

The mission of the Center for Tobacco Grower Research is to conduct timely research in the areas of tobacco production, economics, and markets that will provide information that will support the sustainability of U.S. production of burley, flue-cured, dark and other types of tobacco.

Background and Objective

Tobacco grower participants in previous CTGR surveys and focus group sessions have identified the cost and availability of labor as a significant production restriction in their operation. Furthermore, 60 percent of burley producers responding to the 2008 CTGR Current and Former Growers survey indicated they have trouble finding enough labor for their farming operation. The cost and lack of available labor was also named as an important factor in producers' decisions of whether or not to produce and how much tobacco to produce. Sixty-seven percent of burley respondents indicated the lack of available labor was a very important factor to their production decision, while 73 percent indicated the cost of labor was a very important factor.

While the adoption of mechanical harvesters among flue-cured producers has been quite successful, very few acres of burley tobacco are harvested using mechanical harvesters. Several different systems have been developed for mechanically harvest and strip burley tobacco, but no system has received widespread acceptance by producers.

This study further explores the labor challenges tobacco growers are facing and the potential for adoption of mechanical harvesters and mechanical stripping machines. The main objective is to collect information from burley producers about their labor use, their thoughts on new labor-saving technology, and to explore the factors influencing tobacco producers' decisions to invest in such labor-saving technology.

Sources of Labor

One of the legal options for hiring farm labor is the H2A agricultural guest worker program that was passed by congress in 1986 as a part of the Immigration Reform and Control Act (IRCA). This program was enacted to address the problem of a lack of workers who are "able, willing, qualified, and who will be available at the time and place needed, and the employment of the alien in such labor or services will not adversely affect the wages and working conditions of workers in the United States similarly employed". Based on results of the 2008 CTGR Mail Survey of Current and Former Growers, the H2A program is an important source of labor for hundreds of tobacco farms, particularly those in regions of expanding production. From 2006 to 2007, the number of H2A workers in Kentucky increased by 41 percent from approximately 3,400 workers to more than 4,800 workers.

Under this program, foreign workers enter into a contract with employers to work in the U.S for a specific time period. Once this contract has expired the workers must return to their home country. The law requires that the employers put certain terms in H2A contracts. The worker contract must state the start and end dates of the contract; all significant conditions of employment; the days that laborers are not required to work, the hours per day and the days per week a laborer is required to work during the contract period, the crop and area to be worked, the rate of pay for each job, that the employer will provide all required tools and that the employer will pay for all the required tools and that the employer will provide workers' compensation insurance for the workers. Employers must pay the higher of the statutory minimum wage, the applicable prevailing wage, or the adverse effect wage rate (AEWR).

The adverse effect wage rate (AEWR) is established for each region by the Department of Labor based on data collected by the USDA. Figure 1 summarizes the effective H2A wage rate for selected tobacco-producing states in 2008. Many tobacco growers and grower organizations have expressed concern over the rising cost of farm labor and increases in the H2A wage rate. In addition to the additional labor costs related to the program, the current wage rates in Kentucky and North Carolina are 39 percent and 35 percent higher than the federal minimum wage rate of \$6.55 per hour, respectively.

Figure 1: 2008 Adverse Effect Wage Rates

State	2008 Wage Rate
Florida	\$ 8.82
Georgia	\$ 8.53
Indiana	\$ 9.90
Kentucky	\$ 9.13
Missouri	\$ 10.44
North Carolina	\$ 8.85
Ohio	\$ 9.90
South Carolina	\$ 8.53
Tennessee	\$ 9.13
Virginia	\$ 8.85

Other costs include free housing that meets strict safety and health standards established by law, three low cost meals must be provided per day and the cost of these meals is to be disclosed in the worker contract, or the employer must provide free cooking facilities. Employers must also provide workers' compensation insurance to the workers and transportation between local housing and the place of work.

Additionally, the employer must also guarantee each worker employment for a minimum of 75 percent of the total hours in the contract. For example, if a worker is hired for eight weeks at 40 hours per week, the employer guarantees the worker will be paid or offered work for at least 240 hours by the end of the contract.

The expense and restrictions of the program have caused many tobacco farmers to be wary of the program, particularly smaller producers unable to meet the housing requirements or without adequate workload to meet the 75 percent work guarantee.

Progress toward Mechanized Burley Production

Significant effort has been applied for many years toward the development of machinery to reduce labor-dependency in burley production. The most well-known mechanized burley harvester is a self-propelled machine developed by Biosystems and Agricultural Engineers from the University of Kentucky known as the “Big Red”, which is currently being manufactured as the “GCH Gold Standard” by GCH International of Louisville, KY. This machine is capable of harvesting up to 5 acres per day, but could extend harvesting into the night time for additional production. Sturdy 8 x 14 foot metal frames receive and support approximately 448 plants in the eight slotted rails of each frame. It takes approximately 15 to 16 of these frames to hold an acre of harvested burley tobacco. Five empty frames are loaded onto the harvester at a time using an extended reach all-terrain forklift. A filled frame is set off the harvester on self contained support legs. Later, the extended reach forklift moves the filled frames to a sod area for covering with special poly tarps for curing. Two workers are required for the harvest, one to drive the harvester and the other to operate the forklift. Additional labor is required for moving and covering the frames. In one field study, two commercial prototypes of this machine harvested more than 80 acres each during 2007 at maximum rates of up to 0.5-0.75 acres per hour. (Seebold, Pearce, Duncan, Wells, and Wilhoit, 2008)

Other equipment currently being used by some burley growers include plant-notching harvesters. MarCo Manufacturing Company LLC of Bennettsville, SC, builds the first of these two machines. The MarCo harvester is a tractor mounted 3-point hitch machine powered by a power take off (PTO) driven hydraulic system that cuts, notches and conveys the plants utilizing a “sticker chain” design onto a wagon pulled alongside the machine. The other is a similar machine developed by a French manufacturer called the Kirpy. The Kirpy harvester uses a “log chain” type conveyor with small spike laden metal plates that convey plants from a standing position to deposit them horizontally onto a flatbed wagon pulled alongside the harvester. A special requirement experienced by the trial users of the Kirpy harvester in the U.S. is that the tractor must have a very slow ground drive while running the PTO near 540 revolutions per minute (rpm) for proper hydraulic flow and pressure. (Seebold et al. 2008)

Both the MarCo and the Kirpy harvesters can fill a farm wagon rather quickly with loosely stacked plants. Multiple tractor and wagon units are needed to shuttle wagons from the harvester to the wire type field-curing framework to get maximum production from the harvester of approximately 2.0 – 2.5 acres or more per normal day. (Seebold et al., 2008).

Figure 2 summarizes the estimated FOB price of each of the three harvesting machines. The delivered prices of the MarCo and Kirpy harvesters are not substantially different.

Figure 2. Estimated Costs of Mechanical Harvesters

Machine	Price
GCH Gold Standard	
Harvester	\$ 379,000
Metal Frames (per acre)	\$ 12,750
Metal Frames Covers (per acre)	\$ 1,500
MarCo	
Harvester	\$27,500
Field Curing Structure (per acre)	\$900
Kirpy	
Harvester	\$23,000
Field Curing Structure (per acre)	\$900

In addition to the technology now available to aid in harvesting burley tobacco, a new machine for mechanically removing the leaves from the stalks was made available to burley growers for the first time in 2008. This machine, developed by Carolina Tobacco Services, uses parallel chains to hold the stalks vertically downward while two rotating shafts with paddles remove the leaves from the plant. The various grades of leaves fall into boxes below and the plants move along the length of the machine. The machine currently requires the workers to remove the tip leaves prior to loading the plant into the machine.

Methods

Focus groups were conducted in major burley tobacco growing regions in Kentucky and Tennessee, the regions each included producers from what can be considered expansion regions or areas that have expanded burley acres since 2005.

Four focus groups were held with burley producers in Daviess County, Fleming County and Pulaski County Kentucky and Macon County Tennessee.

Local County Extension Agents assisted in the recruitment of participants for the study. For each group, tobacco producers were invited from multiple counties in the region representing farms with various crop mixes and levels of tobacco production.

The discussion was allowed to flow freely, guided by the following list of questions by the group facilitator.

Introductions

- 1. Please share your name and a brief summary of your farming operation and any other employment.*

Current Labor Sources

2. *How many acres of burley tobacco will you harvest this year?*
3. *From where do you get your labor to harvest your burley tobacco?*
4. *How many laborers do you use during harvest including yourself?*
5. *What is the hourly rate of pay for laborers who harvest burley tobacco on your farm?*
6. *What is the hourly rate of pay for laborers who strip burley tobacco on your farm?*
7. *How satisfied are you with your current workforce?*

Reactions to Labor-Saving Technology

8. *What do you think about when you hear “mechanical tobacco harvester”?*
9. *How many of you have seen a mechanical harvester in action?*
10. *What are your thoughts on the potential development of a mechanical harvester for burley tobacco?*

Videos and Slides of Labor-Saving Technology

(We will now view a video and some slides that show several different mechanical harvesting methods for burley tobacco including the GCH Gold Standard harvester, Kirpy harvester and the MarCo harvester and a new mechanical stripping machine.)

Response to Videos and Slides

11. *What are your initial thoughts about the mechanical harvesters and mechanical stripping machine?*
12. *Would you be interested in using one of these harvesters or the mechanical stripping machine in your own operation?*

Presentation of Costs for the Labor Saving Technology

(Data collected from each harvester manufacturer is presented accompanied by the costs of the machines.)

Reaction to Costs and Ownership Options

13. *What are your thoughts on the cost and benefits of the machines?*
14. *Do you see any potential for cooperative ownership of any of the machines? Would you be interested in participating in cooperative ownership of any of the machines?*
15. *Do you see the potential for any of these machines to be used in a custom hire service?*
16. *Besides the cost, what other factors are important in your decision about whether or not to adopt a mechanical harvester?*

Other Productivity Issues and Future Production

17. *What other areas of tobacco production do you see potential for reducing the use of manual labor?*

18. Assuming tobacco production remains profitable, for how many years do you expect to continue producing burley tobacco?

19. In what areas of tobacco production would you like to see additional research to improve productivity?

Additional Comments

20. Does anyone have any additional comments or questions?

In total, 41 producers participated in the focus groups, farming between 9 and 350 acres of burley tobacco, with a group average of 54.4 acres. Years of experience in burley tobacco production ranged from 3 to 60 years and an average years experience of 30 years. Full time farmers comprised 78 percent (n=32) of the growers in the focus groups, 7.3 percent (n=3) had full time jobs off the farm, 12.2 percent (n=5) held part time jobs off the farm, and 2.4 percent (n=1) were retired. Figures 3 through 6 summarize the participants of each location based on a short survey completed by each participant.

Figure 3. Daviess County, Kentucky – Participants Summary

	N	Mean	Median
Farmland			
Acres Owned	10	557	170
Acres Rented	7	840	400
Crops			
Burley	9	71	50
Dark-Air	2	20	20
Soybeans	6	936	525
Wheat	3	583	300
Corn	5	688	500
Hay	2	76	76
Fruits/Vegetables	2	52.5	52.5
Livestock			
Beef cattle	4	134	116
Employment			
Full-time farmer	7		
Employed full-time off farm	2		
Employed part-time off farm	1		
Retired	0		
Years farming	10	23.1	27.5

Daviess County

Ten growers from the Daviess County Kentucky region attended the focus group session. Growers produced from 10 to 150 acres of burley tobacco and the overall average burley acreage for the growers was 71 acres. These growers owned an average of 557 acres and rented an average of 840 acres. Experience in burley tobacco production ranged from 3 to 40 years with an overall average of 23 years experience. Seven of the ten farmers reported that they were full time farmers, two stated that they had full time employment off of the farm and one reported that he worked a part time job off of the farm. All but one of these producers had a diversified farming operation consisting of row crops, livestock, hay, fruits and vegetables and dark air cured tobacco.

Figure 4. Fleming County, Kentucky – Participants Summary

	N	Mean	Median
Farmland			
Acres Owned	11	264	140
Acres Rented	9	269	200
Crops			
Burley	11	23.5	22
Soybeans	2	39	39
Wheat	3	46	50
Corn	1	25	25
Hay	11	229	200
Livestock			
Beef cattle	9	126	100
Dairy cattle	3	125	130
Broilers/poultry	1	12	12
Horses	3	4.3	4
Employment			
Full-time farmer	6		
Employed full-time off farm	1		
Employed part-time off farm	3		
Retired	1		
Years farming	11	35	35

Fleming County

Eleven growers participated in this focus group that owned an average of 264 acres and rented 269 acres. Years of experience in burley tobacco production ranged from 18 to 58 years and an overall average of 35 years. Burley tobacco acreages amongst the growers ranged from 9 to 38

acres with an overall average acreage of 23. Those considering themselves to be full time farmers consisted of 6 of the growers, 3 were part time farmers who held apart time job off of the farm, one held a full time off the farm and the other was retired. All of these farmers reported hay production with row crops and livestock production scattered throughout the group.

Figure 5. Macon County, Tennessee – Participants Summary

	N	Mean	Median
Farmland			
Acres Owned	8	673	195
Acres Rented	8	545	575
Crops			
Burley	8	124	49
Soybeans	1	400	400
Wheat	4	95	78
Corn	2	140	140
Hay	2	140	140
Livestock			
Beef cattle	8	237	140
Hogs	2	1500	1500
Employment			
Full-time farmer	8		
Years farming	8	25	25

Macon County

These growers owned an average of 673 acres and rented an average of 545 acres. Burley tobacco acreage ranged from 27 to 350 acres with average burley tobacco acreage of 124. Years experience in burley tobacco production ranged from 12 to 35 years with an overall average of 25 years experience. Each grower reported that they were full time farmers with a diversified operation consisting of hay and livestock production. Half of the group reported that they maintained small acreages of row crops such as corn, wheat and soybeans.

Figure 6. Pulaski County, Kentucky – Participants Summary

	N	Mean	Median
Farmland			
Acres Owned	12	335	300
Acres Rented	8	272	200
Crops			
Burley	12	24	20
Soybeans	3	95	90
Wheat	4	60	35
Corn	1	30	30
Hay	12	191	175
Fruits and Vegetables	2	6.75	6.75
Livestock			
Beef cattle	12	273	225
Dairy cattle	1	150	150
Goats	4	79	45
Sheep	2	83	83
Horses	1	4	4
Employment			
Full-time farmer	11		
Employed full-time off farm	1		
Years farming	12	35.4	36.5

Pulaski County

The Pulaski County Kentucky group consisted of 12 growers who owned an average of 335 acres and rented an average of 272 acres. Their years of experience in burley tobacco production ranged from 12 to 60 years with an average of 35 years overall. Their burley acreage ranged from 10 acres to 90 acres and averaged a total of 24 acres overall. All of the growers farmed full time except one who held a part time job away from the farm. These farming operations were all diversified with significant hay acreage and livestock production.

Current Labor Sources

Daviess County

Five of the Daviess County participants used the H2A program as their primary source of migrant labor while the other four growers hired non-H2A Hispanic migrant labor and one hired

high school aged kids on a part-time basis to complete the harvest of tobacco on their farms. Wage rates for harvest were approximately \$9.00 per hour and \$7.00 to \$7.50 per hour for stripping tobacco. Some growers reported paying by the pound for stripping tobacco with rates of \$0.19 per pound compared to \$0.22 per pound for stripping dark tobacco.

Growers were overall very satisfied with the quality of work performed by the labor in their region, this was especially true of those using H2A labor. Several of the producers had been using the same group of workers for ten years or more.

Fleming County

Labor sources varied with two growers using H2A workers, one grower using a labor contractor from Texas to find migrant workers, and the other eight growers using non-H2A Hispanic migrant laborers. Wage rates also varied substantially among the participants with some growers paying by the unit and others by the hour. Growers reported paying \$6 per hour for pre-harvest labor and \$8 and \$9 per hour for harvest. One grower reported paying as much as \$12 per hour for harvest labor in a situation when he “had a very hard time finding help”. Growers paying by the unit reported paying \$0.37 to \$0.40 per stick for cutting and housing with the workers using their tractors and wagons. All participants reported paying by the pound for stripping at the most common rate of \$0.20 per pound. One grower removed his tobacco from the barn and booked the stalks, while paying only \$0.11 per pound for labor to remove the leaves from the stalks.

Satisfaction with the availability and quality of labor in the region was very favorable. Most of the laborers had already been trained to harvest tobacco and many farmers had to turn Hispanic migrant laborers away because they already had enough help. Due to the tight restrictions on H2A laborers, one farmer had quit using them all together because “it was just too much trouble”.

Macon County

Labor usage on these farms and in the county was primarily Hispanic migrant labor with two of the growers using H2A workers and the other six using non-H2A Hispanic migrant labor. Wage rates for harvest laborers were \$0.40 to \$0.45 per stick for contract labor to cut and harvest or \$8.00 to \$9.00 per hour. Growers reported paying \$0.35 to \$0.36 per stick for stripping tobacco.

On average among the group, satisfaction with labor was down or similar to previous years. Growers using non-H2A Hispanic migrant workers stated that the quality of the laborers had decreased and the workers were much slower in harvesting compared to previous years. However, one grower noted most of these workers were being paid by the unit for harvest so the speed of work was not a major concern. Only one grower in the group described his laborers as the best that he had experienced. Another grower explained that he was able to improve his workforce through the H2A program by only rehiring the best of the group each year.

Pulaski County

Hispanic migrant laborers were used in all of the farming operations in Pulaski County with four of the farmers using the H2A program. Wage rates for harvest varied across the group ranging from \$0.38 per stick for contract labor to cut and house tobacco, \$0.15 per stick for cutting tobacco, and hourly labor rates of \$8.00 to \$9.00 for harvest.

Overall satisfaction with the labor force was very high. Participants agreed that without Hispanic migrant laborers there would be no labor for tobacco harvest and tobacco and other industries would fail. Due to a flour mill closing in a neighboring county there was an influx of local Hispanic laborers looking for work harvesting tobacco. Several of the growers reported having one or two full time workers that lived on the farm.

Reactions to Labor-Saving Technology

Daviess County

The majority of the growers had not seen a mechanical harvester nor was very familiar with what technology was available. A couple of the participants had seen a mechanical harvester in an on-farm demonstration.

When asked about their reactions to “mechanical harvesters”, the participants reported “thoughts of leaves flying everywhere”, “500 acre growers with \$1,000,000 machines”, and hesitation to “invest money in an industry with so much uncertainty”. One grower noted the hesitation to invest money in tobacco production is not something that is a post-buyout issue. He explained that growers in the area have always been willing to invest thousands in equipment and harvesters for grain crops, while being reluctant to invest in tobacco production.

Fleming County

Growers were asked what they thought when they heard the words “mechanical harvester.” Growers who had never seen a harvester stated that this simply could not be done and that it was not cost efficient. The four farmers in the group who had seen the harvester stated that their current migrant labor was more efficient and the machines would slow down their production. The average age of farmers in this area ranged from 50 to 55 years of age and the youngest farmer they could think of was 37. Due to the increasing age of farmers in this area adoption of such equipment would be limited.

Macon County

When growers were asked what they thought of when they heard the words “mechanical harvester,” cost was the big issue. One grower stated the first thing he thought of was the “more than \$1 million required” while another added that if he had the money to purchase a harvester

then he would not be growing tobacco. Among these responses, inefficiency and problems with the machines ability to properly harvest the tobacco were also major concerns with the machines.

Pulaski County

When asked what they thought when they heard the words “mechanical harvester,” one grower stated that he would be willing to invest the money into a harvester if it worked efficiently. Most of the farmers were familiar with the pull behind tractor unit from a tobacco field day they visited. One grower said he had seen a new mechanical stripping machine, but it appeared to do a “messy job stripping”.

Responses to Video and Slides

Daviess County

After presentation of the harvester video to the growers they were asked to give their reactions to the mechanical harvesters. The growers provided overall negative responses toward the machines stating that manual labor outperforms the machine and that until their labor source was gone there would be no reason to invest in such a machine. Others responded that potential adoption is slowed by fear of better technology becoming available and the overall price is just too high.

Fleming County

Thoughts on the mechanical harvesters after the presentation of the video remained negative. Tangling of stalks, leaf loss, too much breakage, and inefficiency of the machines were the main reactions to watching the harvesters work in the field. One grower stated that he would be willing to try one but he would not be able to afford the cost of the machine. The benefits do not justify the costs of the machine and as long as migrant labor was available the growers were unwilling to invest in any of the harvesters.

Macon County

After demonstration of the harvester and stripping machine video and slides, all of the growers remained negative about the use of a mechanical harvester on their farm. Growers’ main concerns with the machines were the piling of unwilted tobacco, leaf breakage, and the presence of leaves left in the field. One grower stated that the costs of the machines might not be the issue; it may be inefficiency, production and quality of the mechanical harvesters. He explained that several large-scale producers in the County would likely invest in such technology at the current cost, if the efficiency of the machine were improved.

Pulaski County

Participants' reactions to the video indicated they were generally uninterested in investing in the technology and provided negative responses toward the machine. The most common response among the growers was the uncertainty of the tobacco market and the increasing costs of inputs relating to the costs of the mechanical harvesters. Some growers stated that the mechanical harvester would slow their harvesting down and that manual labor was much more efficient. Other concerns from the growers related to the way the machines handled the tobacco stating that there was too much breakage of the tobacco plant and bruised tobacco is hard to sell.

Reaction to Costs and Ownership Options

Daviess County

The growers generally said while the cost was always a concern, it was not the major issue with the technology presented. More specifically, the ability of the equipment to reduce the amount of time required to harvest and strip tobacco and to provide a labor-savings that offsets the cost would allow investment in the technology.

One producer explained that ability to save time was the most important factor to him in any new technology for tobacco production. He said technology to reduce the amount of time required to harvest and strip tobacco would allow him to produce more acres and to double-crop barns, allowing a tremendous savings in the cost to cure tobacco.

One participant stated that his workers can cut 17,000 to 18,000 sticks per day and the harvesters presented in the videos would "get in the way" and reduce his efficiency.

Two growers said they had already purchased the new stripping machine and would be using it to prepare their 2008 crop for market. The significant benefit they saw in the stripping machine was the potential to shorten the amount of time required to get tobacco ready for market. Several growers explained that with H2A labor, they must provide work for their employees throughout the production season and this has an impact on any labor-saving technology they adopt. Specifically, technology that reduces the length of the production season by helping them get tobacco planted more quickly and sold sooner is a great benefit. This technology would allow them to reduce labor cost by reducing the number of weeks they must employ their H2A workers.

Growers generally did not have an opinion on the potential for cooperative ownership or custom hire potential for the harvesters or stripping machine.

Fleming County

With the exception of a couple producers, the group generally felt the harvesters were too expensive for the scale of production in the Fleming County region. Others explained that the benefits of the harvesters do not justify the costs.

One grower mentioned a self-propelled cutting and spearing machine that was developed many years ago that he believed had more potential for the Fleming County region than the machines demonstrated in the video. The equipment was much cheaper and would be applicable for small farms with small fields.

Some growers had experience with cooperative ownership and sharing of equipment through a program that allowed local producers to share silage equipment. One grower explained that generally when one grower needed the equipment, others did as well and scheduling the use of the equipment was nearly impossible. He said this would be even worse with tobacco harvesting and would not expect cooperative ownership of harvesters or stripping machines to be very successful.

Macon County

The growers generally saw more potential for the stripping machines for the Macon County region. One grower explained that Macon County has some of the “most aggressive” producers in the tobacco-belt and that if the technology worked they will be among the first to adopt the harvesters. However, he explained that the cost was not the concern with the harvesting equipment, but rather the slow speed of the equipment and inefficient use of equipment and labor.

The growers said they support the work that has been done in developing new technology to mechanize burley production, but the equipment developed so far was not the solution.

Several producers emphasized the importance of using barns more efficiently in this region of expanding production. As with the Daviess County group, these producers said they are very interested in any technology that will allow them to more easily double-crop curing barns.

None of the growers expressed an interest in cooperative ownership or custom hire of the machinery.

Pulaski County

Several growers explained that future uncertainty of profitability in tobacco production makes them reluctant to make any long-term investments on their farms, and this is especially true of new mechanization technology. One grower said “even if the harvester worked perfectly, future uncertainty will prevent farmers from investing”.

One grower said that even the cost of the GCH harvester was not a tremendous issue, but rather the speed of harvest and the cost of the many racks required to hang the tobacco stalks.

A couple growers explained that as long as they have access to migrant labor, they would not consider investing in any labor-saving technology.

Other Productivity Issues and Future Production

Daviess County

Growers emphasized that the most important thing that will help them to continue producing tobacco was a more efficient H2A program for guest workers. The growers discussed the challenges associated with paperwork processing and concerns about the AEWI increasing in the coming years.

Nearly all of the producers indicated they expected to be growing tobacco for at least five more years, but did have alternative sources of income if profitability in tobacco falls.

The growers reflected on the major benefits of the more recent improvements in tobacco production technology, specifically greenhouse plant production and big bales. They explained one of the major benefits of these technologies was to allow them to effectively “shorten” the production season by getting tobacco planted sooner and stripped more quickly.

Growers in the group described several other technologies they had incorporated into their operations such as “chain stripping systems” where the stick of tobacco is placed on a conveyer system while the leaves are removed from several stalks at once. Additionally, one producer had built a tobacco cutting machine that is mounted on a Hi-Boy to make save labor in harvesting.

Fleming County

Only seven of the growers indicated that they expected to be growing tobacco in 5 years, but beyond that they were uncertain. The other growers were uncertain if they would be able to continue tobacco production in the future. This was mainly due to the increasing age of the farmers and the increasing cost of production and other inputs. Uncertainty in the tobacco market was also a limiting factor in the decision to continue burley tobacco production on their farms.

Several growers said they would like to see more research on “smaller-scale” technology to reduce labor dependency on small farms.

One grower explained that Alfalfa in this area is making the farmers more money per acre than burley tobacco and other crops could also take its place such as catfish and grapes. Farmers stated the need for new varieties to help them increase their yields. Several who were still collecting tobacco quota buyout payments said they would be forced to quit growing tobacco when those payments end if profitability does not improve.

Macon County

While growers were concerned about long-term profitability of tobacco production, all of the participants had invested significant amounts of money into new barns and greenhouses following a devastating tornado in the area in early 2008. Burley tobacco being the main farming enterprise in this county, most farmers were working to rebuild curing structures and recoup their losses relying on burley tobacco production to offset the costs of rebuilding.

However, future burley production for these growers remains uncertain. They explained that the market prices for burley tobacco verses their cost of inputs are their most limiting factor when it comes to future tobacco production. One grower explained that he is making his production decisions “from year to year” due to the uncertainty of the burley tobacco market. A couple of the participants said they only plan to continue tobacco production because they have children that desire to farm full-time in the future. These growers explained that if it were not for their children they would quit burley production all together.

One grower reported that due to long-term uncertainty, he does not want his child to farm, but five years ago he felt differently better about future income potential from farming. Another grower said it would be impossible for him to make a living farming without burley tobacco as a significant part of his operation.

When asked about the potential for improvements in other areas of tobacco production farmers stated that mechanization of stripping and market preparation has more potential than mechanization of the harvesting process. Other comments were about immigration reform to make it easier to obtain legal migrant workers, the development of more disease resistant varieties, and the ease of restrictions on certain chemicals used in tobacco production.

Pulaski County

The group generally felt that with the continued availability of migrant labor, burley tobacco would continue to be an important part of agriculture in the region. While two producers indicated this will likely be their last crop, the rest indicated they would continue growing tobacco as long as labor was available and the crop was profitable. Several voiced concerns about the shrinking profit margin in tobacco compared to alternatives such as hay production.

Other comments from growers stated that there needed to be more focus on mechanization of stripping since this can be a difficult time to find labor when many Hispanic migrant workers are ready to return home. This is where the growers in this group saw a significant potential for a machine to provide labor savings.

One grower explained that a large majority of the growers in his county are 50 years of age and older and that profits must improve in order to sustain burley production in the area. He said his twenty acres of production only yielded a \$6,000 profit at the end of the year and the return is just not worth the investment and work required.

Lastly, the growers emphasized the need for a more efficient system for getting legal labor and more research to develop better yielding varieties of tobacco.

Summary

Concerns about both the availability and cost of labor were the most common issues emphasized as the benefit of adopting labor-saving technology. However, the same larger scale producers who are more likely to have the resources to adopt new technology also are more likely to have a reliable labor supply through utilization of the H2A program. Additionally, several growers using H2A labor emphasized the importance of keeping their labor employed throughout a specific time period and the need for technology that helps them “shorten the production season” is beneficial. They are generally satisfied with their labor and see more potential for new technology that allows them to use their existing labor sources more efficiently to get tobacco harvested and stripped more quickly, specifically to allow the double-cropping of curing barns.

Smaller scale producers are interested in seeing additional research in smaller scale equipment to aid in harvesting and stripping tobacco. Some growers suggested revisiting some of the smaller scale technologies that were developed many years ago, such as the small self-propelled cutting and spearing machines that utilize existing curing barns.

The concerns voiced about the efficiency of the GCH, MarCo and Kirpy harvesters were similar in all regions. Growers generally failed to see the potential for the technology to “fit” their operations. Larger scale producers did not think the technology was fast enough to work on their operation compared to the Hispanic migrant labor they are currently using. Smaller scale producers felt the equipment was too large and expensive for their operations.

The mechanical stripping machine received a more favorable response in each of the groups. In fact, two participants had already purchased a stripping machine. These producers said they purchased the stripping machine for its potential to allow them to empty barns more quickly and reuse this same curing space, effectively cutting the cost of curing space in half.