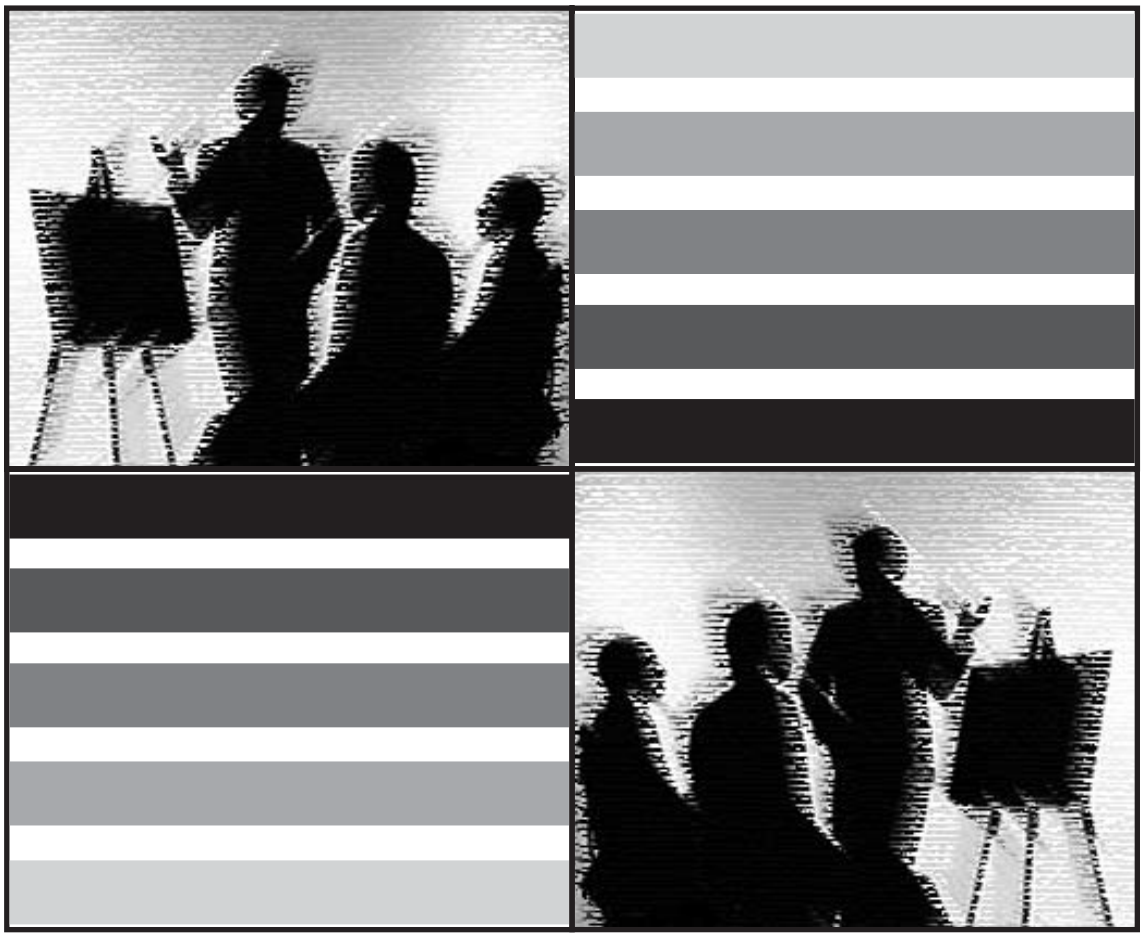
Focus Group Survey Results: Typical Arkansas Crop Producer Production and Marketing Practices



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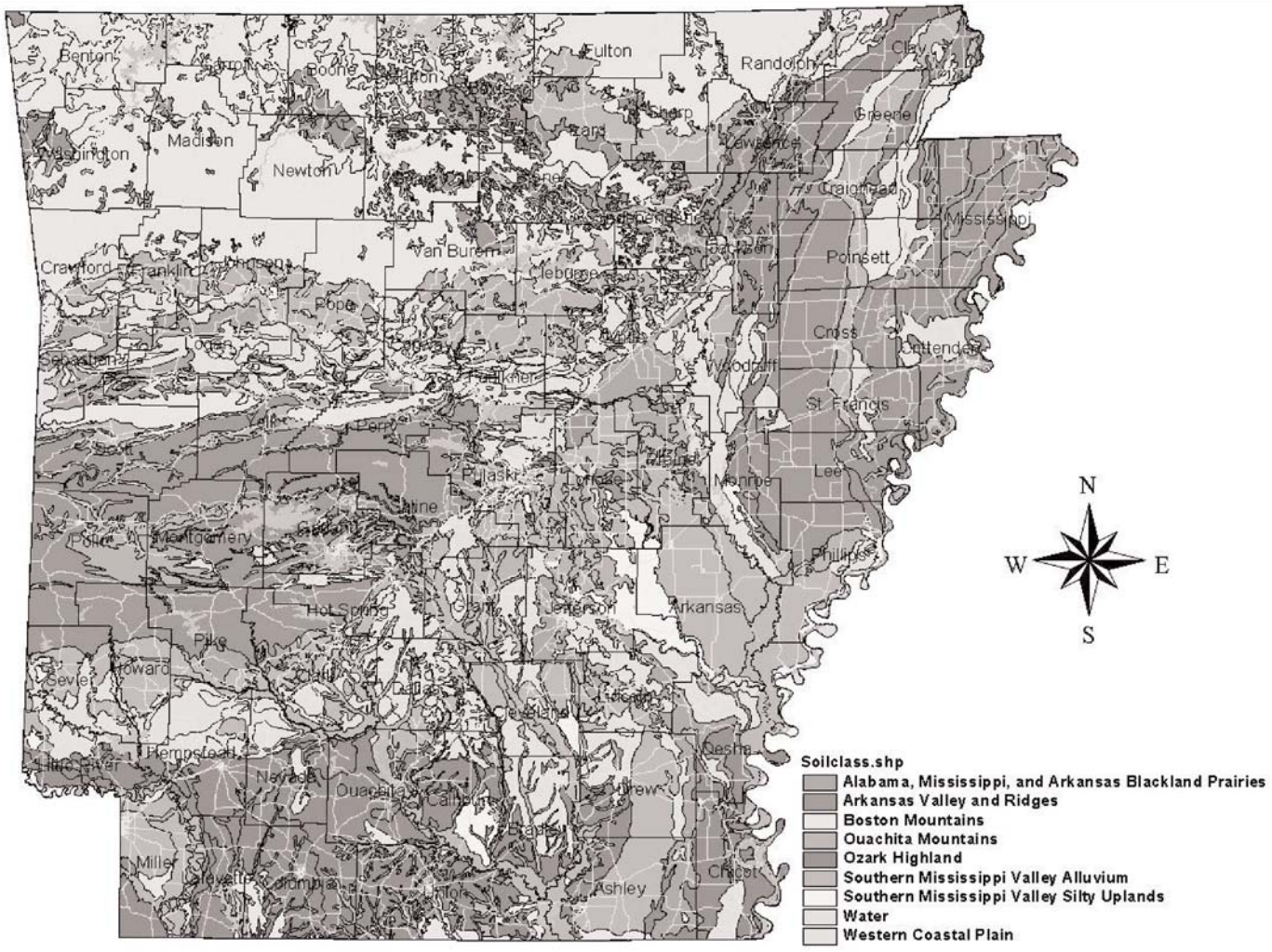

Fig. 2. Map of Arkansas soil classes used with Survey Instrument


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Summary

This report contains information from a 2001 focus group survey of production practices and marketing decisions of 'typical' representative Arkansas farms from selected counties in eastern Arkansas. While the National Agricultural Statistical Service (NASS) publishes similar information through the Arkansas Agricultural Statistics Service, reporting of these statistics is often not differentiated across crops or specific farm type. Therefore, one of the major objectives of this survey was to ascertain production practices for specific crops and farm types typical of row crop farms in eastern Arkansas. Responses were categorized into production regions dominated by either rice or cotton production. The results of this study may be useful in creating profiles of 'typical' Arkansas farms. It should thus prove useful in evaluating effects of various farm policies or changes in production methods on Arkansas rice and cotton farms.

Key words: farm size, rice production, cotton production, decision making

Focus Group Survey Results: Typical Arkansas Crop Producer Production and Marketing Practices

Jason Hill, Michael Popp, and Patrick Manning[1]

Introduction

A focus group session on agricultural production and marketing practices was conducted on January 18, 2001. It was intended to elicit production and marketing practices of 'typical' crop producers in eastern Arkansas that grow rice, cotton, soybeans, wheat and corn. One of the main goals was to provide a benchmark of these production practices as of 2001, as such information is typically not easily available from other sources. That is, it is hard to determine typical production practices from aggregated data published by the Arkansas Agricultural Statistics Service (AASS), the National Agricultural Statistics Service (NASS) and other public sources. The survey questionnaire attempted to ascertain information on a wide array of farm production decisions. The main topics included decision-making factors and practices related to:

- Land rental
- Conservation tillage
- Seed cultivar selection (GMO, maturity group, early season, etc)
- Planting dates
- Irrigation practices
- Soil mapping / testing
- Government programs
- Crop rotations
- Crop diversification (specialty crops, etc)
- Insurance
- Risk reduction / marketing

Sampling Procedure and Survey Design

Since the array of topics was very broad, the survey was conducted using a focus group session with Arkansas Cooperative Extension Service (CES) agents (see Appendix for survey instrument). Six Arkansas CES agents were selected to participate in the focus group on the basis of their work experience related to the issues outlined above. At the time of the session, the participants were responsible for extension of knowledge/research on crop production in their respective districts in northeastern, eastern and central Arkansas (see Figure 1). Corn, cotton, rice, soybean, and wheat are grown in this region and some of the surveyed counties are among Arkansas' top-producing counties in terms of crop acreage (AASS, 2001). At the onset of the focus group session, the CES agents were asked to describe the typical range of farm sizes (acres) they encounter in dealing with producers and subsequently to picture in their minds a 'typical' or modal operation (one county agent chose to describe two typical operations). This 'typical' operation then became the focus of the questions for the remainder of the survey. The agents were told that they could ask further questions during the focus group session to reduce ambiguity about the questions.

Soil types in the surveyed region can be loosely placed into two broad categories: silt loams and clays. This is important as, historically, cotton production has been confined to regions with sandy loam and silt loam soils, while rice production is typically found on both clay soils and silt loam soils with a restrictive layer. All counties surveyed had both silt loam and clay soils. Soybeans, corn, and wheat are typically rotated with both rice and cotton in Arkansas to reduce weeds or insects and to improve soil fertility.

The results of this survey are summarized in the following sections of the paper and include summary statistics such as averages and ranges reported across all responses. Some information, where appropriate, will be separated by farm type or county to reflect a typical farm, either rice/soybean or cotton/soybean, etc. No statistical comparisons are possible given the small sample size associated with the focus group approach. To at least partially verify how typical or representative these responses of Arkansas producers are, survey statistics are compared to unpublished yet available data from AASS where possible.

Figure 1. Arkansas regions/counties covered by survey-respondent county agents, 2001

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Basic Farm Information

Basic farm information includes information on farm size and type of operation. In addition, rental and lease arrangements are considered basic farm information in the following sections.

Farm Size and Type

Average farm size varies widely in Arkansas as many operations may be part-time farms, hobby farms or full-time farms. The AASS does not typically differentiate types of farms in their publicly available information and therefore average farm size numbers may be somewhat misleading if a person were interested in average or typical farm size information for those farms that are operated on a full-time basis. Evidence of this issue is demonstrated in Tables 1 and 2. Table 1 shows average farm sizes as reported by AASS for the counties included in the survey (AASS, 2001a). Table 2, by contrast, shows the small, average, and large farm sizes for operations where farming makes up a principal portion of family income as reported by the respondents to this survey.

Table 1. Number of farms, acreage, and average farm size for selected counties, 1997 Agricultural Census.

County	Number of farms	Land in farms (acres)	Average size of farms (acres)
Clay	611	323,578	530
Lee	273	279,643	1024
Mississippi	462	489,158	1059
Prairie	420	301,851	719
St. Francis	328	289,882	884
Total	2094	1,684,112	804

Table 2. Small, large, and average farm sizes for counties as reported by respondents, 2001.

Farm size (acres)	Eastern Clay	Western Clay	Lee	Mississippi	Prairie	St. Francis	Survey average
Small	500	1,000	1,500	500	625	700	804
Large	4,800	10,000	3,000	10,000	4,750	2,000	5,758
Average	1,500	2,000	2,250	3,500	1,750	1,500	2,083

The implication is that the AASS summary statistics obscure the fact that some operations may be part-time and that some operations may not grow some crops while other operations specialize in certain crops. Agents were therefore asked to describe their typical farm in terms of principal crops grown, soil series encountered, planted acreage, extent of diversification of the operation, and number of personnel engaged in farming. This information is summarized in Table 3 for the seven typical farms generated during the focus group session. None of the respondents reported any diversification in off-farm businesses.

There are two differentiating features in Table 3. First, farms either grow cotton or they do not. Second, cotton is preferably grown on silt loam soils. On the other hand, rice is grown on both silt loam soils with a restrictive soil layer and clay soils. Table 4 lists the top five counties in terms of production for each of the crops in Table 3. Using this information, the respondents were grouped into two categories:

i) Rice farms—operations that emphasize rice production and also grow soybeans, wheat, or corn either in rotation or on non-irrigated acreage; and

ii) Cotton farms—operations that focus on cotton production and may also grow rice, soybeans, wheat, corn, or sorghum, again in irrigated or non-irrigated production.

Respondents from eastern Clay, Lee and Mississippi counties were thus grouped into the cotton farm category with the remaining counties (western Clay, Mississippi, Prairie and St. Francis) classified as rice farms. The classification is done to be able to report some information on the basis of these two basic operation types. Further, information may also be reported on a crop-by-crop basis in order to exhibit differences in typical production and marketing practices by producers across crops. However, given the small sample size, no statistical tests will be performed to see whether there are significant differences in responses or not. In most tables, information is therefore presented on the overall responses as well as for the two farm categories.

Rental Arrangements

Table 5 summarizes the statistics related to land rental and leasing arrangements by crop. The findings suggest that there are large differences in cash rental rates and rental arrangements across crops. The crop share rental arrangement is markedly the most common for all types of farms and crops while the cost share (as defined in the table) arrangement is the least common. In general, land suited for the most profitable crops, rice and cotton, commands higher cash rental rates than land not suited to their production. Land rented for wheat production tends to cost producers less than land rented for other crops. However, combining the soybean and wheat rental rates for double-cropped acreage results in even higher returns to landlords than those achieved on cotton. These statistics are slightly higher than averages reported by AASS at $78/acre and $47/acre on irrigated and non-irrigated acreage, respectively (AASS, 2001b).

Overall it appears that nearly two-thirds of land in production is rented or leased rather than owned. This makes capital investment decisions like irrigation and other land improvement decisions more difficult as both a landlord and the producer are involved.

Finally, even with footnote three in Table 5 included in the survey, the readers are cautioned that respondents likely did not differentiate whether the cash rental rates represent rates for irrigated or dryland production in the case of soybean and corn. The relatively large range in responses may indicate that the low and high end of the range represent cash rental rates for land without and with irrigation, respectively.

Table 3. Principal survey farm characteristics as defined by CES agent for a typical farm.

Counties:	Eastern Clay	Western Clay	Lee	Mississippi[1]		Prairie	St. Francis
Principal crops[2]	R, C, Ct, S	R, C, S, W	R, C, Ct, S, W	Ct, S	R, C, S, W	R, C, Ct, S, W, GS	R, S,
Dominant soil series[3]	SSL	SL, SC, TL	TL, MC	SL, TL	SC, MC	SL, TL, MC, CL	SSL, MC
Crop acres	1,600	2,000	3,000	4,000	6,000	1,800	2,200
# of personnel engaged in farming[4]	6	4	4	8	9	3	5

[1] One county agent filled out two questionnaires to reflect two typical operations. One growing cotton and the other with an emphasis on rice.
[2] R= Rice, C= Corn, Ct = Cotton, S= Soybean, W= Wheat, GS= Grain Sorghum.
[3] SSL= Sandy silt loams, SL= Sandy loam, SC= Sharkey clay, TL= Silt loam, MC= Mixed clay, CL= Clay loam.
[4] Personnel include full-time and part-time people working on the farm. Average responses were 4 full-time and 2 part-time employees. The overall total employees engaged on typical farms was 5.6 per operation.

Table 4. Top five producing counties for selected crops in Arkansas, 2000.

Rank	Corn	Cotton		Rice	Sorghum	Soybean		Wheat
	(in thousands of bushels)	(in thousands of 480lb bales) hundredweight)		(in thousands of of bushels)	(in thousands bushels)	(in thousands of bushels)		(in thousands of bushels)
		Irrigated	Non-irrigated			Irrigated	Non-irrigated	
1	Clay 2,869	Mississippi 170	Mississippi 111	Poinsett 7,601	Phillips 1,299	Arkansas 6,377	Crittenden 1,755	Arkansas 5,547
2	Monroe 1,924	Desha 141	Craighead 35	Arkansas 7,393	Monroe 697	Cross 4,846	Mississippi 1,584	Crittenden 4,351
3	Woodruff 1,755	Craighead 126	Crittenden 21	Cross 6,151	Crittenden 632	Poinsett 4,156	Lee 1,170	Mississippi 4,025
4	Jackson 1,193	Phillips 101	Phillips 21	Jackson 5,535	Prairie 618	Lonoke 3,780	Lawrence 1,091	St. Francis 3,098
5	Randolph 1,176	Ashley 93	Poinsett 19	Lawrence 5,335	Mississippi 579	Prairie 3,354	Clay 979	Jackson 2,943
State Total	22,750	1,141	284	86,112	9,940	65,567	17,633	59,400
Top 5 counties (% of State Total)	39.2	55.3	72.4	37.2	38.5	34.3	37.3	33.6

Table 6 presents summary responses on expected changes in rental arrangements by crop and type of farm. Focus group members were asked to compare this year's level of rental and lease arrangements to those they expect over the next five years. There appears to be a trend towards an overall increase in the amount of land rental for all crops. Only land rented for wheat production shows the possibility of declining. Cotton appears to show the strongest expected increase over the next five years.

In summary, Table 7 illustrates which factors are important to producers in determining the extent of their involvement in rental/leasing agreements. Availability of labor and management time and available operating capital appear to be the most important factors as indicated by their relatively high average rankings. There also seems to be a difference in the rankings between farm types. Rice farmers think that the cost of land rental or leasing and available labor and management time are the most important factors, while cotton farmers find these factors to be somewhat less important. Cotton farms tend to place available operating capital as the most important factor. This is likely a function of more input-intensive production for cotton production, which is also reflected in the slightly higher importance ranking of input price changes on cotton farms as compared to rice farms. Respondents also mentioned other factors that play a role in land rental. These other factors, in the bottom rows of the table, include irrigation availability and productivity of land. Many farmers will refuse to rent land if irrigation is not guaranteed as banks often require irrigation before allowing operating loans.

Table 5. Average and range of survey responses on rental and leasing arrangements by crop.

Crop	Responses (#)	Percent of land rented or leased[1] versus owned	Percentage of rented/leased land: Cash rent[2]	Rental fee[3] ($ per acre)	Crop share[4]	Cost share[5]
Rice						
avg	6	67	13	95	85	3
range		33 - 100	0 - 25	80 - 100	75 - 100	0 - 10
Soybean						
avg	7	64	11	65	87	2
range		20 - 95	0 - 25	40 - 80	75 - 100	0 - 10
Wheat						
avg	6	53	12	54	86	3
range		12 - 95	0 - 25	30 - 75	75 - 100	0 - 10
Cotton						
avg	3	77	10	100	90	0
range		50 - 95	0 - 20	100	80 - 100	0
Corn						
avg	4	65	8	65	90	3
range		0 - 95	0 - 15	30 - 85	80 - 100	0 - 10

[1] Indicates how much of the crop land for each crop is leased or rented versus owned. That is, a farmer may grow 300 acres of soybeans of which he rents 200 acres. The entry would be 2/3 or 67%.
[2] Of the rented land, how much is rented on a cash basis. If 100 of the 200 acres he/she rents is on a cash basis for the indicated rental fee, the entry is 50%.
[3] Respondents were asked to present an average cash rental cost if there was more than one set of rates or write down for different crops (i.e. soybean - dryland cost is $xx/acre... on irrigated soybean cost is $yy/acre).
[4] Crop share identifies an arrangement where the landlord receives a share of the crop only. No costs are shared. Indicates the % of land rented under this type of arrangement. If the farmer crop-share rents 50 of the 200 rented acres, then the entry is 25%.
[5] Cost share identifies an arrangement where the landlord shares some or all costs of production in addition to the harvest. Indicates the % of land rented under this type of arrangement. If the farmer rents 40 of the 200 rented acres, then the entry is 20%.

Table 6. Rental and lease arrangement expectations by farm type and crop.

Crop	Responses (#)	Rate of change[1] per year in %: Rice farms[2]	Cotton farms[3]	All respondents
Cotton	3	0	8.3	8.3
Rice	6	3.5	7.5	4.8
Soybean	7	2.5	6.7	4.3
Corn	4	5.0	2.5	3.8
Wheat	6	(-0.5)	5.0	1.3

[1] Rate of change across respondents is calculated by taking a simple average of the categorical responses (i.e. the survey used ±5%, ±2%, no change, and other in %. If there were three respondents who indicated a +5%, no change, and 4% under the other category, the rate reported as an average for this response group would be 3%.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Production Information

Production information includes conservation tillage practices; seed cultivar selection (e.g. use of GMO varieties, MG selection for soybean, planting date information on soybeans); irrigation decisions; soil mapping/testing practices; participation in government programs; crop rotation practices; and crop selection methods.

Conservation Tillage

Conservation tillage is rapidly increasing in popularity due to many factors. In this section, the focus of the survey was on finding how many producers use conservation tillage, their reasons for adopting the tillage methods, and their expectations for the future. First, in Table 8, respondents were asked the estimated current level of conservation tillage being used by farmers for certain crops in their region. Second, the respondents were asked to describe the practices

Table 7. Average rankings of factors that impact amount of land rented/leased

Factor	Responses (#)	Average ranking[1] Rice farms[2]	Cotton farms[3]	All responses
Available operating capital	7	3.0	3.0	3.0
Available amount of labor and management time	7	3.3	2.7	3.0
Land rent	7	3.3	2.3	2.9
Land available for rent	7	2.8	2.7	2.7
Government programs (e.g. LDP and price support)	7	2.8	2.3	2.6
Input prices (e.g. if diesel price increases, would you farm less acres?)	7	2.3	2.7	2.4
Crop prices	7	2.3	2.3	2.3
Other factors mentioned by respondents[4]:				
Irrigation availability	1	4.0	N/A	N/A
Productivity of land	1	4.0	N/A	N/A

1 The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
2 Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
3 Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.
4 Respondents had room to include other factors they deemed important.

Table 8. Adoption of no-till and reduced-till systems

Crop	Responses (#)	Average percentage of adoption & practice(s) employed	
Rice	6	52	Practices include mostly stale seed-bed and reduced till
Corn	4	49	Reduced-till
Soybean	7	46	Mostly no-till, some reduced-till
Cotton	3	43	Reduced-till
Wheat	6	22	Mostly no-till, some reduced-till

Additional comments:
1. *Soybeans are no-till planted behind wheat.*
2. *No-till is used for soybeans if previous season's harvest left minimal ruts in fields.*
3. *Cotton fields are rebedded after harvest and planted conservation tillage the following spring.*
4. *As labor becomes harder to obtain, no-till practices have continued to increase on larger farms.*
5. *Minimum tillage is used only when weather conditions are acceptable in the fall.*

they saw in the fields. Based on the responses, rice appears to have the highest adoption rate for conservation tillage, while wheat shows the lowest adoption rate.

Note that the response rate on this question was relatively low especially on corn and cotton. This is likely due to the operation types that were queried. Cotton and to a lesser degree corn are not typically in crop rotations on rice farms. Further, the average use rates for conservation tillage are relatively high compared to currently available public information on this issue. The USDA Natural Resource Conservation Service reports as much as a quarter of production under conservation tillage in Arkansas in 1996 (USDA, 1996). This is approximately half the amount reported herein and may be a reflection of rapid changes in conservation tillage practices on farms. Again the farm type surveyed in this study may also play

a role in the sense that hobby farms – or mixed crop and livestock operations that are potentially less likely to invest in no-till equipment – are not included.

The additional comments section provides further insights into this issue as well. Field condition and labor requirements seem to play an important part in the decision. Table 9 summarizes the responses given for the factors involved in choosing not to use conservation tillage methods. The most important factor in the decision not to use conservation tillage is the cost of more expensive no-till equipment. This factor was the most important for both rice and cotton farms. Other factors mentioned by respondents included pest management, ruts in the field from harvest, and reduced yields. All of these factors were ranked as either very important or important by the various respondents and reflect issues similar to those reported in the comments section of Table 8. While the complement of reduced yield and increased cost would be detrimental to the adoption of conservation tillage, no-till is expected to reduce cost especially with over-the-top herbicide applications and reduced tillage costs. Further, some respondents mention that labor availability can be an issue. With relatively recent herbicide technologies and GMO crops, the use of conservation tillage may continue to increase as herbicide applications substitute for mechanical weed control. One of the concerns with the use of no-till production – slower field speeds during planting – appears not to be a major concern and in fact is refuted as an issue by one of the respondents.

Seed Cultivar Selection

This section attempted to identify the impacts, if any, of recent difficulties in marketing of GMO (Genetically Modified Organisms) or transgenic crops on the planting decisions of farmers for the 2001 crop year. Table 10 shows the 2000 level of GMO acreage and the expected changes for the 2001 growing season (in square brackets) for each crop excluding wheat, as no GMO varieties are available for this crop. From the table, it is apparent that soybeans and cotton are grown using mostly GMO varieties. All GMO crops are expected to increase in acreage except corn where responses were both positive and negative across respondents. The overall trend is negative and may be related to the recent marketing concerns related to GMO corn. The use of GMO varieties for soybean is slightly higher on rice farms than cotton farms. This may reflect a trend toward the use of glyphosate to control red rice in rice/soybean crop rotations.

The rankings of the reasons that farmers plant GMO crops are given in Table 11. Farmers from both rice and cotton farms agree that weed control is the most important reason for planting GMO crops. This is mainly attributed to the availability of Roundup Ready® corn, cotton, and soybeans. Another very important reason farmers grow GMO varieties is that these varieties are easier to manage. Less physical work is needed to produce a crop when using Roundup Ready® varieties. Visual appeal is considered of lesser concern than the previous factors. Coordination of planting and harvest as well as

Table 9. Reasons producers chose not to use conservation tillage.

		Average ranking[1]		
Factor	Responses (#)	Rice farms[2]	Cotton farms[3]	All respondents
No-till equipment too expensive	7	3.3	2.0	2.7
Weed control more difficult	7	1.8	1.7	1.7
Risk of not being able to apply chemical at proper time due to weather	7	1.8	1.7	1.7
Fewer acres can be planted with no-till equipment	6	1.3	1.0	1.2
Other factors mentioned by respondents[4]:				
Reduced yields	1	N/A	4.0	4.0
Presence of ruts in field	1	N/A	4.0	4.0
Pest management	1	N/A	3.0	3.0

[1] The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.
[4] Respondents had room to include other factors they deemed important.

Additional comments:

1. *The statement, fewer acres can be planted with no-till equipment, is false.*
2. *Most producers use a mix of tillage systems. One field may have a set of conditions that no-till fits good, whereas the next field may require conventional tillage.*
3. *Complete no-till use in rice production maybe impractical. Example: wet fall harvest conditions tend to leave fields rutted. Minimum till is more practical.*
4. *Some fields need conservation tillage/no-till practices while others need conventional tillage.*
5. *Cost of equipment and lower yields have added to grower reluctance to adopt this technology.*

Table 10. 2000 and expected 2001 GMO plantings of specific crops.

Crop	Responses (#)	Percentage of total acreage in GMO, 2000 [Rate of change[1] expected for 2001] Rice farms[2]	Cotton farms[3]	All respondents
Cotton	3	N/A	83.3 [5.7]	83 [5.7]
Soybean	7	77.5 [2.5]	73.3 [8.3]	76 [5.0]
Corn	3	5.0 [5.0]	12.5 [-5.0]	10 [-1.7]
Rice	5	0.3 [0.7]	0 [6.0]	0.2 [2.8]

[1] Rate of change across responses is calculated by taking a simple average of the categorical responses (i.e. the survey used ±5%, ±2%, no change and other in %. If three respondents indicated a +5%, no change and 4% under the other category, the rate reported as an average for this response group would be 3%).
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Table 11. Reasons that farmers plant GMO varieties.

Factor	Responses (#)	Average ranking[1] Rice farms[2]	Cotton farms[3]	All respondents
Weed control for crop planted	7	4.0	4.0	4.0
Weed control for subsequent crop (i.e. red rice control when using Roundup Ready® beans the year before)	7	4.0	3.7	3.9
Ease of management	7	3.8	3.7	3.7
Visual appeal of clean field	7	3.0	2.3	2.7
Makes coordination of planting and field preparation easier	7	2.5	2.7	2.6
Allows more acreage to be covered with the same equipment	6	2.0	2.0	2.0
Other factors mentioned by respondents[4]:				
Insect management in cotton	1	N/A	4.0	4.0

[1] The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.
[4] Respondents had room to include other factors they deemed important.

Additional comments:

1. *GMO's are here to stay and overall make pest control more flexible/manageable.*
2. *Improved weed control is most important.*
3. *Acceptance of GMO soybeans and weed resistance will have a major impact. If mills have to segregate GMO soybeans from non-GMO soybean varieties, GMO adoption will likely be curtailed.*

potential associated size implications are considered least important. This is in line with previous comments regarding conservation tillage where size implications of technology are considered to be of lesser importance.

Seed variety selection is an important part of crop production from a perspective of seed quality and yield potential appropriate for growing conditions faced by the producer. Table 12 presents the average number of varieties used by crop and farm type. Table 13 highlights the use of different maturity group seed varieties for soybeans and the average planting dates for soybeans. Some producers choose to plant early season early maturity soybeans. Reasons for planting this type of soybean are given in Table 14.

The average number of crop varieties planted varied greatly across crops and to a lesser extent across farm type (see Table 12). The average number of varieties varied from a high of 5 in soybeans, to a low of 2.3 in wheat. Rice and corn exhibited larger differences than other crops when compared by farm type. The additional comment suggests that new varieties are planted on an experimental basis only. Adoption of new varieties is thus expected to require at least one crop production season.

Table 12. Average number of varieties for selected crops in Arkansas.

		Average number of varieties planted		
Crop	Responses (#)	Rice farms[1]	Cotton farms[2]	All respondents
Soybean	7	5.3	4.7	5.0
Corn	4	3.5	2.5	3.0
Cotton	3	n/a	2.7	2.7
Rice	6	3.0	2.0	2.7
Wheat	6	2.3	2.5	2.3

[1] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[2] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:

1. *Most producers plant 1 or 2 varieties on most of their land, but also plant a few acres of newer top-performing varieties to see how they will perform on their farm.*

Soybeans are grown by many different types of farmers as a secondary crop in rotation with either rice or cotton. They are also grown as a primary crop by some farmers. These differences in farming practices contribute to the wide variety of soybean maturity groups (MG) and planting dates utilized by Arkansas farmers. In Arkansas, MG III through MG VI are grown. Maturity group V is the most common for both rice and cotton farmers. The number of responses for MG III and MG VI suggest that these maturity groups are less common and may be used more in specific crop rotations that fit weather and field conditions.

Due to the different maturity groups grown in the state, there is also a wide difference in the planting date for soybeans. Planting may occur later and involve different maturity groups if soybeans are to follow the wheat harvest in late spring. Lack of irrigation may cause some farmers to plant their soybean crop earlier in the spring to avoid much of the dry summer months. Due to these and many other reasons, the planting date for soybeans may vary from late March to July. May is the most frequent planting date followed by June. Very few soybeans are planted in late March or July (with these dates again showing the fewest responses). Farm type seems to have an impact on planting dates, because the third most common planting period is not the same for the two groups. Rice farms plant more soybeans in early April, while cotton farms plant more during mid-April. Overall, rice farms seem to plant soybeans earlier in the season than cotton farms.

In Table 14, reasons for planting early season early maturity varieties are given. Respondents were asked to respond only if early season early maturity soybeans were planted in their county. Drought avoidance was found to be the most important reason for planting these varieties. The second and third most important factors involved the efficient use of equipment and labor during the harvest period and planting period. The "earlier to market for a better cash price" was the least important factor for both rice and cotton farms. Farmers may have contracted production and therefore seasonal cash prices

Table 13. Soybean selection by maturity group and planting date.

		Percentage of soybeans planted		
Maturity Group (MG)	Responses (#)	Rice farms[1]	Cotton farms[2]	All respondents
MG III	2	10.0	10.0	10.0
MG IV	7	18.8	25.0	21.4
MG V	7	68.8	68.3	68.6
MG VI	2	40.0	10.0	25.0
Planting Date				
Late March	2	5.0	1.0	3.0
Early April	3	20.0	5.0	10.0
Mid April	5	15.0	21.7	19.0
May	7	57.5	40.0	50.0
June	7	28.5	33.3	30.6
July	2	1.0	4.0	2.5

[1] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[2] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:

1. *Maturity Group IV soybeans are increasing in popularity.*
2. *Most producers in my county (Prairie) produce Group V soybeans; Group III and Group IV have not caught on as in other counties.*

Table 14. Reasons for planting early season early maturity soybeans.

Factor	Responses(#)	Average ranking[1] Rice farms[2]	Cotton farms[3]	All respondents
Drought avoidance	6	4.0	3.7	3.8
Improved use of equipment and labor during harvest	6	3.0	3.3	3.2
Improved use of equipment and labor during planting	6	3.0	3.0	3.0
Crop rotation aspects (i.e. can prepare field for winter wheat better)	6	3.0	2.7	2.8
Water conservation	6	2.7	2.7	2.7
Earlier to market for better seasonal cash price	5	2.0	2.3	2.2

[1] The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:
1. *Many farmers are planting Group IV soybeans because of their top yield potential / profit potential.*
2. *Rice harvest is a big player in Group IV production. Farmers don't want soybean to interfere with rice harvest.*
3. *Early harvested crop aids timing of land leveling.*

provide little incentive, or marketing is of lesser importance than production issues for this crop at least among this respondent group.

Irrigation Decisions

Irrigation is one of the most important aspects to crop production in Arkansas. Hot, dry growing seasons produce a need for irrigation of most crops. In this study we asked our respondents to identify and rank the use of different sources of irrigation water (see Table 15). In some counties, certain types of irrigation sources are not available, such as surface water from rivers. The most used irrigation was the underground well or aquifer. It was the most used on both rice and cotton farm types. The least used irrigation source is rivers. This could be due to the very shallow water table in fields near the river and an associated reduced need for irrigation. The use of manmade surface storage or reservoirs is becoming more popular, especially in rice production regions. The use of drain ditches and tail water recovery by some respondents also indicates producer interest in conserving water or looking for alternatives sources to well/aquifer water.

Table 15. Sources of irrigation water.

Source	Responses (#)	Responses with irrigation source available (#)	Average ranking[1] Rice farms[2]	Cotton farms[3]	All respondents
Well / aquifer	7	7	4.0	4.0	4.0
Manmade surface storage	7	5	1.3	1.0	1.2
River	7	5	0.7	0.5	0.6
Other factors mentioned by respondents[4]:					
Drain ditches	1	1	2.0	N/A	2.0

[1] The following numerical values correspond to various levels of usage: 4 = most used, 1 = least used, 0 = not used but available, n/a = not available. Average rankings were calculated from only those respondents where the irrigation source was available. Example: If 3 out of 7 respondents said rivers were available, the average ranking would be calculated from the 3 respondents. The other 4 would be disregarded.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.
[4] Respondents had room to include other factors they deemed important.

Additional comments:
1. *All cotton is irrigated in Mississippi county; 1/3 of soybeans are irrigated.*
2. *Mississippi County has lots of shallow groundwater of excellent quality.*
3. *Wells are the most common source in Prairie County. More tail-water recovery ditches are being utilized.*

Table 16 addresses what specific irrigation methods, if any, are most common for each crop. Arkansas farms mainly use border, flood, furrow, and center-pivot irrigation systems on the majority of their cropland. The values presented in the table are the average rank given by all respondents, with the higher numbers representative of increased importance. Flood irrigation was found to be the most common irrigation system for rice, but furrow irrigation was the most important for corn, soybeans, and cotton. The relatively low rankings for irrigation methods on wheat are reflective of the fact that wheat is rarely irrigated in Arkansas because it is planted in the fall, lies dormant in winter, and then matures the following spring (note 0% entry in acreage irrigated across the entire growing season). One reason that wheat may be irrigated early in the season is to promote adequate germination in the fall. If conditions are too dry, irrigation would aid in establishing a good stand before winter.

Irrigation decisions are influenced by many factors. Table 18 portrays some of the factors respondents were asked to rank in terms of importance. The most important factor for both rice and cotton farms was the access to irrigation water used on the field. Some fields may be too far from wells or other irrigation sources to receive water. Another important factor was that rental agreements may not allow for irrigation investment. Some landowners don't want to spend large amounts of money to irrigate their farms because there are not enough financial rewards given current low commodity prices. Recall that nearly two-thirds of cropland is rented and therefore rental/leasing arrangements take on a large role in irrigation decisions.

Table 16. Common irrigation systems employed for different types of crops.

		Irrigation type rankings[1]				Percentage of acreage
Crop	Responses (#)	Border	Flood	Furrow	Center pivot	irrigated[2]
Rice	5	1.5	4.2	1.5	1.8	100
Corn	3	2.0	2.3	4.0	3.0	92.5
Soybeans	5	1.5	2.8	4.0	3.2	68.6
Cotton	3	2.0	2.3	4.0	2.7	65.0
Wheat	4	1.3	2.0	1.7	1.0	0.0

Notes: Overall the responses to this table appear somewhat inconsistent, which is likely a function of the way the question was asked (note the use of center-pivot irrigation on rice). No definitions for the irrigation methods were provided and therefore respondents may have experienced some ambiguity about the different irrigation methods. Further, it may have been better to ascertain specific acreage levels irrigated by each irrigation method for each crop rather than the use of common and least common categories. The reader is thus cautioned regarding the accuracy of these responses.

[1] The following numerical values correspond to various levels of usage: 5 = most common to 1 = least common

[2] Percentage of total acres of the given crop that are irrigated on an average farm.

In some areas of Arkansas where agricultural water demand has exceeded supply, farmers have taken steps to conserve water or to reuse it. We asked respondents to estimate the total percentage of irrigation water that is reclaimed by farmers and reused as tail water. Some of the regions in this study do not have a need to reclaim tail water at the present time due to sufficient water supplies. Other areas in Arkansas such as Arkansas and Prairie counties already are experiencing the increased need to conserve or reclaim their irrigation water. Table 17 shows the average estimated percentage of irrigation water reclaimed and used as tail water. It also shows the percentage change in irrigated acreage from year-to-year. The change in irrigated acreage from one year to the next could be caused from lack of irrigation water, ongoing precision leveling efforts (with expected reductions in water use), or many other reasons not covered by our study. Most of the respondents reported less than 5% tail water recovery, which is likely indicative of adequate water supply for most of the regions in this survey. There is also very little annual change in irrigated acreage with all respondents reporting 10 % or less change per year.

The least important factor reported by the respondents is that the soil characteristics are adequate for dryland production. Dryland production on the majority of Arkansas farms will nearly always yield not only less than irrigated land but also lead to greater production risk (one of the reasons why lenders prefer to lend for irrigated production). One possible exception is land near a major river such as the Arkansas, Mississippi, or White rivers where the water table is near the soil surface, in reach of a crop's roots.

Some of the differences in rankings across operation types are likely a function of the difference in reliance on irrigation. Note that over 30% of soybeans and cotton are grown non-irrigated in the state whereas all rice and nearly all corn are irrigated.

The University of Arkansas CES is a very helpful source of information for farmers. The CES provides many different computer software programs to aid farmers in decision making. These programs include irrigation tools such as the irrigation scheduler (Cahoon et al.), which is helpful in determining when to irrigate a

Table 17. Percentage of irrigation water reclaimed as tail water and annual irrigation changes.

	Number of responses per category[1]			
Factor	<5	5 - 10	11 - 20	More than 20
Average amount of irrigation water reclaimed and reused (%)	5	2	0	0
Yearly change in irrigated acreage (%)	4	3	0	0

[1] Number of respondents selecting the corresponding percentage category.

Table 18. Factors influencing irrigation decisions.

		Average ranking[1]		
Factor	Responses (#)	Rice farms[2]	Cotton farms[3]	All respondents
Access to irrigation water on the field	7	2.5	3.3	2.9
Rental agreement does not allow for irrigation investment	7	2.5	3.0	2.7
Crop prices too low	7	2.0	2.3	2.1
Natural rainfall adequate for dryland production	7	1.8	2.0	1.9
Water quality too poor	7	1.5	2.0	1.7
Fuel, labor and equipment costs too high	7	1.8	1.7	1.7
Soil characteristics adequate for dryland production	7	1.3	1.7	1.4

[1] The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:
1. *Many farmers want more irrigation, but landlords do not want to invest in a well. Most lenders are requiring fields to be irrigated. Irrigated acreage in Mississippi County has gone up 25% in the last decade.*
2. *Land leveling and irrigation improvements are continuing at a rapid pace.*
3. *Many new wells are being installed due to farmers talking landlords into investing in the improvement. Lenders are also requiring more irrigation for farmers to get loans.*

crop. Table 19 shows the respondents' estimation of the percentage of farmers in their county using a CES irrigation software tool. All respondents reported that less than 50% of farmers are using this type of software.

Soil Mapping / Testing Practices

Soil mapping and testing can be a way for farmers to save money and increase yields on their farms. It is a relatively inexpensive procedure that can reduce the need for fertilizers on some fields or can explain yield differences across fields with different nutrient levels. In Table 20, respondents were asked to rank various factors used by farmers to differentiate across soil types or soil qualities. There were slight differences between farm types. Rice farmers compared to cotton farmers felt that surface drainage and fertility were more important. This difference in opinion is likely a reflection of the difference in primary soil type used in production of rice compared to cotton (see Table 3). The two farm types both believed that subsurface water permeability was the least important factor.

Table 21 shows the number of different soil types on a typical farm for each respondent and for each farm type. Compared to all counties, Lee County was found to differ the most in soil characteristics with 5 to 7 different soil types on a typical farm. Several respondents reported only about 3 soil types per farm. Comparisons across farm type reveal that cotton farms tend to have about 1 more soil type per farm than rice farms.

Governmental Programs / Crop Insurance

Governmental conservation programs include the Conservation Reserve Program (CRP), the Environmental Quality Incentives Program (EQIP), and the Wetland Reserves Program (WRP). These programs provide income to farmers on land that has marginal productivity or that has been determined to be unsuitable for farming. Very few of the seven respondents reported that farmers had land enrolled in these programs. Only one respondent reported that a typical farm has land enrolled in the WRP. Two respondents said that typical farms have land enrolled in CRP and EQIP programs in their county. Four respondents reported that a typical farm in their county wouldn't have any land enrolled in conservation programs. Only eastern Clay, Lee, and Prairie counties reported that typical farmers have land in conservation programs. Based on the responses in this

Table 19. Percentage of producers using the irrigation scheduler or other CES software to follow irrigation recommendations.

	Number of responses[1] per category			
Farm type	<10	10 - 25	26 - 50	More than 50
Rice farms[2]	1	2	1	0
Cotton farms[3]	1	1	1	0
Total	2	3	2	0

[1] Number of respondents selecting the corresponding percentage category.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Table 20. Factors farmers use to differentiate across soil types or soil qualities.

		Average ranking[1]		
Factor	Responses(#)	Rice farms[2]	Cotton farms[3]	All respondents
Surface drainage	7	3.8	3.3	3.6
Water holding capacity	7	3.5	3.7	3.6
Texture (sandy vs. clay)	7	3.5	3.7	3.6
Fertility (yield potential)	7	3.8	3.3	3.6
Subsurface water permeability	7	2.8	2.7	2.7

1 The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
2 Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
3 Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

survey, more land is enrolled in the CRP and EQIP programs than in the WRP programs. Most of the land in the surveyed counties is very suitable to farming. Additional comments provided by respondents to this question included: *1) Not much ground in Mississippi County is in any of these programs. 2) There may be a few acres in WRP & EQIP in Mississippi County.*

Reasons for enrolling land in conservation programs were also elicited. All respondents stated that money was the main factor in enrolling land in conservation programs. If program payments were better than alternative investment opportunities for the land, then conservation programs would be utilized. Concerns about environmental impacts and the expected improvement in soil for the future are only of minor importance when deciding whether or not to enroll a parcel of land in conservation programs. One respondent commented: It depends on whether the farmer/landlord can make more growing a crop or being in a conservation program. Money is everything.

Table 21. Number of different soil types or categories on a typical farm.

County	Number of soil types
Clay (eastern)	4
Clay (western)	3
Lee	5 - 7
Mississippi (cotton)	3
Mississippi (rice)	4
Prairie	3
St. Francis	3
Rice farm[1] average	**3.3**
Cotton farm[2] average	**4.3**
All respondent average	**3.7**

1 Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
2 Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:

1. *Depends on which side of the county you are in; the river bottoms could have 3 different soils within the same field. (Prairie County)*

Crop Rotation Practices / Crop Selection

Crop rotation is a very important part of farm management. If crops are not rotated then weed and disease pressure will likely increase on a field or farm. Typical rotations vary between farm type, soil type, and across operations. A rice farm, for example, will typically choose a rotation involving rice and soybeans. In addition, some operations will double crop the land with a winter wheat crop. Some farmers may plant grain sorghum or corn in addition to rice, soybeans, and wheat. Cotton farms on the other hand typically rotate cotton with soybeans or corn. These rotations along with several other variations are given in Table 22. Some of the rotations can become quite complicated and involve many different crops.

Table 23 summarizes the different decision criteria that producers focus on when determining crop rotations on farms. The importance of these factors differs somewhat across farm types. Rice farms ranked weed pressure and crop prices to be the most important. Cotton farms on the other hand felt that crop prices and irrigation availability are the most important. Overall, crop prices appear to be the most important factor regardless of farm type.

With the above results in mind, producers were asked what alternative crops they consider in selecting the crops they grow. Having more crops in a crop rotation may allow for benefits of added diversification in terms of reducing risk without sacrificing returns. Other trade-offs related to increased diversification or growing several different crops may be the efficient utilization of specialized equipment and other economies of size (i.e. a farmer growing 4 crops on a thousand acres may be more efficient at growing crops than a farmer growing 8 crops on the same size farm as equipment may be sized and used more efficiently on larger acreages for individual crops). Table 24 summarizes the different crops that farmers would consider growing if prices were to increase for them. Grain sorghum and corn were the most popular choices for the respondents. One respondent felt that farmers would grow edible beans and peas if the profit potential increased. Lentils and canola, even though suggested on the list of other crops, were not mentioned.

Insurance, Risk Preference, and Marketing

Crop insurance is a tool used by many farmers to decrease the risk associated with crop failures. Many farmers purchase crop insurance to help protect them in situations of drought, fire, hail or other natural, insurable disasters. Table 25 shows the typical crops that are insured by farmers. Wheat and cotton are the most commonly insured crops with rice and soybeans less common. Corn is the least insured crop. Rice farms typically insure soybeans more than cotton

Table 22. Standard crop rotations.

Rotation #	County	% of farm	Soil / land description	Crops rotated[1] Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
1	E. Clay	10	Silt loam and some clay	R		R		S					
2	E. Clay	65	Sandy and sandy silt loams	Ct		Ct		C					
3	E. Clay	15	Silt loam and clay (good water-holding capacities)	S	W	S	W	C	W				
4	E. Clay	10	Sandy silt loams	C	W	S							
5	Miss.	100	Loams	Ct		Ct		S					
6	Lee	50	Well drained soils	Ct									
7	Lee	10	Well drained soils	Ct		C		C					
8	Lee	30	Clay (poor drainage)	R		S							
9	Lee	10	Good surface drainage	S	W	S	W	S					
10	W. Clay	80	Silt loams and Sharkey clays	R		S							
11	W. Clay	20	Silt loams and Sharkey clays	C	W	S		R		C	W	G	
12	Miss.	20	Clay soils	S	W	S	W	C					
13	Miss.	40	Clay	R		R		S					
14	Miss.	40	Clay loam	C		C		S					
15	Prairie	100	Silt loams	R		S	W	S					
16	St. Francis	50	Silt loam (good water-holding capacity)	S		S		R	W				
17	St. Francis	50	Clay	R		S							

[1] Rice = R, Soybeans = S, Cotton = Ct, Wheat = W, Corn = C, and Grain Sorghum = G.

Table 23. Factors determining the crop rotation used.

Factor	Responses (#)	Average ranking[1] Rice farms[2]	Cotton farms[3]	All respondents
Changes in crop prices	7	3.5	4.0	3.7
Availability of irrigation	7	3.3	4.0	3.6
Agreement with landowners	7	3.3	3.7	3.4
Weed pressure	7	4.0	2.3	3.3
Soil type	7	3.0	3.3	3.1
Changes in production costs	7	3.0	3.3	3.1
Disease pressure	7	2.8	3.0	2.9
Capital constraints	7	2.3	3.0	2.6
Changes in soil fertility	7	2.3	1.7	2.0
Requirements of government programs (CRP, etc.)	7	1.5	2.3	1.9

[1] The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Additional comments:

1. *Rotations are chosen based upon making money and pest management.*
2. *Disease pressure ranks 4 where problems exist, otherwise it ranks 1.*
3. *Profitability is the major force. (Mississippi County)*
4. *Typical crop rotations in my county are 1 year of rice followed by 2 years of soybeans. Wheat is grown on about 40,000 - 50,000 acres. Soybeans are usually rotated following wheat if there is enough water for irrigation. (Prairie County)*

Table 24. Other crops that could be grown if marketing opportunities were available.

County	Possible crops
Clay (eastern)	Grain sorghum
Clay (western)	None
Lee	Corn and grain sorghum
Mississippi (cotton)	Corn, grain sorghum and rice
Mississippi (rice)	Any crop that would be profitable
Prairie	Corn and grain sorghum
St. Francis	Corn, edible beans and peas

[1] Respondents were asked to choose from corn, sorghum, canola, edible beans, peas, lentils, or other.

farms with the opposite true for corn. Some of the differences in insurance decisions may be due to irrigated vs. non-irrigated production. Since most corn is irrigated (at least according to the responses in this study), less insurance may be necessary. Further, higher valued crops (like rice and cotton) tend to be insured more heavily.

Since the question did not differentiate among types of insurance, little can be said about whether producers use private hail insurance and/or multiple-peril crop insurance nor did the respondents state what coverage level is typically chosen. A more comprehensive survey would be required to elicit these issues on a crop-specific basis.

Table 26 shows the reasons that farmers choose not to insure their crops. The top reason that farmers choose not to insure their crops is that insurance premiums are too high. Other major reasons included that risk is not sufficiently reduced and that the sign-up process is too time consuming. The least common reason was that insurance programs are not available for the desired crop. The number of responses ranged from 2 to 4 (i.e. not all seven respondents provided a ranking in each category). This further illustrates that the top three issues were of most concern to producers. Finally, one respondent argued that producers use insurance fraudulently.

Risk management is an important issue for producers. In addition to diversification and insurance, farmers may also use futures, options, and other marketing contracts either through cooperatives or forward contracts with elevators, etc. as well as through the government programs (i.e. the marketing loan program or loan deficiency payment (LDP) program). Table 27 provides estimates of the extent farmers use these different marketing strategies for each of their crops. A large percentage of crops is sold using marketing loan rates as current low market prices often trigger the marketing loan rate payments, which effectively provides a price floor to producers. Cooperative marketing appears to be used more often for rice, cotton, and corn than for the other crops. Given the nature of these high- revenue and capital-intensive crops, cooperatives appear to not only be a sound investment for producers but also a much used marketing alternative. Use of forward contracts is also a highly used marketing strategy especially for wheat. Use of futures and options for purposes of hedging is not very common. One respondent mentioned that his typical producer would hedge 10% of his/her production across all crops.

Unfortunately the survey did not elicit what percentage of the crop is sold directly in the cash market as a means to determine how much of all production is sold using the complement of marketing strategies listed in the table. Further emphasis on this issue may be warranted.

To summarize most of the issues in this survey, respondents were also asked in Table 28 how they decided which crop to grow. The various decision factors differed somewhat across farm type. Soil type and crop prices appear to be the two key determinants for rice farms. On cotton farms, the decision criteria with an average ranking greater than important (3.0) extended further down the list. On cotton farms, irrigation availability, equipment concerns, and government price supports played more of a role than they do on rice farms. Weather expectations played a minor role.

Summary and Concluding Remarks

This report summarizes production and marketing characteristics of typical Arkansas rice and cotton farms. For many of the decisions farmers make, the importance of various aspects about the decisions were identified. The sample of respondents included five Arkansas Cooperative Extension Agents and one University of Arkansas research agronomist covering a relatively large crop production region in Arkansas' Mississippi river delta. While this type of focus group survey is not as representative of the whole population of Arkansas farms, it highlights some differences across AASS data and data for typical farms (at least as perceived by this respondent group). The report highlights differences across various crop-enterprise and farm types. The following is a brief summary of the key findings from the survey:

Farm Size and Type

- The average farm size for surveyed counties according to the Arkansas Agricultural Statistics Service for 1998 was 804 acres. The average size of farms according to this survey for the same counties is about 2,083 acres. Differences in the average farm size for the two sources are related to the definition of a typical farm. The AASS statistics include all farms, which may distort the size of farm for which crop production is the primary source of income.

Rental Arrangements

- The crop share rental arrangement is the most common for all farm types and crops.
- Sharing both the crop and the costs to generate the crop is the

Table 25. Typical crops for which producers purchase crop/income insurance.

	Percentage of respondents insuring crop if grown[1]				
Farm type	Rice	Soybean	Cotton	Wheat	Corn
Rice farms[2]	50	75	N/A	100	33
Cotton farms[3]	100	33	100	100	50
Total[4]	66	57	100	100	40

[1] Percentage of respondents that insured the crops they were growing as indicated in Table 3. If a respondent said they grew the crop and did not list it among insured crops, it was counted as a non-insured crop.
[2] Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
[3] Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.
[4] Overall average among all eligible respondents.

Table 26. Reasons that crop insurance is undesirable to some farmers.

		Average ranking[1]		
Factor	Responses (#)	Rice farms[2]	Cotton farms[3]	All respondents
Insurance premiums are too high	4	3.5	3.5	3.5
Does not reduce risk sufficiently to be interesting	4	2.5	3.0	2.8
Sign-up process too time consuming and difficult	4	2.5	2.5	2.5
Insurance regulations restrict production practices too much	2	1.0	3.0	2.0
Insurance program not available for crops of interest	3	1.0	1.0	1.0

1 The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
2 Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
3 Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

Table 27. Average and range of percentage of crop sold using various marketing strategies.

			Percentage of crop sold using various marketing strategies				
Method		Responses (#)	Rice	Soybeans	Cotton	Wheat	Corn
Futures	Avg	7	9.2	7.9	18.8	3.8	8
	Range		0 - 30	0 - 30	0 - 40	0 - 10	0 - 20
Options	Avg	7	4.0	8.6	6.3	5.0	7.5
	Range		0 - 15	0 - 20	0 - 20	0 - 15	0 - 15
Contract	Avg	7	36.7	47.5	38.8	70	48.8
	Range		10 - 60	10 - 90	25 - 50	50 - 90	35 - 60
Marketing[1]	Avg	7	37.5	16.8	31.7	15	28
	Range		10 - 50	0 - 50	10 - 50	0 - 50	0 -90
LDP[2]	Avg	7	78	74.3	76.3	83.3	77.5
	Range		20 - 100	30 - 100	25 - 100	60 -100	30 - 100

1 “Marketing” = using seasonal pools and other pricing arrangements through a producer cooperative.
2 “LDP” = using government programs as a price floor (selling at the higher of market or loan rate prices)

Table 28. Important factors in allocating crop acreage.

		Average ranking[1]		
Factor	Responses (#)	Rice farms[2]	Cotton farms[3]	All respondents
Soil type	7	3.5	3.7	3.6
Crop prices	7	3.5	3.7	3.6
Irrigation availability	7	3.0	4.0	3.4
Equipment	7	3.0	3.3	3.1
Government price support	7	2.8	3.7	3.1
History	7	3.0	3.0	3.0
Labor availability (both quality and quantity)	7	3.0	3.0	3.0
Management, time, and effort	7	3.0	3.0	3.0
Weed / disease pressure	7	3.0	3.0	3.0
Operating capital	7	2.8	3.3	3.0
Planting / harvest weather expectations	7	2.3	3.0	2.6

1 The following numerical values correspond to various levels of importance: 4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important.
2 Rice farms are the response group from Clay (western), Mississippi, Prairie, and St. Francis counties.
3 Cotton farms are the response group from Clay (eastern), Lee, and Mississippi counties.

least common type of rental arrangement.
- Cash rental fees for rice or cotton production are higher than rental rates on land used for other crops.
- Nearly all respondents stated that farms intend to increase the amount of land rented for all crops over the next five years.
- Available operating capital as well as labor/management time and land rent are the most important factors in determining how much land will be rented.

Conservation Tillage
- Soybeans have the highest percentage of land that is no-tilled.
- Rice, corn, and cotton used mostly reduced till practices.
- Wheat uses the least amount of conservation tillage.
- The main reason farmers choose not to employ conservation tillage is the cost of equipment.
- Overall, the reported use of conservation tillage is much higher than expected.
- Farm-size implications associated with conservation tillage equipment are not considered important by most respondents. This attitude was mirrored in responses to similar issues in other questions as well.

Seed Cultivar Selection
- Use of transgenic seed varieties is most heavily concentrated in cotton and soybeans.
- GMO corn is expected to decrease on cotton farms for 2001.
- The highest expected increase for any GMO crop is 8.3% for soybeans.
- Top reasons for planting GMO varieties are weed control and ease of management.
- Soybeans tend to have a higher number of varieties planted than other crops.
- Wheat tends to have the least number of varieties.
- Most common are Maturity Group V soybeans and a majority of soybeans are planted in May.
- Early season, early maturity soybeans are grown mainly to escape drought.
- Rice farms were more likely to plant earlier in the season than cotton farms.

Irrigation Decisions
- Wells are the most common irrigation source and rivers are the least common.
- Flood irrigation is a standard practice for rice while furrow irrigation is most often used in corn, soybeans, and cotton.
- Very little tail-water is recovered in the surveyed area, which is likely a function of plentiful water supplies in the surveyed region.
- Access to irrigation water and rental arrangements are the main factors for making irrigation decisions.
- Financial institutions are thought to encourage further use of irrigation by restricting lending on non-irrigated production.
- Fewer than 10% of producers are expected to use the irrigation scheduler or other software to follow irrigation recommendations.

Soil Mapping/Testing
- Drainage, water-holding capacity, texture, and fertility are equally important in differentiating soil types.
- Cotton farms tend to have more soil types on a farm than rice farms.

Governmental Programs
- Very few farms in the survey area have land enrolled in conservation programs.
- Land is enrolled in conservation programs because the program payments are higher than alternative uses for the land.

Crop Rotation Practices / Crop Selection
- Rice farms typically rotate rice with soybeans and sometimes wheat.
- Cotton farms generally rotate cotton with corn or soybeans.
- Rotations can be quite complex and may involve several different crops.
- Changes in crop prices along with irrigation availability are the main reasons given for determining crop rotations.
- Farmers would grow more acreage of grain sorghum and corn if marketing opportunities were improved or higher prices were available.

Insurance, Risk Preference, and Marketing
- Higher valued and non-irrigated crops are more frequently insured than are crops of lower value or those that are irrigated.
- Farmers chose not to purchase crop insurance because of high insurance premiums and insignificant reduction of risk.
- Use of cooperatives for collective marketing of crops is more pronounced for rice and cotton than for other commodities.
- Forward contracting is quite common for wheat.
- Use of futures and options for hedging is the least used marketing strategy.
- Government programs are relied upon to provide a price floor.

To improve the validity and reliability of some of this data, the survey should likely include more regions in the state and be repeated from year to year. Further, some of the questions need to be revised to capture additional detail. Finally, repetition of this kind of survey over time can elicit reactions to upcoming agricultural production concerns. An internet survey method and automated report generation may also speed up the generation of these types of surveys.

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Appendix — Survey Instrument

Focus Group Survey
Jan. 18, 2001, Brinkley, AR

Name:_____
Phone/E-mail:

Basic Farm Information

1. What area of the state do you cover for extension purposes? (See attached soil map and shade in your area)

2. Estimate a typical range and average of acres cropped for farms you deal with?

   Small _____ acres Average _____ acres Large _____ acres

3. Briefly describe a typical farm from your area: (Note the location of the farm you have in mind with an "X")

   Principal crops: _____
   _____

   Soils: _____
   _____

   Size of operation (crop acres & other businesses -- sod business, seed business, etc.): _____
   _____

   Number of people working on farm (full-time, part-time, skilled, unskilled):_____
   _____

4. Estimate what percentage of land is rented/leased on this typical farm on a crop by crop basis

Crop	% of crop land rented or leased[1] versus owned	Indicate Breakup of Rented/Leased Land				
		% Cash Rent[2]	Fee[3] ($ per acre)	% Crop Share[4]	% Cost Share[5]	% Other[6]
Rice						
Soybean						
Wheat						
Cotton						
Other _____						
Other						

[1] Indicate how much of the crop land for each crop is leased or rented vs. owned. That is a farmer may grow 300 acres of soybeans, of which he rents 200 acres. The entry would be 2/3 or 67%.
[2] Of the rented land, how much is rented on a cash basis. If this farmer would have 100 acres on a cash basis the entry is 50%.
[3] What is the rental cost per acre. Use an average if there are more than one set of rates or write down for different crops (i.e. soybean - dryland cost is $xx/acre... on irrigated soybean cost is $yy/acre).
[4] Crop share identifies an arrangement where the landlord receives a share of the crop only. No costs are shared. Indicate the % of land rented under this type of arrangement. If the farmer crop share rents 50 acres then the entry is 25%.
[5] Cost share identifies an arrangement where the landlord shares some or all costs of production in addition to the harvest. Indicate the % of land rented under this type of arrangement. If the farmer rents 40 acres this way then the entry is 20%.
[6] Other. Any rental arrangement that does not fit the cash rent, crop share or cost share categories. Indicate the % of land rented under this type of arrangement. If the farmer rents the remaining 10 acres in this fashion then the entry is 5%.

5. What do you expect this farmer will lease/rent over the next five years compared to 2000?
(Please circle response or indicate!)

Crop	Rate of Change per year						
Rice	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other	%
Soybean	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other	%
Wheat	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other _____	%
Cotton	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other _____	%
Other_____	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other	%
Other	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other	%

6. What changes the amount of land that is rented or leased periodically? In other words, what factors determine how much land will be rented? *Please provide a ranking for each of the following factors... (4 Very Important, 3 Important, 2– Somewhat Important, 1 – Not Important)*

Factor	Ranking *(1 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)*
Land rent	_____
Crop prices	
Government programs (e.g. LDP and price support programs)	
Input Prices (e.g. if diesel increases a lot, would you farm less acres?)	_____
Available operating capital	_____
Available amount of labor and management time	
Land available for rent	
Other_____	_____

Production Information

Conservation Tillage

7. In your opinion, what percentage of this producer's land is farmed using no-tillage (using zero-till equipment) and/or reduced tillage (fewer passes) systems? *Please describe the most common methods in the table below...*

Crop	Level of Adoption of no-till or reduced-till systems	
Rice	%	Practice
Soybean	____%	Practice _____
Wheat	____%	Practice _____
Cotton	%	Practice
Other_____	%	Practice
Other_____	____%	Practice _____

Additional Comments: _____
_____

8. What do you think are some aspects why producers do not choose reduced tillage programs compared to conventional tillage systems? *Please provide a ranking for each....*

Factor	Ranking *(4 – Very Important, 3 – Important, 2 – Somewhat Important, 1 – Not Important)*
Weed control more difficult than with conventional tillage	
No-till equipment too expensive	_____
Risk of not being able to apply chemical at the right time because of poor weather	_____
Fewer acres can be planted with no-till equipment	_____
Other	
Other	

Additional Comments: _____

Seed Cultivar Selection

9. With questions arising regarding marketing of GMO or transgenic crops, what do you expect this farmer will plant in terms of transgenic varieties in 2001 compared to 2000? *Please circle response or indicate ...*

Crop	Current Level (% of crop acreage in GMO where applicable)	Rate of Change					Please Indicate + or -
Rice	%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other %
Soybean	_____%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other _____%
Wheat	%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other %
Cotton	%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other %
Other_____	_____%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other _____%
Other	%	+ 5%	+ 2%	No Change	- 2 %	- 5%	Other %

10. What do you expect are this farmer's reasons for growing GMO crops? *Please provide a ranking...*

Factor	Ranking *(4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)*
Weed control (for the crop planted)	_____
Weed control for subsequent crop in the crop rotation (i.e. red rice control when using Roundup Ready beans the year before)	_____
Ease of management	
Visual appeal of clean field	_____
Makes coordination of planting and field preparation easier	_____
Allows more acreage to be covered with the same equipment	
Other	
Other_____	_____

Additional Comments:

Seed Cultivar Selection (cont'd)

11. Please estimate and summarize what this farmer in your area will plant in terms of cultivar seed selection in 2001. *Please indicate the total number of varieties, the information on maturity group for soybeans only, and any other seed selection criteria you may have. An example is provided. Not all categories may apply to all crops.*

Crop	Total # of Varieties	Soybeans Only (Indicate % of planted acreage for each category)					Describe Other
		MG III	MG IV	MG V	MG VI	Other MG ___	
Example: Soybean Rice	6	20%	50%		30%		All MG IV are early season.
Soybean							
Wheat							
Cotton							
Other _____							
Other _____							

Additional comments:_____

12. Please indicate when this producer plants their soybeans

Planting Period	% of Soybean acreage planted during this period
Late March	
Early April	
Mid April	
May	
June	
July	

13. What do you think are reasons for this producer to grow early season early maturity soybean?

Please provide a ranking for each of the following factors... If producers typically don't grow early season early maturity soybeans in your area skip this question and go to question 14.

Factor	Ranking *(4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)*
Improved use of equipment and labor during planting	
Improved use of equipment and labor during harvest	
Drought avoidance	_____
Water conservation	_____
Crop rotation aspects (e.g. can prepare field for winter wheat better)	
Earlier to market for better seasonal cash price	
Other_____	_____
Other_____	_____

Additional Comments:

_____

_____

Irrigation Decisions

14. Please provide some information about typical irrigation practices, sources and usage.

1. What are the main sources of water? *Please indicate which sources are used and rank their importance across producers in your area for the production year 2000. Use only one rank per source please (i.e. rank from 1 to 4 and/or set to zero for not used).*

Source	Is it available?	Rank (Most used – 4 to least used – 1, not used – 0)
Well/Acquifer	☐ Yes ☐ No	
River	☐ Yes ☐ No	
Manmade Surface Storage	☐ Yes ☐ No	_____
Other_____	☐ Yes ☐ No	_____

Additional Comments: _____

2. On a crop by crop basis, what is the most common type of irrigation system used on this farm and what percentage of the acreage is irrigated?

Please rank the irrigation type from "5" – most common to "1" – least common and indicate how much of the acreage for a particular crop is irrigated regardless of irrigation system.

Crops	Irrigation Type					% of Acreage Irrigated
	Border	Flood	Furrow	Center Pivot	Other _____	
Rice						
Soybean						
Wheat						
Cotton						
Other						
Other_____						

3. What percentage of irrigated water do you think is reclaimed and reused as tail water?

Please check only one

□ < 5% □ 5% - 10% □ 11% - 20% □ More than 20% □ Other _____%

4. Does the percent of irrigated acreage change from year to year? □ Yes □ No

If yes, by how much (*Please check only one*)

□ < 5% □ 5% - 10% □ 11% - 20% □ More than 20% □ Other _____%

5. What are significant factors when making irrigation decisions on this farm?

Please provide a ranking for each of the following factors…

Factor	Ranking *(4 – Very Important, 3 – Important, 2 – Somewhat Important, 1 – Not Important)*
Access to irrigation water on the field	
Rental agreement doesn't allow for irrigation investment	_____
Crop prices too low	_____
Water quality too poor	
Not enough water available to irrigate everything during peak demand (i.e. summer months)	
Fuel, labor and equipment costs too high	
Natural rainfall adequate for dryland production	_____
Soil characteristics (stored soil moisture and water holding capacity) adequate for dryland production	_____

Additional Comments: _____

_____

6. What percentage of producers in your area do you think use the irrigation scheduler or other extension software to follow cooperative extension recommendations?

Please check only one

□ < 10% □ 10% - 25% □ 26% - 50% □ More than 50% □ Other %

Soil mapping/testing practices

15) What percentage of producers in your area have had their fields soil mapped?

□ < 10% □ 10% - 25% □ 26% - 50% □ More than 50% □ Other %

16) How would a typical farmer differentiate across soil type/quality? *Please provide a ranking for each of t following factors...*

Factor	Ranking (4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)
Surface drainage	
Water holding capacity	
Subsurface water permeability	_____
Texture (sandy vs. clay)	_____
Fertility (i.e. yield potential)	
Other	
Other _____	_____
Other _____	_____

Additional Comments:

_____

_____

_____

_____

17) If you had to categorize soil type/quality for the typical farm, how many different categories would you have?

□ 1 □ 2 □ 3 □ 4 □ 5 - 7 □ 8 or more

Additional Comments: _____

_____

_____

_____

Government Programs / Crop Insurance

18) Does the typical producer have any land enrolled in the following conservation programs? If so, indicate acreage for this farm in the following table.

Conservation Program	Are they enrolled?	Acres
CRP *(conservation reserve)*	□ Yes □ No	
EQIP *(Environmental Quality Incentives)*	□ Yes □ No	_____
WHIP *(Wildlife Habitat Incentives)*	□ Yes □ No	
WRP *(Wetland Reserves)*	□ Yes □ No	_____
SIP *(Stewardship Incentive)*	□ Yes □ No	
Other _____	□ Yes □ No	_____

Additional Comments:

_____

_____

_____

_____

19) If this farm has acreage enrolled in government programs, what are the major reasons?

Please provide a ranking for each of the following factors...

Factor	Ranking *(4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)*
Expected improvement in soil quality for the future	_____
Program payments better than alternative investment opportunities	_____
Concern about environmental impacts	
Other	
Other _____	_____

Additional Comments: _____

_____

_____

_____

_____

Crop Rotation Practices / Crop Selection

20) Are there standard crop rotations (sequence of crops grown on a field over time) on this farm? ☐ Yes ☐ No

... If so, what are the rotations?

Rotation #	% of Farm[1]	Soil / Land Description[2]	Year 1[3]		Year 2		Year 3		Year 4		Year 5	
			Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1												
2												
3												
4												
5												

Notes:
[1] % of crop land that typically will be farmed using that rotation.
[2] Type of land (e.g. well drained mostly claycy soil, poorly drained silt loam, etc.)
[3] This describes what crop(s) will be planted in year 1 and at what time. e.g. a rotation that repeats itself every three years like a rice-soybean-wheat-soybean rotation might look like this:

Rotation #	% of Farm[1]	Soil / Land Description[2]	Year 1[3]		Year 2		Year 3		Year 4		Year 5	
			Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
1	25%	Soil that is mostly clay, holds water well and is leveled.	Rice		Soybean	Wheat	Soybean					

21) What factors determine what type of crop rotation is used? *Please provide a ranking for each of the following factors...*

Factor	Ranking *(4 – Very Important, 3 – Important, 2 – Somewhat Important, 1 – Not Important)*
Weed pressure	
Disease pressure	_____
Soil type	_____
Changes in soil fertility	
Changes in crop prices	
Changes in production costs	_____
Capital constraints	_____
Agreement with landowners	
Requirements of government programs (e.g. CRP, etc.)	
Availability of irrigation	_____
Other _____	_____
Other	
Other	

Additional Comments: _____

_____

_____

22) What other crops would this farm grow if marketing opportunities were more available?

Please check all that apply.

□ Corn □ Sorghum □ Canola □ Edible beans □ Peas □ Lentils

□ Other

Additional Comments:

_____

_____

Insurance, Risk Preference and Marketing

23) Does a typical producer purchase any form of crop / income insurance? ☐ Yes ☐ No

... If yes, for what crops do they seek insurance? *Please check all that apply*

☐ Rice ☐ Soybean ☐ Cotton ☐ Wheat ☐ Other _____

... If not, what are the reasons that insurance is undesirable? *Please provide a ranking for each of the following factors...*

Factor	Ranking *(4 = Very Important, 3 = Important, 2 = Somewhat Important, 1 = Not Important)*
Insurance premiums are too high	_____
Does not reduce risk sufficiently to be interesting	_____
Sign-up process too time consuming and difficult	
Insurance program not available for crops of interest *(please note which crop(s) in the additional comments section below)*	
Insurance regulations restrict production practices too much	
Other _____	_____
Other _____	_____
Other	

Additional Comments:

_____

_____

24) When making production/marketing decisions, which of the following risk reduction methods are common?
Please indicate if producers in your area use the following method, for what crop(s) and for what percentage of production.

Method	Is it used?	Crop(s) and Percentages in parantheses
Futures	☐ Yes ☐ No	
Options	☐ Yes ☐ No	
Contract	☐ Yes ☐ No	
Marketing Coop	☐ Yes ☐ No	
LDP & other Gov't programs	☐ Yes ☐ No	
Other	☐ Yes ☐ No	

Additional Comments: _____

_____

_____

_____

25) What are the most important factors for crop acreage allocation? *Please provide a ranking for each of the following factors...*

Factor	Ranking *(4 – Very Important, 3 – Important, 2 – Somewhat Important, 1 – Not Important)*
Soil type	
History	_____
Labor availability (both quality and quantity)	_____
Management, Time and Effort	
Equipment	
Crop Prices	_____
Government Price Support	_____
Planting/Harvest Weather Expectations	
Weed/Disease Pressure	
Operating Capital	_____
Irrigation Availability	_____
Other	
Other	

Additional Comments: _____

_____

_____

_____