

**Summary of Results**

**April 2011**

**BEAG Report**



**2009  
Southeastern  
United States  
Switchgrass  
Production  
Survey**

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## **Study Purpose**

Switchgrass, a perennial grass native to North America, is considered a potential new biomass resource. In addition to having significant promise as an energy feedstock, switchgrass can also be co-fired with coal, converted to oil and sprayed on coal to decrease dust, or converted to ethanol. Switchgrass can have significant environmental benefits over other energy sources in the production of energy. Compared to low grade coal, burning switchgrass for energy produces less toxic atmospheric emissions (especially sulfur). Ethanol produced from switchgrass results in lower greenhouse gas emissions than either gasoline or corn grain ethanol.

Agronomically, switchgrass is high yielding, drought tolerant, and requires lower fertilizer and herbicide inputs than corn. The native perennial needs to be planted only once every ten years or more and can be harvested annually, either in a two or one harvest system after the first frost, using conventional hay equipment. Switchgrass production adds organic matter to soils, helps reduce erosion, and provides wildlife habitat. In addition, switchgrass can also be used as forage for livestock.

The purpose of this study was to ascertain producers' willingness to adopt switchgrass as an energy feedstock crop. The study also examines producers' attitudes toward switchgrass market development, opinions about contracts for switchgrass, and joining cooperatives to handle switchgrass.

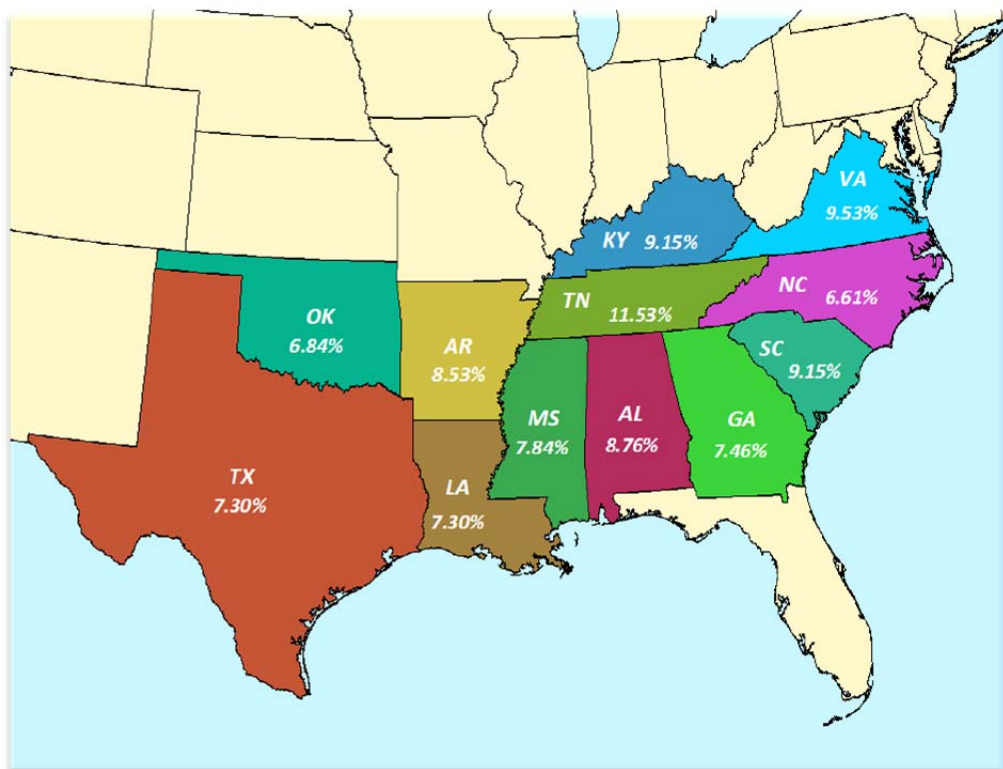
## **Data and Analysis**

### *Data*

The data used in this study were collected from a mail survey of agricultural producers with at least \$10,000 in sales (see survey, Appendix A). The survey was sent to 7,000 producers randomly selected by the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) from the

following states: Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

The initial mailing of the survey included a cover letter explaining the study's purpose and a postage-paid return envelope. There was a follow-up reminder postcard sent a week after the initial mailing. A follow-up mailing that included a letter emphasizing the importance of the survey, and another copy of the questionnaire was sent two weeks after the mailing of the reminder postcard. A total of 1,300 surveys were returned and recorded (see Figure 1 for returned surveys response rate by state).



**Figure 1: Switchgrass Survey Response Rate by Selected States**

The five major areas addressed in the survey are: 1) the respondent's knowledge of, and interest in, switchgrass as an energy crop; 2) the respondent's opinion on topics related to switchgrass production as a biomass feedstock, including conversion of acreage in response to a specified

switchgrass price; 3) characteristics of the farm operation, including farm size, types of enterprises, and use of various agricultural practices; 4) financial information, including on and off-farm income; and 5) demographic characteristics of the respondents.

After being provided with information about switchgrass, producers' willingness to grow switchgrass was solicited with two questions. First, producers were asked whether they were interested in growing switchgrass as a crop for energy production. This question was included to screen out producers who were unlikely to entertain an offer to grow switchgrass. Producers who expressed some interest in producing switchgrass were asked to continue to a question asking whether they would be willing to produce switchgrass given a specified farmgate per ton price for switchgrass. Each respondent was randomly assigned one of five different prices - \$40/ton, \$60/ton, \$80/ton, \$100/ton, or \$120/ton. If the respondent indicated that they would be willing to produce switchgrass at that price, then they were asked how much switchgrass they would grow. The results from the survey are presented using means and percentages, graphics, and summaries.

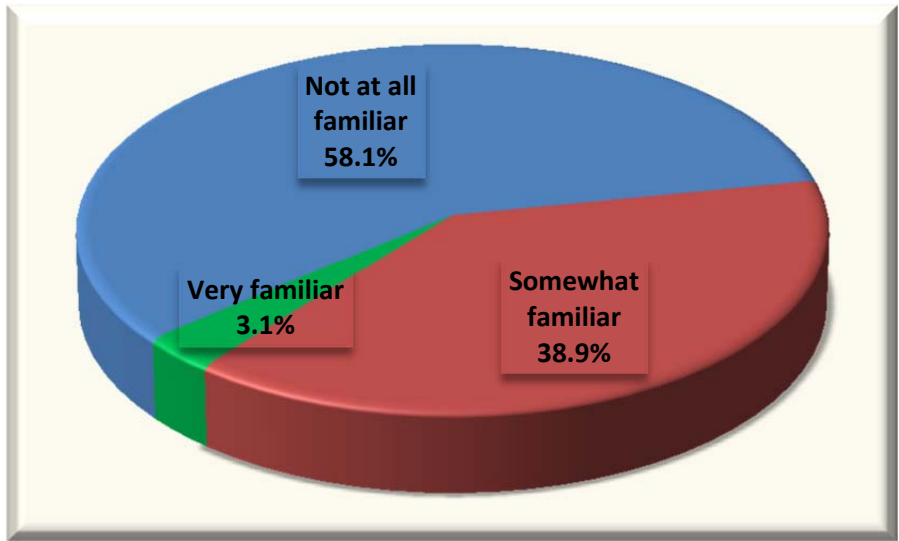
## **Results**

### *Survey Data Descriptive Measures*

A total of 1,300 agricultural producers responded to the mail survey for a response rate of 18.6 percent (1,300/7,000). Throughout the document, "N" represents the number of responses to a particular question. The survey design has three major sections: 1) About switchgrass; 2) About your farming operation; and 3) About you. For this analysis, results from the survey are presented in the same section format.

### *Section I. About Switchgrass*

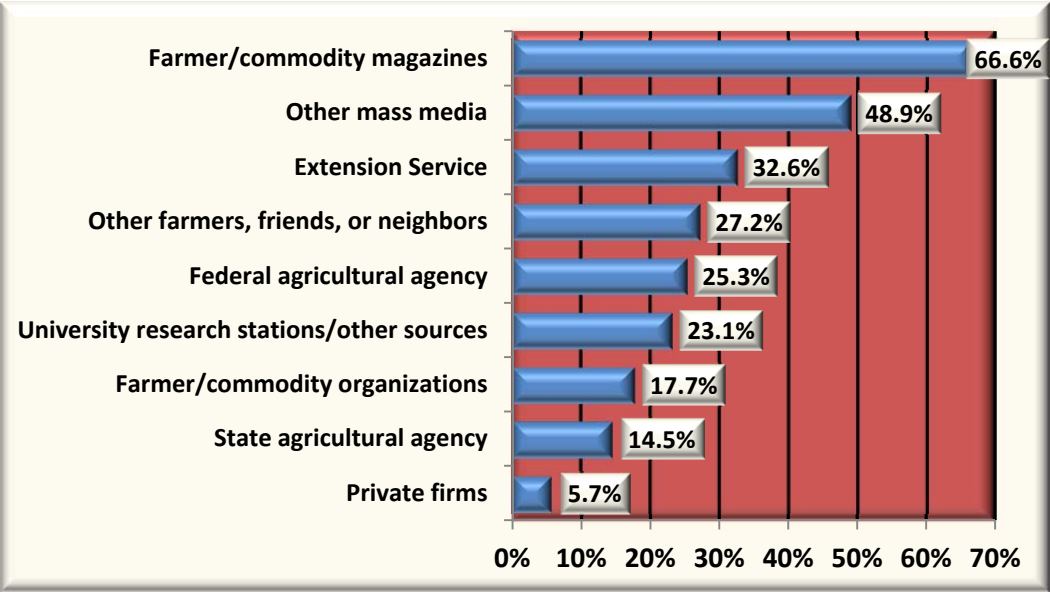
Agricultural producers were asked how familiar they were with switchgrass as a crop to be used in energy production. A total of 1,137 responded to the question. As shown in Figure 2, 58.1 percent



**Figure 2: Agriculture Producers Response to Familiarity of Switchgrass as a Crop Used for Energy Production (N=1,137).**

of the agricultural producers were not at all familiar with switchgrass as a crop to be used in energy production, 38.9 percent were somewhat familiar, and 3.1 percent were very familiar.

Agricultural producers were asked what sources they use to obtain information on switchgrass. A summary of the results are presented in Figure 3. The top three sources were farmer or commodity magazines (66.6 percent), followed by other mass media (Internet, radio, TV, newspapers, magazines) (48.9 percent), and the Extension Service (32.5 percent).



**Figure 3: Agricultural Producers Sources of Information on Switchgrass (N=593).**

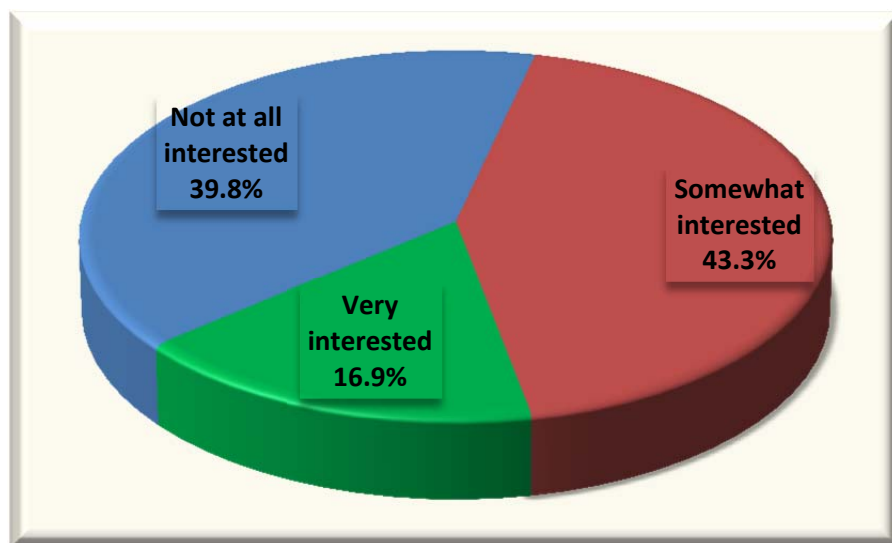
Agriculture producers were asked to rate the importance of various factors that might influence their decision to produce switchgrass. A rating of 1 was assigned for not at all important to 5 for extremely important. A summary of the results are presented in Table 1. Using the mean ratings, profitability of growing switchgrass compared with other farming alternatives (3.53), concerns that the

**Table 1. Importance of Factors Influencing the Decision to Produce Switchgrass.**

| Factors   | Mean | Percent Responding As: |          |           |       |            |
|---|------|------------------------|----------|-----------|-------|------------|
|   |      | Not at All             | Not Very | Some-what | Very  | Extre-mely |
| Possible conflicts between planting/harvest period for switchgrass and planting/harvest period for your other crops (N=1,119) | 2.43 | 32.44                  | 19.84    | 26.45     | 14.75 | 6.52       |
| Concern that the market for switchgrass as an energy crop is not developed enough yet (N=1,132)                               | 3.49 | 13.43                  | 4.42     | 25.35     | 33.75 | 23.06      |
| Profitability of growing switchgrass compared with other farming alternatives (N=1,130)                                       | 3.53 | 11.68                  | 6.02     | 23.45     | 35.49 | 23.36      |
| Possibility that you will cease farming in the next few years due to retirement or other reasons (N=1,143)                    | 2.46 | 35.08                  | 19.95    | 20.21     | 13.46 | 11.20      |
| Your knowledge about growing switchgrass compared with your knowledge about growing other crops (N=1,131)                     | 2.91 | 20.42                  | 14.94    | 29.80     | 22.72 | 12.11      |
| Concern about planting a perennial crop such as switchgrass on land that is leased (N=1,111)                                  | 2.12 | 50.95                  | 13.41    | 15.75     | 12.33 | 7.56       |
| Opportunity to diversify your farming operation (N=1,122)   | 2.93 | 18.72                  | 12.75    | 35.20     | 23.53 | 9.80       |
| Potential for creating jobs in your community (N=1,121)   | 2.85 | 22.21                  | 14.01    | 30.69     | 22.84 | 10.26      |
| Potential for switchgrass to reduce erosion on your farm (N=1,129)  | 2.71 | 23.03                  | 19.31    | 29.23     | 20.28 | 8.15       |
| Whether acreage converted to switchgrass would qualify for CRP payments or not (N=1,129)                                      | 2.66 | 31.36                  | 16.03    | 20.11     | 20.37 | 12.13      |
| Potential for switchgrass to provide habitat for native wildlife on your farm (N=1,128)                                       | 3.00 | 17.82                  | 13.21    | 31.65     | 25.44 | 11.88      |
| Potential to contribute to national energy security by producing switchgrass for fuel (N=1,123)                               | 3.19 | 16.03                  | 9.44     | 29.56     | 29.12 | 15.85      |
| Potential to help the environment by producing switchgrass for fuel (N=1,123)   | 3.22 | 15.49                  | 9.80     | 28.76     | 29.47 | 16.47      |
| Ability to use switchgrass as a feed for livestock (N=1,128)  | 3.34 | 14.54                  | 8.60     | 24.29     | 33.60 | 18.97      |
| The three year lag between planting and switchgrass reaching its full yield potential (N=1,127)                               | 3.32 | 12.60                  | 9.05     | 31.77     | 26.62 | 19.96      |
| Possibility of lowering fertilizer and herbicide applications as compared with crops currently growing (N=1,122)              | 3.48 | 11.68                  | 5.79     | 25.76     | 36.45 | 20.32      |
| Concern about having the financial and equipment resources needed to produce switchgrass (N=1,127)                            | 3.27 | 15.97                  | 11.80    | 22.54     | 28.48 | 21.21      |

market for switchgrass as an energy crop is not developed enough yet (3.49), and the possibility of lowering fertilizer and herbicide applications as compared with currently grown crops (3.48) received the highest average rating of somewhat to very important. Also rated high were ability to use switchgrass as a feed for livestock (3.34) and the three-year lag between planting and switchgrass reaching its full potential yield (3.32).

Agricultural producers were asked about their interest in growing switchgrass a crop for energy production. A total of 1,247 responded to the question. As shown in Figure 4, 39.8 percent of the agricultural producers were not at all interest in growing switchgrass for energy production, 43.3 percent were somewhat interested, and 16.9 percent were very interested.



**Figure 4: Agriculture Producers Interest in Growing Switchgrass as a Crop to be Used for Energy Production (N=1,247).**

For those agricultural producers indicating some interest in growing switchgrass (Figure 4 – somewhat interested (43.3 percent) plus very interested (16.9 percent)), they were asked their willingness to sell switchgrass at various prices per ton under the assumption that the producers are responsible for harvesting costs and all inputs, except seed, and the switchgrass is picked up at their farm at the time of harvest. A total of 740 responded to the question. A summary of the results are presented in Table 2. The percentages for those producers willing to sell switchgrass ranged from 53.6

percent at \$40/ton to 82.6 percent at \$120/ton. The overall average number of acres switchgrass producers would be willing to produce is 88.3 acres (N=487), with minimum and maximum acreages

**Table 2. Willingness to Sell Switchgrass at Specified Prices Per Ton if the Switchgrass is Picked Up at the Farm at the Time of Harvest (N=740).**

| Switchgrass Price | \$40/ton | \$60/ton | \$80/ton | \$100/ton | \$120/ton |
|-------------------|----------|----------|----------|-----------|-----------|
| Percent Willing   | 53.6     | 67.3     | 72.2     | 75.7      | 82.6      |

recorded at 2.9 and 1,000, respectively. The average acres of switchgrass producers were willing to grow switchgrass by price is shown in Table 3. Acreages ranged from 86.8 acres at \$40/ton to 94.1 acres at \$120/ton. The agricultural producers were given up to five existing land use options (crop, pasture, CRP, forest, etc.) they would convert to switchgrass. Most of the land selected was either pasture, hay, and/or idle. The overall average total number of acres producers were willing to convert to switchgrass was 119.5.

**Table 3. Average Acres of Switchgrass Producers Willing to Produce at the Specified Price (N=487).**

| Switchgrass Price | \$40/ton | \$60/ton | \$80/ton | \$100/ton | \$120/ton |
|-------------------|----------|----------|----------|-----------|-----------|
| Average Acres     | 86.8     | 75.9     | 87.9     | 93.8      | 94.1      |

Next, the agricultural producers were asked their willingness to sell switchgrass at specified prices per ton if the switchgrass is harvested and picked up at the farm. A total of 684 responded to the question. A summary of the results are presented in Table 4. The percentages for those producers willing to sell switchgrass ranged from 17.8 percent at \$10/ton to 71.0 percent at \$90/ton.

**Table 4. Willingness to Sell Switchgrass at Specified Prices Per Ton if the Switchgrass is Harvested and Picked Up at the Farm (N=684).**

| Switchgrass Price | \$10/ton | \$30/ton | \$50/ton | \$70/ton | \$90/ton |
|-------------------|----------|----------|----------|----------|----------|
| Percent Willing   | 17.8     | 33.1     | 57.1     | 59.1     | 71.0     |

Of the 678 agriculture producers responding, approximately 61.6 percent indicated they would prefer to grow switchgrass under a contract. The average preferred contract length was 6.5 years (N=365). The most frequent response was 5 years (138 respondents), followed by 10 years (95

respondents) and then 3 years (53 respondents). Approximately 78.2 percent of the producers surveyed have not produced any commodity under contract in the past (N=1,222).

The issue of on-farm storage of switchgrass after harvest was addressed next in the survey and is summarized in Table 5. Approximately 70.0 percent of the agricultural producers were willing to store switchgrass on their farm after harvest if reasonably compensated for their costs. The average number of days after a December harvest producers are willing to store switchgrass on farm is 125.6. For on-farm storage, 73.1 percent of the producers have an existing hay shed or barn where switchgrass could be stored, 47.9 percent would construct storage facilities such as a gravel pad or tarp for cover, and 10.6 choose the category “other”. Please note that some producers checked more than one option, indicating they had some storage but would construct more.

**Table 5. On-Farm Storage of Switchgrass After Harvest and Cooperative Interest**

| Question  | Response                        |                                |
|---|---------------------------------|--------------------------------|
| Willingness to store switchgrass on your farm after harvest if reasonably compensated for the costs (N=753)     | Yes (70.0%)                     |                                |
| Number of days after December harvest producer would be willing to store switchgrass on-farm (N=427)            | 125.6 days                      |                                |
| On-farm storage situation:  |                                 |                                |
| Have an existing hay shed or barn where the switchgrass could be stored (N=555)                                 | Yes (73.1%)                     |                                |
| Overall average number of bales stored in existing hay shed or barn (N=354)                                     | 997.0                           |                                |
| Bales stored in existing hay shed or barn by bale type:   | Percent Using Bale Type (N=383) | Bales Storage Capacity (N=340) |
| Large square  | 10.7%                           | 1,697.7                        |
| Small square  | 22.7%                           | 3,043.6                        |
| Large round   | 70.5%                           | 618.0                          |
| Other   | 4.7%                            | 280.5                          |
| Would construct storage facilities (such as gravel pad with tarp for cover) (N=555)                             | Yes (47.9%)                     |                                |
| Other (N=555)   | Yes (10.6%)                     |                                |
| Interested in participating in a cooperative that harvests, transports, stores, and markets switchgrass (N=691) | Yes (77.1%)                     |                                |

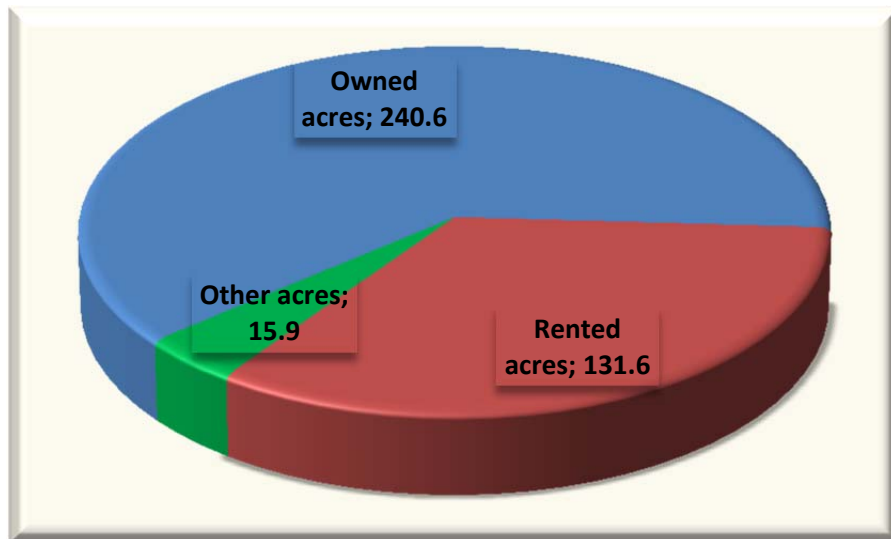
The overall average number of bales that could be stored in existing hay sheds or barns is 997.

The most dominant bale type used by producers (70.5 percent) was large round with producers

indicating a 618 bale storage capacity in existing hay sheds or barns. Next was small square, where 22.7 percent of the producers using this bale type and having a bale storage capacity in existing on-farm storage structures of 3,043.6 bales. Approximately 10.7 percent of the producers were using large square bales with on-farm storage capacity of 1,697.7 bales. Approximately 4.7 percent of the producers indicated the category “other” with on-farm storage capacity of 280.5 bales. The majority of the producers (77.1 percent) indicated an interest in a cooperative to harvest, transport, store, and market their switchgrass.

### *Section II. About Your Farming Operation*

Agricultural producers were asked how many acres they farmed in 2008. For acres that were owned by the producers the average was 240.6 acres (N=1,186); for rented, the average was 131.6 acres (N=1,175); and for other (acres farmed but neither owned nor rented), the average was 15.9 acres (N=1,171) (Figure 5). The average total acres farmed in 2008 (owned + rented + other) was 384.2 acres (N=1,190). For the rented acres farmed, the average lease time period was 9.5 years and the average rental rate paid was \$164.25 per acre. Approximately 9.1 percent of the agricultural producers who owned farmland rented to someone else in 2008 (N=1,221). The average acres rented was 194.7 (N=117), the average acre rental rate charged was \$49.86 (N=86), and the average lease length was 23.8 years (N=92).



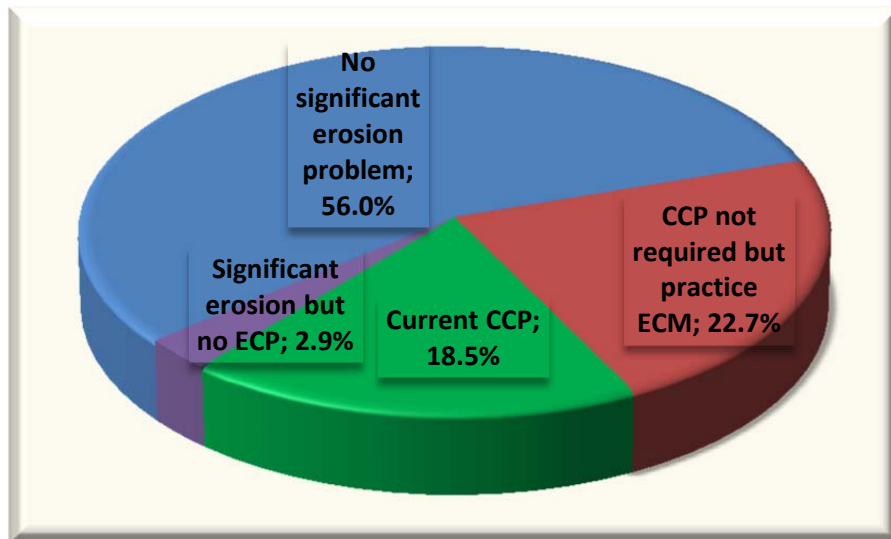
**Figure 5: Agriculture Producers Response to their Acres Farmed in 2008.**

The average amounts of acres/products grown by the agricultural producers in descending order are shown in Table 6. The top three are pasture (110.2 acres), soybeans (56.5 acres), and timber (52.5 acres). For other hay types, the most frequent responses were fescue and bermuda; for other uses, the most frequent responses were pasture, rice, and peanuts.

**Table 6. Average Acres of Crops/Products Grown in 2008**

| Crop/Use             | Mean (acres) |
|----------------------|--------------|
| Pasture (N=1,148)    | 110.25       |
| Soybeans (N=1,147)   | 56.52        |
| Timber (N=1,148)     | 52.49        |
| Other Hay (N=1,143)  | 50.10        |
| Wheat (N=1,147)      | 30.77        |
| Other Uses (N=1,140) | 28.04        |
| Corn (N=1,147)       | 24.28        |
| Cotton (N=1,148)     | 18.28        |
| Idle (N=1,144)       | 7.25         |
| Alfalfa Hay (1,148)  | 4.51         |
| Vegetables (N=1,148) | 2.03         |
| Tobacco (N=1,148)    | 1.71         |
| Fruit (N=1,148)      | 0.68         |

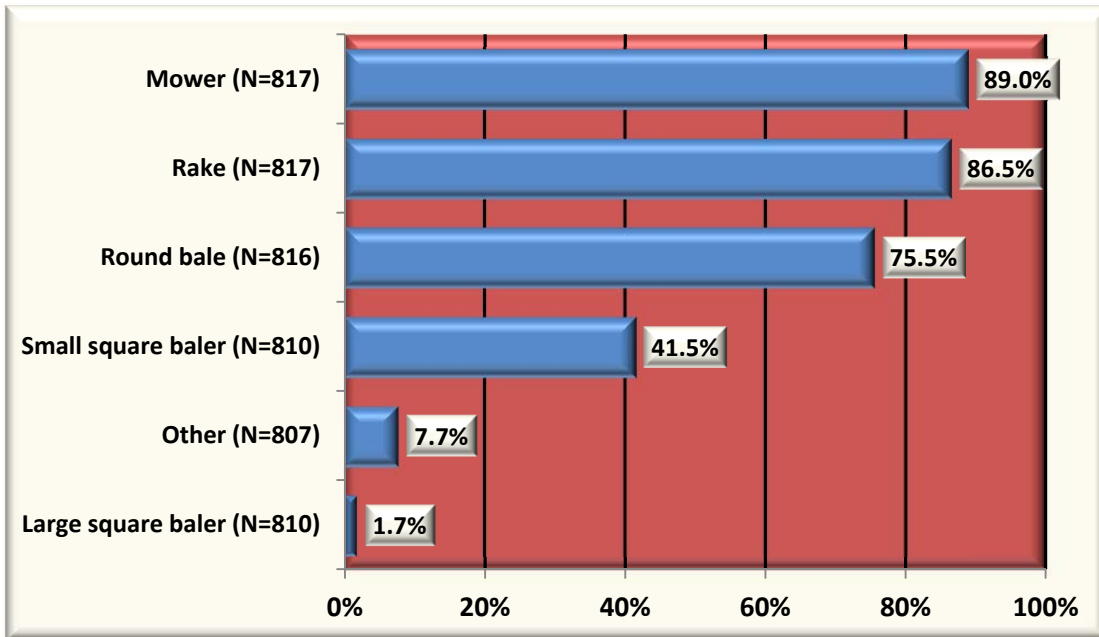
Approximately 56.0 percent of the agriculture producers have no significant erosion problems on their farms (Figure 6). A current Conservation Compliance Plan (CCP) is in effect for 18.5 percent of the producers, with 22.7 percent of the producers not having a CCP but practicing erosion control



**Figure 6: Agriculture Producers Description of their Current Farm Situation (N=1,195).**

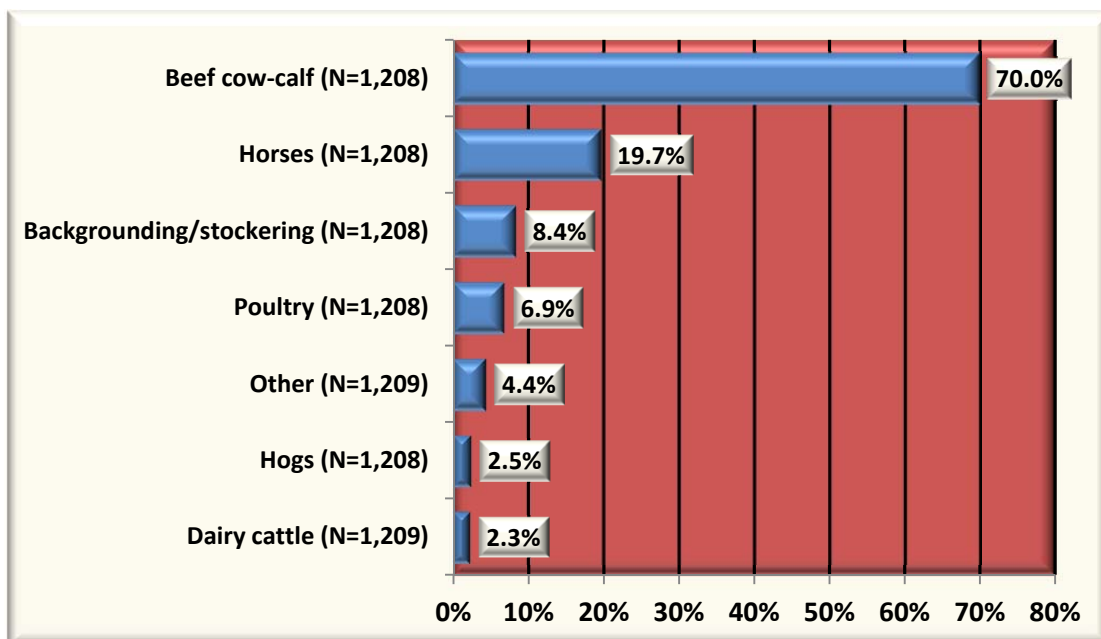
methods (ECM) on their farms. Significant erosion is occurring on 2.8 percent of the surveyed producers' farms and these producers are not practicing ECM. Approximately 49.1 percent of the producers use no-till production in their farming practices (N=1,185). Conservation Reserve Program (CRP) enrolled acres occurs on 15.7 percent of the farms for the producers surveyed (N=1,240). The average CRP acres planted to grass is 53.2 acres (N=164); to trees, 77.3 acres (N=167). For farm decisions regarding which crops to grow, 70.7 percent of the agricultural producers surveyed made those decision on their own (N=1,244).

Approximately 61.5 percent of the agricultural producers surveyed own hay equipment (N=1,235), with the most common equipment owned being mowers, rakes, and a round balers (Figure 7). A hay tedder was the most frequent response given for the "Other" hay equipment type. The most frequent response for bale sizes for the round baler was 4'x5', large square baler was 4'x4', and small square baler was 14"x18". In 2008, 21.6 percent of the agricultural producers used custom hay harvest services (N=1,210). The average cost for mowing/raking from custom hay harvest services was \$80.26 (N=60). Baling costs for round bales were \$121.12 (N=178), \$40.21 for small square bales (N=37), and \$10.79 for large square bales (N=36).



**Figure 7: Types of Hay Equipment Agricultural Producers Own.**

The beef cow-calf was the most common livestock operation for the agricultural producer surveyed, followed by horses and then backgrounding/stockering of cattle (Figure 8). The most frequent response for the “Other” type livestock operation was goats followed by sheep. The reader should note that some producers may have more than one type of livestock operation.



**Figure 8: Livestock Operation Types.**

Agriculture producers were asked what the status of the farm will be once the farmer ceases operation. Approximately 58.5 percent of the producers surveyed indicated that one or more children or grandchildren will farm the land, 20.7 percent indicated that the land will be sold or leased to another farmer, 12.8 percent marked "Other", where the most frequent response was "don't know" or "unknown", and 7.9 percent indicated the land will be sold for development (N=1,182).

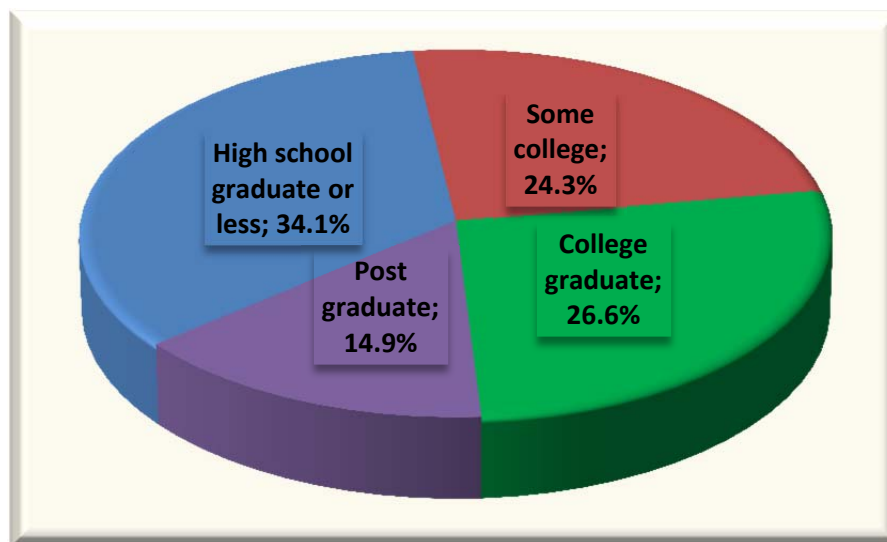
Most of the agricultural producers indicated that their farming business was a sole proprietorship (76.6 percent). Next, partnership was indicated by 15.2 percent of the producers, followed by corporation (4.1 percent), other (3.7 percent), and cooperative (0.2 percent) (N=1,228). For the category "Other", the most frequent response was limited liability company (LLC). The most frequent responses concerning the farming operation's net income for 2008 were \$0-\$9,999 (28.6 percent), negative (16.0 percent), and \$10,000-\$14,999 (12.6 percent) (N=1,142). Approximately 12.1 percent of the producers surveyed indicated a farming operation net income greater than \$75,000. Inquiry of the agricultural producer's debt load for the farming operation for every \$100 of farm assets was asked. Close to 73.0 percent of the producers indicated that no dollars are financed with debt, followed by 7.2 percent for the \$1-\$4.99 finance with debt category, 4.8 percent for \$5-\$9.99, and 3.2 percent for \$10-\$14.99 (N=1,141). Approximately 2.5 percent indicated finance with debt category of greater than \$70.

### *Section III. About You (Farmer Characteristics/Demographics)*

The agricultural producers were asked several questions regarding demographics. The average age of the agricultural producers was 60.3 years, had an average of 35.3 years' experience farming, was married, and attended an average of 1.1 extension workshops or experiment station field day in 2008 (Table 7). Displayed in Figure 9, nearly 41.5 percent of the producers were a college graduate, 24.3 percent had some college education, and 34.1 percent had high school graduate education or less.

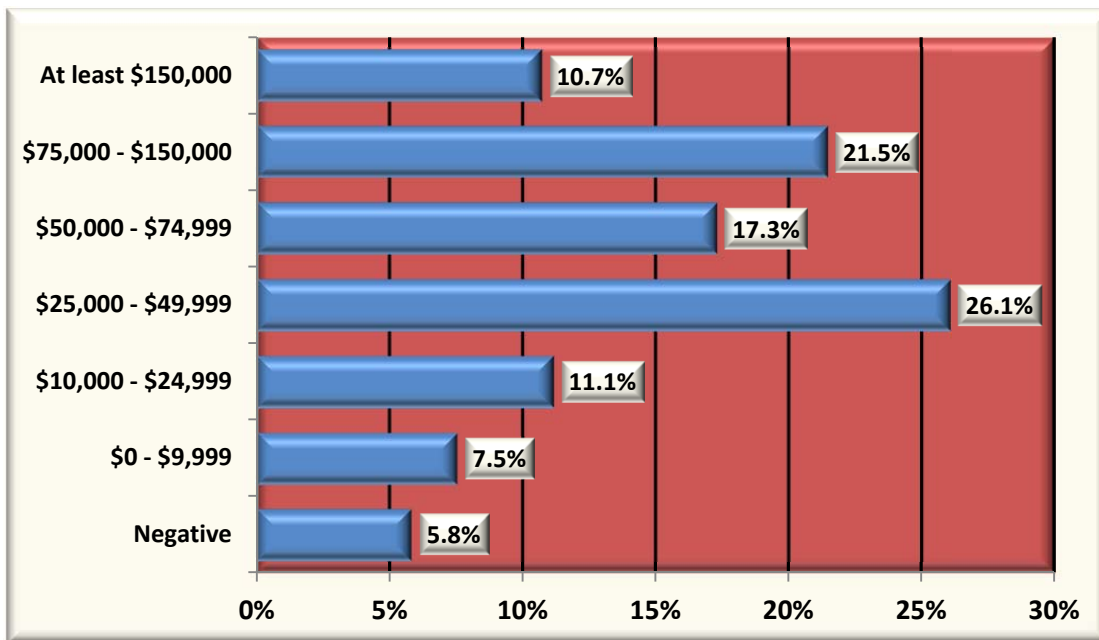
**Table 7. Agricultural Producers Demographics**

| Question  | Response   |
|---|------------|
| Average age (N=1,241)   | 60.3 years |
| Average year of experience farming (N=1,125)  | 35.3 years |
| Do own personal computer (N=1,253)  | 74.2%      |
| Average number of extension workshops/experiment field day attended in 2008 (N=1,195) | 1.1        |
| Married (N=1,248)   | 85.4%      |



**Figure 9: Agriculture Producers Highest Education Level Attained (N=1,254).**

Nearly 32.2 percent of the producers had a 2008 household income before taxes of \$75,000 or more (Figure 10). Approximately 17.3 percent of the producers had incomes between \$50,000 to \$74,999, 26.1 percent had incomes between \$25,000 to \$49,999, and 11.1 percent between \$10,000 to \$24,999. About 13.3 percent of the producers' incomes fell below \$9,999 of which 5.8 percent were negative.



**Figure 10: Household 2008 Net Income Before Taxes from Off-Farm Source (N=1,104).**

Nearly 30 percent of the producers' spouses were employed off-farm but did not work on the farm, 20.0 percent were employed off-farm but also worked on the farm, 24.7 percent were not employed off-farm but did work on the farm, and 25.6 percent were not employed off-farm and did not work on the farm (Figure 11). Close to 58.0 percent of the agricultural producers belonged to the farm bureau (Figure 12). The next most predominant type of organizations the producers belonged to were a cooperative (31.9 percent), followed by hunting-related (21.6 percent), grower or commodity (13.9 percent), environmental (8.7), and the category "Other" (6.9 percent). The most frequent response to the "Other" category was the cattlemen's association.

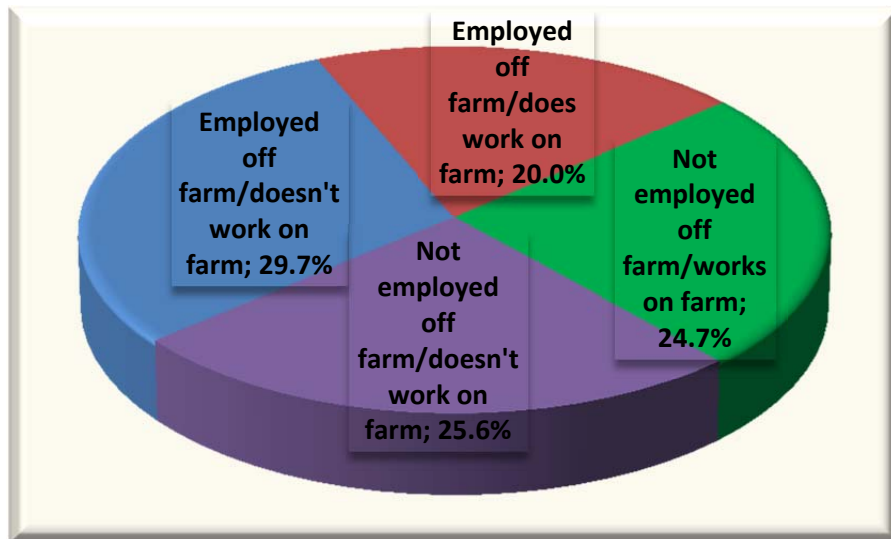


Figure 11: Employment of Agricultural Producer's Spouse (N=1,038).

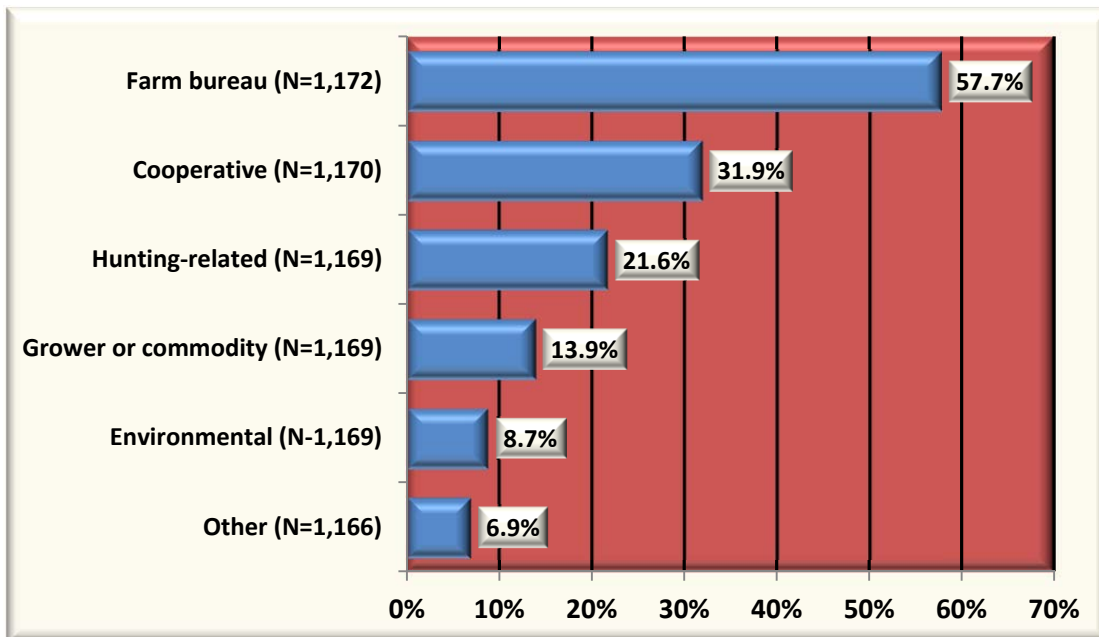


Figure 12: Organizations Agricultural Producers Belong (N=1,104).

Agriculture producers were asked to rate their agreement with statements related to risk and adopting new production methods or crops. A rating of 1 was assigned for strongly disagree to 5 for strongly agree. A summary of the results are presented in Table 8. Using the mean ratings, concern about a large loss to their farming operation than about missing a substantial gain received the highest average rating of between no opinion to agree (3.41). Reluctance to adopt new production methods

or crops until the producers see they work for others (3.13) and the need to take substantial financial risks to be a successful farmer (3.10) received primarily no opinion. Finally, willingness to take financial risks more than other producers received a mean rating between disagree to no opinion (2.71).

**Table 8. Agricultural Producers Agreement with Risk and New Production Methods Statements.**

| Factors   | Mean | Percent Responding As: |          |            |       |                |
|---|------|------------------------|----------|------------|-------|----------------|
|   |      | Strongly Disagree      | Disagree | No Opinion | Agree | Strongly Agree |
| You are the kind of farmer who is more willing to take financial risks than others (N=1,119)                        | 2.71 | 17.77                  | 26.53    | 25.94      | 25.94 | 3.83           |
| You must be willing to take substantial financial risks to be a successful farmer (N=1,132)                         | 3.10 | 11.97                  | 22.75    | 16.98      | 40.15 | 8.15           |
| You are reluctant about adopting new production methods or crops until you see them working for others (N=1,130)    | 3.13 | 7.94                   | 24.58    | 21.62      | 38.01 | 7.85           |
| You are more concerned about a large loss to your farming operation than about missing a substantial gain (N=1,143) | 3.41 | 6.37                   | 13.59    | 25.32      | 42.23 | 12.49          |

## Summary

The results from this study suggests that 58.1 percent of the agriculture producers in this survey were not familiar with switchgrass as a crop that can be used for energy production, with close to 40 percent of the producers surveyed somewhat familiar and 3.1 percent very familiar. Survey results from a previous study conducted in 2005 for Tennessee agricultural producers only indicated that 20.8 percent of the agricultural producers had heard of switchgrass as a crop to be used for energy production (Jensen *et al.*, 2005). This 12-state survey indicates a higher familiarity with switchgrass. Profitability of growing switchgrass compared with other farming alternatives, the lack of a mature market for switchgrass, and the possibility of being able to lower input costs for current grown crops were important factors that might influence producers to produce the energy crop. Also rated high were the ability to use the crop for animal feed and the concerns towards the three year lag between planting and switchgrass reaching its full potential yield.

Approximately 60.2 percent of the producers surveyed were somewhat to very interested in growing switchgrass to be used for energy production. The Tennessee study conducted by Jensen *et al* (2005) indicated an interest by agricultural producers in growing switchgrass of 29.6 percent. For those producers willing to grow switchgrass, various switchgrass per ton prices ranging from \$40 to \$120 per ton in \$20 per ton increments were offered via the survey to incite their response. At \$40 per ton, 53.6 percent of the producers were willing to sell switchgrass; at \$120 per ton, 82.6 percent. Using this same switchgrass per ton price range, producers were willing to grow an average of 86.8 acres at \$40 per ton and 94.1 acres at \$120 per ton.

If reasonably compensated for their costs, 70.0 percent of the producers were willing to store switchgrass on their farm after harvest. Approximately 73.1 percent of the producers have existing hay sheds or barns where switchgrass could be stored, 47.9 percent of the producers would construct storage facilities (i.e., gravel pad or tarp for cover), and 10.6 would choose another method for storage. The most dominant bale type producers used was large round (70.5 percent), followed by small square bales (22.7 percent). Hay equipment was owned by most of the producers (61.5 percent), with the most common equipment owned being mowers, rakes, and a round baler.

The most frequent responses concerning the farming operation's net income for 2008 were \$0-\$9,999 (28.6 percent), negative (16.0 percent), and \$10,000-\$14,999 (12.6 percent). Approximately 12.1 percent of the producers surveyed indicated a farming operation net income greater than \$75,000. A question on the survey concerned the agricultural producer's debt load for the farming operation for every \$100 of farm assets. Close to 73.0 percent of the producers indicated that no dollars are financed with debt, followed by 7.2 percent for the \$1-\$4.99 finance with debt category, 4.8 percent for \$5-\$9.99, and 3.2 percent for \$10-\$14.99. Approximately 2.5 percent indicated finance with debt category of greater than \$70.

Farming operation and demographic information derived from the survey for agricultural producers can be compared across interest in growing switchgrass. Agricultural producers interested in growing switchgrass tended to be older than producers not interested, had farmed longer, had less farm income, were less likely to own hay equipment, and were less likely to be members of a hunting and/or environmental organization. In addition, for producers interested in growing switchgrass, in 2008 they farmed fewer acres and owned/rented fewer acres for farming compared to producers not interested. Education level, farm debt, livestock ownership, and farm bureau membership were, for all practical purposes, identical between those producers interested and not interested in growing switchgrass.

**Table 9. Selected Means of Demographic Variables for Agricultural Producers' Interest in Growing Switchgrass as a Crop to be Used for Energy Production.**

|  | <b>Interested</b> | <b>Not Interested</b> |
|--|-------------------|-----------------------|
| Age (N=1,201)                          | 63.9              | 57.9                  |
| Farming experience (N=1,091)           | 37.6              | 34.0                  |
| Education (1,214)                      | Some College      | Some College          |
| Acres farmed (N=1,157)                 | 313.7             | 429.5                 |
| Acres owned (N=1,153)                  | 205.2             | 262.7                 |
| Acres rented (N=1,143)                 | 97.5              | 154.5                 |
| Farm income (N=1,069)                  | \$35,000-\$39,999 | \$40,000-\$44,999     |
| Farm debt (N=1,109)                    | \$0-\$9,999       | \$0-\$9,999           |
| Livestock (beef) owner (N=1,171)       | .81               | .77                   |
| Own hay equipment (N=1,197)            | .55               | .66                   |
| <b>Member of:</b>                      |                   |                       |
| Farm bureau (N=1,131 )                 | .57               | .58                   |
| Hunting related organization (N=1,128) | .17               | .24                   |
| Environmental organization (N=1,128)   | .04               | .11                   |

## Reference

Jensen, K., P. Ellis, J. Menard, B. English, C. Clark, and M. Walsh. 2005. "Tennessee Farmers' Views of Producing Switchgrass for Energy". Bio-Based Energy Analysis Group, Department of Agricultural and Resource Economics, The University of Tennessee. Available at <http://beag.ag.utk.edu/pp/switchgrasssurvey>. Pdf

## **Appendix A**

Department of Agricultural Economics  
302 Morgan Hall  
2621 Morgan Circle  
Knoxville, TN 37996-4518  
865-974-3716

9/1/2009

Dear Agricultural Producer:

Biomass (plant material) is currently used to produce about 3 percent of the energy used in the U.S. (primarily in the form of ethanol and electricity). USDA and the U.S. Department of Energy are working to increase this percentage. One potential new biomass resource is switchgrass, a perennial grass that is native to North America. Switchgrass has considerable promise as an energy feedstock, as it can be co-fired with coal, converted to an oil and sprayed on coal to decrease dust, or converted to ethanol. The production of energy from switchgrass can have significant environmental benefits over other energy sources. For example, compared to low grade coal, burning switchgrass for energy produces less toxic atmospheric emissions (especially sulfur). Similarly, ethanol produced from switchgrass results in lower greenhouse gas emissions than either gasoline or corn grain ethanol. Switchgrass can also be used as forage for livestock.

While our nation struggles with the national security issues connected to our dependence on foreign oil, the food versus fuel debate about land use is also an issue of concern. As technologies evolve, feedstocks will be developed that reduce the competition for resources between food and fuel. Switchgrass can be grown on marginal lands not well-suited for food crops. Switchgrass is a bulky material that will require biorefineries to be located in close proximity to the switchgrass. This should create economic opportunities for our rural communities

While conversion technologies and market uses of switchgrass are currently under investigation and development, the potential supply of switchgrass also needs to be assessed. As part of this assessment, we are conducting a survey of farmers in the southern region to better understand their attitudes toward producing switchgrass as an energy feedstock. This survey includes questions about switchgrass markets, potential for converting acreage to switchgrass, and characteristics of farming operations. An information sheet about switchgrass is also included.

You have been randomly selected to participate in this survey. Please complete the enclosed survey, place it in the enclosed postage paid envelope, and return it to us by mail. The survey should take you about 10-15 minutes to complete.

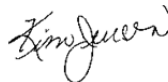
To provide an accurate picture of farmers' views, it is important for us to obtain as many completed responses from as many different farmers as possible. Your response is very important; however, your participation is *completely voluntary*. All individual responses will be held strictly confidential. Direct access to the data will be limited to researchers at the University of Tennessee. Only summaries of all survey responses will be reported. Once all of the survey results are in and tabulated, a summary will be provided at the internet address: <http://beag.ag.utk.edu/link.html>. These summaries will also be shared with other farmers, farmer organizations, and assistance agencies.

If you should have any questions regarding the survey or the study, please feel free to contact us by email (provided below) or by phone at 865-974-3716. We truly appreciate you taking time out of your busy schedule to provide this information and to help out with the study.

Sincerely,



Burton English  
Professor, Agricultural Economics  
[benglish@utk.edu](mailto:benglish@utk.edu)



Kim Jensen  
Professor, Agricultural Economics  
[kjensen@utk.edu](mailto:kjensen@utk.edu)

## Switchgrass Fast Facts

- A perennial grass native to North America
- High yielding, drought tolerant, and requires lower fertilizer and herbicide applications than corn
- Planting is from mid-May to mid-June and can use no-till practices
- Needs to be planted only once every 10 years or more
- Harvested annually, either in a two harvest system or a one harvest system after the first frost, using conventional hay equipment
- Potential environmental benefits:
  - use of switchgrass for energy produces fewer atmospheric emissions than gasoline. Corn grain ethanol may reduce greenhouse gas emissions by up to 25% compared to gasoline, while ethanol made from cellulose may reduce greenhouse gas emissions by up to 85%
  - adds organic matter to soils
  - can be grown on highly erosive lands and helps reduce erosion
  - provides wildlife habitat
- Eligible crop for CRP acres and can be harvested once every three years with rental payment retention
- Currently, expected yields vary by location and growing conditions, but are as high as 6 tons per acre in the Southeast
- Generally, switchgrass takes 3 years to reach its full yield potential, with yields in the first year averaging about 30% of the full potential, and yields in the second averaging about 70%

### Projected Yields for Switchgrass

| Area             | Tons/Acre |
|------------------|-----------|
| Alabama          | 5.1       |
| Arkansas         | 5.1       |
| Georgia          | 5.2       |
| Kentucky         | 5.3       |
| Louisiana        | 5.3       |
| Mississippi      | 5.3       |
| North Carolina   | 3.8       |
| Eastern Oklahoma | 4.5       |
| Western Oklahoma | 2.9       |
| South Carolina   | 4.8       |
| Tennessee        | 6.0       |
| Eastern Texas    | 3.9       |
| Western Texas    | 3.7       |
| Virginia         | 4.9       |



**CORN**



**SWITCHGRASS**

## Switchgrass Production for Energy: Your Views

The purpose of this study is to collect information from farmers regarding their views on switchgrass production. Your participation in this study is completely voluntary. Your individual responses will be held confidential. Only summaries of the results will be presented. The survey should take you about 10 to 15 minutes to complete.

### About Switchgrass

1. How familiar are you with switchgrass as a crop to be used in energy production? (Circle the answer)

|  |  |  |
|--|--|--|
| Not at all<br>familiar<br>(Skip to question 3) | Somewhat<br>familiar<br>(Continue to question 2) | Very<br>familiar<br>(Continue to question 2) |
|--|--|--|

2. From which of the following sources have you obtained information on switchgrass?  
(Check one box for each information source)

Yes      No

|                          |                          |   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Farmer or commodity magazines                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | Other mass media (Internet, radio, TV, newspapers, magazines) |
| <input type="checkbox"/> | <input type="checkbox"/> | Extension Service   |
| <input type="checkbox"/> | <input type="checkbox"/> | University research stations or other university sources      |
| <input type="checkbox"/> | <input type="checkbox"/> | Federal agricultural agency (for example USDA, NRCS, FSA)     |
| <input type="checkbox"/> | <input type="checkbox"/> | State agricultural agency                                     |
| <input type="checkbox"/> | <input type="checkbox"/> | Farmer or commodity organizations                             |
| <input type="checkbox"/> | <input type="checkbox"/> | Other farmers, friends, or neighbors                          |
| <input type="checkbox"/> | <input type="checkbox"/> | Private firms   |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (Please describe: _____)                                |

3. Please read through the following factors and circle how important each might be in influencing your decision to grow switchgrass (circle the number indicating the importance of each factor).

| Factors   | Importance Level |          |           |      |            |
|---|------------------|----------|-----------|------|------------|
|   | Not at All       | Not Very | Some-what | Very | Extre-mely |
| Possible conflicts between planting/harvest period for switchgrass and planting/harvest period for your other crops | 1                | 2        | 3         | 4    | 5          |
| Concern that the market for switchgrass as an energy crop is not developed enough yet                               | 1                | 2        | 3         | 4    | 5          |
| Profitability of growing switchgrass compared with other farming alternatives                                       | 1                | 2        | 3         | 4    | 5          |
| Possibility that you will cease farming in the next few years due to retirement or other reasons                    | 1                | 2        | 3         | 4    | 5          |
| Your knowledge about growing switchgrass compared with your knowledge about growing other crops                     | 1                | 2        | 3         | 4    | 5          |
| Concern about planting a perennial crop such as switchgrass on land that is leased                                  | 1                | 2        | 3         | 4    | 5          |
| Opportunity to diversify your farming operation   | 1                | 2        | 3         | 4    | 5          |
| Potential for creating jobs in your community   | 1                | 2        | 3         | 4    | 5          |
| Potential for switchgrass to reduce erosion on your farm  | 1                | 2        | 3         | 4    | 5          |
| Whether acreage converted to switchgrass would qualify for CRP payments or not                                      | 1                | 2        | 3         | 4    | 5          |
| Potential for switchgrass to provide habitat for native wildlife on your farm                                       | 1                | 2        | 3         | 4    | 5          |
| Potential to contribute to national energy security by producing switchgrass for fuel                               | 1                | 2        | 3         | 4    | 5          |
| Potential to help the environment by producing switchgrass for fuel   | 1                | 2        | 3         | 4    | 5          |
| Ability to use switchgrass as a feed for livestock  | 1                | 2        | 3         | 4    | 5          |
| The three year lag between planting and switchgrass reaching its full yield potential                               | 1                | 2        | 3         | 4    | 5          |
| Possibility of lowering fertilizer and herbicide applications as compared with crops currently growing              | 1                | 2        | 3         | 4    | 5          |
| Concern about having the financial and equipment resources needed to produce switchgrass                            | 1                | 2        | 3         | 4    | 5          |
| Other (Please describe: _____ )   |                  |          |           |      |            |

4. How interested are you in growing switchgrass as a crop to be used for energy production? (Circle the answer)

|                          |                        |                    |
|--------------------------|------------------------|--------------------|
| Not at all<br>interested | Somewhat<br>interested | Very<br>interested |
|--------------------------|------------------------|--------------------|

If you indicated you were **NOT** at all interested in growing switchgrass in question 4, please skip to question 12. If you indicated some interest in growing switchgrass in question 4, please continue on to question 5.

| Projected Yields for Switchgrass |           |
|----------------------------------|-----------|
| Area                             | Tons/Acre |
| Alabama                          | 5.1       |
| Arkansas                         | 5.1       |
| Georgia                          | 5.2       |
| Kentucky                         | 5.3       |
| Louisiana                        | 5.3       |
| Mississippi                      | 5.3       |
| North Carolina                   | 3.8       |
| E. Oklahoma                      | 4.5       |
| W. Oklahoma                      | 2.9       |
| South Carolina                   | 4.8       |
| Tennessee                        | 6.0       |
| E. Texas                         | 3.9       |
| Western Texas                    | 3.7       |
| Virginia                         | 4.9       |

5. Annual switchgrass yields in your area are listed in the table to the left. Assume you are responsible for harvesting costs and all inputs, except seed, which is provided by the contractor.

Would you be willing to sell switchgrass at a price of **\$40/ton** if the switchgrass is picked up at your farm at the time of harvest? (Check one box and fill in the blank)

No, and the reason(s) are \_\_\_\_\_

Yes and I would be willing to produce \_\_\_\_\_ acres

What are the current uses of the land you would convert (for example type of crop, pasture, idle, CRP, timber, or other)? If some of the land would be newly rented land, please list as "new rented acres".

6. Would you be willing to sell at \$10/ton if harvest services were provided by the buyer?

| Type of crop or other use (ex: pasture, idle, CRP, forest, etc.) | Number of acres to be converted |
|--|---------------------------------|
| a. _____   | _____                           |
| b. _____   | _____                           |
| c. _____   | _____                           |
| d. _____   | _____                           |
| e. _____   | _____                           |
| Total acres converted to switchgrass = _____                     |                                 |

Yes       No, and the reason(s) are \_\_\_\_\_

7. Would you prefer to grow switchgrass under a contract? (Check one box and fill in the blank)

Yes, and the contract length would need to be \_\_\_\_\_ years

No

8. If you were to grow switchgrass, would you be willing to store it on your farm after harvest if you were reasonably compensated for the costs? (Check one box)

Yes       No, and the reason(s) are \_\_\_\_\_

\_\_\_\_\_  
(Skip to question 11)

9. If you were willing to store switchgrass on your farm, and the switchgrass was harvested in December, how long would you be willing to store it? \_\_\_\_\_ days

10. Which best describes your storage situation (Check one box)

You have an existing hay shed or barn where the switchgrass could be stored  
You can store about \_\_\_\_\_ number bales of hay in this barn. Indicate bale type with a check mark.

\_\_\_\_\_ large square  
\_\_\_\_\_ small square  
\_\_\_\_\_ large round  
\_\_\_\_\_ other

You would construct storage facilities (such as a gravel pad with tarp for cover)

Other (Please describe: \_\_\_\_\_)

11. Would you be interested in participating in a cooperative that harvests, transports, stores, and markets switchgrass? (Check one box)

Yes       No, and the reason(s) are \_\_\_\_\_

### About Your Farming Operation

12. How many acres did you farm in 2008 that you (Fill in the blanks):

Owned \_\_\_\_\_ acres

Rented \_\_\_\_\_ acres (rent paid was \$\_\_\_\_\_/acre and the lease was for \_\_\_\_\_ years)

Other \_\_\_\_\_ acres (farmed but neither owned nor rented these acres)

Total \_\_\_\_\_ acres farmed in 2008 (total = owned + rented + other)

13. Did you own additional farmland that you rented to someone else in 2008? (Check one box)

Yes       No (Skip to question 15)

14. If you rented farmland to someone else,
- a) How many acres did you rent to someone else? \_\_\_\_\_ acres
  - b) How much rent (per acre) did you charge? \$\_\_\_\_\_/acre
  - c) What was the length of the lease? \_\_\_\_\_ year(s)

15. How many acres of each crop/product did you grow in 2008? (Fill in the blanks)

|             |                               |            |                         |
|-------------|-------------------------------|------------|-------------------------|
| Soybeans    | _____ acres                   | Fruit      | _____ acres             |
| Cotton      | _____ acres                   | Vegetables | _____ acres             |
| Tobacco     | _____ acres                   | Corn       | _____ acres             |
| Wheat       | _____ acres                   | Pasture    | _____ acres             |
| Alfalfa Hay | _____ acres                   | Other Hay  | _____ (Describe: _____) |
| Timber      | _____ acres                   | Idle       | _____ acres             |
| Other Uses  | _____ acres (Describe: _____) |            |                         |

16. Which of the following best describes your farm's current situation? (Check one box)

- Currently have a Conservation Compliance Plan (CCP)
- Not required to have a CCP but practice erosion control methods
- Significant erosion problems but erosion control practices not currently used
- No significant erosion problem on farmland

17. Do you have any acres enrolled in the Conservation Reserve Program (CRP)? (Check one box)

- Yes                       No (Skip to question 19)

18. If you have acres enrolled in CRP, how many of these acres are planted to (Fill in the blanks):

Grass? \_\_\_\_\_ acres    Trees? \_\_\_\_\_ acres

19. Do you own any hay equipment? (Check one box)

- Yes                       No (Skip to question 21)

20. What types of hay equipment do you own? (For each type of equipment, check one box, then fill in the blanks)

|                          |                          |                                |                |
|--------------------------|--------------------------|--------------------------------|----------------|
| Yes                      | No                       |                                |                |
| <input type="checkbox"/> | <input type="checkbox"/> | Mower                          |                |
| <input type="checkbox"/> | <input type="checkbox"/> | Rake                           |                |
| <input type="checkbox"/> | <input type="checkbox"/> | Round Baler                    | bale size_____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Small Square Baler             | bale size_____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Large Square Baler             | bale size_____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (Please describe: _____) |                |

21. Did you use custom hay harvest services in 2008? (Check one box)

Yes                       No (Skip to question 23)

22. If you used custom hay harvest services in 2008, indicate the costs per acre. (Fill in the blanks)

Mowing/raking                      \$\_\_\_\_\_/acre      Baling for small square bales      \$\_\_\_\_\_/bale  
 Baling for round bales      \$\_\_\_\_\_/bale      Baling for large square bales      \$\_\_\_\_\_/bale

23. Do you currently use no-till production methods? (Check one box)

Yes                       No

24. Do you have any of the following types of livestock operations? (For each type of livestock operation, check one box)

|                          |                          |                          |                          |                          |                                |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------------|
| Yes                      | No                       |                          | Yes                      | No                       |                                |
| <input type="checkbox"/> | <input type="checkbox"/> | Beef cow-calf            | <input type="checkbox"/> | <input type="checkbox"/> | Hogs                           |
| <input type="checkbox"/> | <input type="checkbox"/> | Backgrounding/stockering | <input type="checkbox"/> | <input type="checkbox"/> | Horses                         |
| <input type="checkbox"/> | <input type="checkbox"/> | Dairy cattle             | <input type="checkbox"/> | <input type="checkbox"/> | Other (Please describe: _____) |
| <input type="checkbox"/> | <input type="checkbox"/> | Poultry                  |                          |                          | _____                          |

25. Which of the following best describes your farming operation? (Check one box)

One or more of your children or grandchildren will farm your land after you  
 Your land will be sold for development after you cease farming  
 Your land will be sold or leased to another farmer after you cease farming  
 Other (Please describe: \_\_\_\_\_)

26. Which of the following best describes your role in deciding which crops to grow on your farm?  
(Check one box)

- I make the decision on my own
- I share the decision making with partners or family
- Someone else makes this decision

27. Which of the following best describes your farming business? (Check one box)

- Sole proprietorship
- A partnership
- A cooperative
- A corporation
- Other (Please describe: \_\_\_\_\_)

28. Which of the following describes your farming operation's net income from farming in 2008  
(before taxes)? (Check one box)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Negative (less than \$0) | <input type="checkbox"/> \$25,000-\$29,999 | <input type="checkbox"/> \$50,000-\$74,999   |
| <input type="checkbox"/> \$0-\$9,999              | <input type="checkbox"/> \$30,000-\$34,999 | <input type="checkbox"/> \$75,000-\$99,999   |
| <input type="checkbox"/> \$10,000-\$14,999        | <input type="checkbox"/> \$35,000-\$39,999 | <input type="checkbox"/> \$100,000-\$149,999 |
| <input type="checkbox"/> \$15,000-\$19,999        | <input type="checkbox"/> \$40,000-44,999   | <input type="checkbox"/> At least \$150,000  |
| <input type="checkbox"/> \$20,000-\$24,999        | <input type="checkbox"/> \$45,000-49,999   |  |

29. For every \$100 of farm assets your farming operation has, how many dollars are financed with  
debt? (Check one box)

- |                                     |                                       |                                       |  |
|-------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> \$0        | <input type="checkbox"/> \$5-\$9.99   | <input type="checkbox"/> \$15-\$19.99 | <input type="checkbox"/> \$40-\$69.99      |
| <input type="checkbox"/> \$1-\$4.99 | <input type="checkbox"/> \$10-\$14.99 | <input type="checkbox"/> \$20-\$39.99 | <input type="checkbox"/> greater than \$70 |

30. Have you ever produced any commodity under contract? (Check one box)

- Yes                       No

### About You

31. Your age in years \_\_\_\_\_ Your years of experience farming \_\_\_\_\_

32. Do you own a personal computer? (Check one box)     Yes                       No

33. How many extension workshops or experiment station field days did you attend in 2008? (Fill in  
the blank) \_\_\_\_\_

34. What is the highest education level you have attained? (Check one box)

- Elementary/Middle school       High school       College graduate  
 Some high school       Some College       Post graduate

35. What was your household's 2008 net income (before taxes) from off-farm sources?

- Negative (less than \$0)       \$25,000-\$29,999       \$50,000-\$74,999  
 \$0-\$9,999       \$30,000-\$34,999       \$75,000-\$99,999  
 \$10,000-\$14,999       \$35,000-\$39,999       \$100,000-\$149,999  
 \$15,000-\$19,999       \$40,000-44,999       At least \$150,000  
 \$20,000-\$24,999       \$45,000-49,999

36. Please circle the answers that reflect your level of agreement with each of the following statements.

| Statement   | Strongly Disagree | Disagree | No Opinion | Agree | Strongly Agree |
|---|-------------------|----------|------------|-------|----------------|
| You are the kind of farmer who is more willing to take financial risks than others                        | 1                 | 2        | 3          | 4     | 5              |
| You must be willing to take substantial financial risks to be a successful farmer                         | 1                 | 2        | 3          | 4     | 5              |
| You are reluctant about adopting new production methods or crops until you see them working for others    | 1                 | 2        | 3          | 4     | 5              |
| You are more concerned about a large loss to your farming operation than about missing a substantial gain | 1                 | 2        | 3          | 4     | 5              |

37. Are you married? (Check one box)  Yes  No (Skip to question 39)

38. If you are married, your spouse is (Check one box):

- Employed off farm and does not work on farm  
 Employed off farm, but also works on farm  
 Not employed off farm, but does work on farm  
 Not employed off farm and does not work on farm

39. Do you currently belong to any of the following types of organizations? (For each type of organization, check one box)

- |                              |                             |                     |                              |                             |                                |
|------------------------------|-----------------------------|---------------------|------------------------------|-----------------------------|--------------------------------|
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | Grower or commodity | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Hunting-related                |
| <input type="checkbox"/>     | <input type="checkbox"/>    | Cooperative         | <input type="checkbox"/>     | <input type="checkbox"/>    | Environmental                  |
| <input type="checkbox"/>     | <input type="checkbox"/>    | Farm Bureau         | <input type="checkbox"/>     | <input type="checkbox"/>    | Other (Please describe: _____) |

Place the completed survey in the enclosed postage paid envelope and return by U.S. mail. A summary of the results will be available at <http://beag.ag.utk.edu/link.html>. Thank you for your assistance.