operations?

7 MR. GOODWIN: I have done several
8 papers and that's one reason I passed out my card.
9 Many of you may want to ask for these, but a
10 recent one in the Journal of Applied Poultry
11 Research shows that returns per square foot are
12 about \$1.70 on average. Now, that's about what
13 they were in 1979. The difference is farmers are
14 controlling about twice as many square feet of
15 production as they had. In gross terms, just gross
16 revenues not subtracting anything out, for an
17 average size housing unit between 25 and 30,000
18 per year per house for gross revenues. Obviously,
19 out of that they have to pay interest, utilities, et
20 cetera, but that's about what we're seeing and
21 obviously as the house gets paid out your return
22 gets a lot bigger.

23 MR. KIRSCHENMANN: And the net return
24 per house is what?

25 MR. GOODWIN: Depending on what stage

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1 that you're in and what your energy prices are,
2 you're looking at about \$9-10,000 per house and,

3 of course, that's -- you know, I hesitate to give
4 exact numbers because there's so many variables,
5 but I also have a spreadsheet that will allow that
6 to be estimated if you will contact me.

7 MR. CARLIN: Bernie?

8 MR. ROLLIN: In Colorado people sell
9 dried poultry waste for lawns and gardens. Is that
10 market saturated or can you envision that for the
11 future as a natural lawn fertilizer?

12 MR. GOODWIN: There are some farms
13 right now looking at composting products and also
14 pelletized and bagged products and the key there
15 is to hit the market niche because when you
16 pelletize you add about \$60, between 40 and \$60 a
17 ton, so you have to get these niche markets and be
18 able to supply enough to get into a Lowe's or a
19 Home Depot or somebody like that. But, yes, I
20 think there's a niche market for that.

21 MR. CARLIN: Brother David?

22 MR. ANDREWS: You and a number of
23 speakers have alluded to the fuel versus food use
24 of corn and also to the fact that energy prices are
25 increasing on poultry operations. We heard -- we

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1 visited a farm the other day where they were at
2 significant monthly expenditures for energy use.
3 And we heard one gentleman project that the
4 poultry industry is, here in this state, on the
5 decline and suggested that within ten years we'll
6 have significantly fewer producers or -- fewer
7 producers. I'm wondering more concretely what
8 you might estimate the poultry units condition will
9 be over the short haul in the light of increased
10 energy production and the doubling or tripling of
11 the price of grain?

12 MR. GOODWIN: Well, there were two or
13 three parts to the question. I'll address the feed
14 cost first. That would impact directly the
15 integrators which supply the feed, and to the
16 extent that that price increase that's necessary
17 would cause a contraction in chicken meat
18 demand, that could cause fewer placements on the
19 farms. That's one possibility.

20 With respect to energy prices, there are
21 people that I know that have 12-house operations
22 that last month had over a \$30,000 natural gas
23 bill. So that's not to be ignored and there are
24 some initiatives in the state of Arkansas right now
25 to look at reducing or exempting sales tax on that.

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1 I know there are some companies that have
2 considered increasing their fuel allotments, so
3 there is some effort there. But I think in the
4 short-term marginal producers given these
5 squeezes, there could be some contraction as
6 people decide to sell their land for development
7 purposes and close out their poultry operation.

8 MR. CARLIN: Do you feel that the
9 economic issues you've shared with us will drive
10 the kind of solutions we need to deal with litter for
11 the most part or does there need to be more
12 investment into research for new ideas?

13 MR. GOODWIN: Well, I -- you know, an
14 economist, Harry Truman, says on the one hand
15 and on the other hand you wanted a one-handed
16 economist, but I have two answers to that. I'm
17 very much a market -- free-market economist;
18 however, I'll be the first one to say when the
19 market is not solving a problem there needs to be
20 government intervention. And I think the
21 government can best intervene by putting in
22 research dollars to come up with new and
23 innovative ways to deal with animal byproducts
24 and manures and I also think the tax credit that is
25 being considered now in Arkansas and Oklahoma

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1 has funds going into the EQIP program with the
2 NRCS. These kinds of initiatives help bring the
3 cost of looking at manure management in
4 alternative ways down so that the market hopefully
5 will catch up to that as energy prices increase.
6 Maybe a few years out, the market can address it,
7 but right now the market can't address it.

8 MR. CARLIN: Very good. Thank you.

9 MR. GOODWIN: Thank you.