



## Relative Importance of Hired Labor in U.S. Tobacco Farms

Tobacco production is generally a labor-intensive enterprise. The 2009-2010 Kentucky and Tennessee Tobacco Production Guide<sup>i</sup> indicates that burley tobacco production requires 150 to 200 hours of labor per acre, and dark tobacco production (dark air and dark-fired) require 300 or more hours of labor per acre, approximately one-quarter to one-third of which is used for harvesting. Flue-cured tobacco production, which is largely mechanized, requires a little over 100 hours of pre-harvest and harvest labor per acre<sup>ii</sup>.

While labor already constitutes the largest share of expenses in tobacco production (i.e., one-third and two-fifths of variable cash expenses for flue-cured and burley tobacco production, respectively) ongoing structural change, since the end of the federal tobacco program in 2004, makes it even more important. The structural change is exemplified by a continuing exit of growers and an increase in acreage per farm leading to concentration of production on fewer and larger farms. The average burley acreage harvested in 2004 (i.e., before the buyout) was approximately 5 acres while that of flue-cured was 32 acres<sup>iii</sup>. The CTGR's 2010 tobacco survey data indicates that the average harvested acreage per farm of burley was 17 acres while that of flue-cured tobacco in 2009 was 105 acres, suggesting that the post-buyout acreage per farm of both tobacco types has tripled from the pre-buyout era.

As the acreage per farm increases, so has reliance on hired farm labor relative to unpaid family labor. Further, the fact that the structural change has been occurring without an accompanying change in the method of production makes the importance of hired labor more pronounced. With acreage per farm increasing and the intensity of labor (labor hours per acre) remaining unchanged, growers increasingly rely on hired labor to sustain the level of production in line with the expansion of acreage. A USDA/ERS report (Dohlman *et al.* 2009, pp. 32)<sup>iv</sup> notes that "In the past, many small tobacco operations were able to handle the workload by supplementing operator and family labor with hired local laborers. As tobacco acreage per farm increases, family labor and the supply of local residents willing to work with tobacco may no longer meet labor requirements."

This issue of *The Tobacco Grower* uses data from CTGR's 2010 tobacco survey to assess the relative importance of hired labor across different types of tobacco in light of changing tobacco farm structure. Assessing the relative importance of hired labor helps to identify the target groups who are most vulnerable to potential changes in immigration policy and labor regulations pertaining to the supply of labor and wages.

### **Relative importance of hired labor**

Overall, in the U.S. agricultural workforce, there are two farm family members for each hired worker<sup>v</sup>, indicating that family labor (operator and unpaid family members) account for two-thirds and hired labor for the remaining one-third of the total agricultural labor force. Tobacco farms, a relatively labor-intensive segment of the agricultural system, have more hired workers per farm family member than non-tobacco growing farms. In 2009, the average number of workers employed on tobacco farms was 11, 8 hired and 3 family members (including the operator of the farm). Thus, hired labor use in tobacco farming accounts for slightly less than 75 percent of the total labor used in 2009, while family labor accounts for the remaining 25 percent.

In this study, the relative importance of hired labor was estimated using the share of hired workers in the total number of farm workers employed per farm in 2009. The sample of tobacco growers was divided into two groups: 1. where hired workers accounted for 75 percent or more of total workers used (hired labor-dependent) and 2. where less than 75 percent of the total workers were hired (family labor-dependent). In each case, the balance is provided by the family. The choice of the cut-off point (75 percent) was based on the finding that hired labor, on average, accounts for 75 percent of the total labor use on a tobacco farm, based on the total number of reported workers and their source. The survey data does not provide details about hours or days worked, so it is not known whether the workers were part time or fulltime. The hired labor-dependent group accounted for 31 percent of tobacco growers in 2009, and the family labor-dependent group accounted 69 percent of growers.

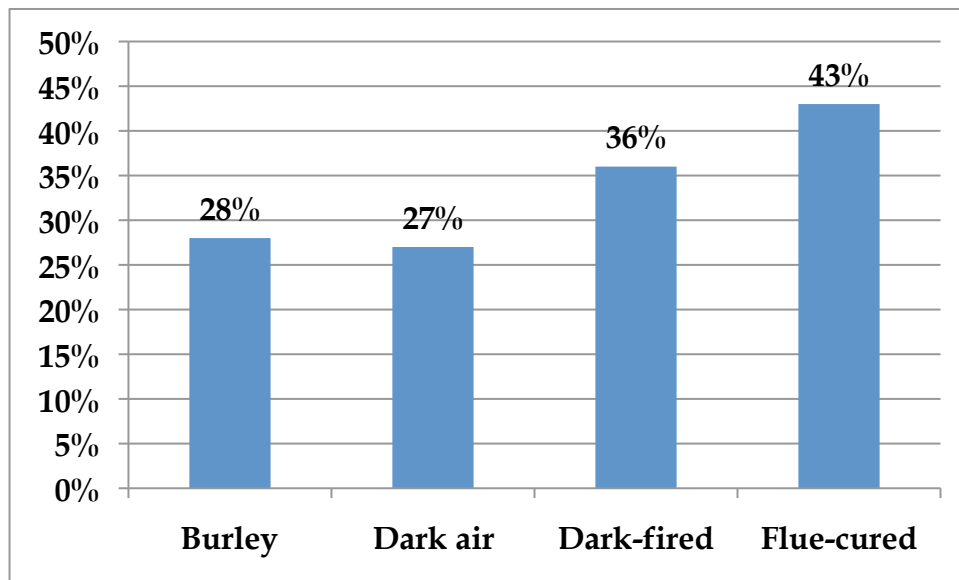
The following section explores the relationship between the relative importance of hired labor and farm/operator-level characteristics, such as the type of tobacco produced, scale of operation, level of dependence on tobacco income, age and tobacco farming experience of the primary decision maker, household size, and the level of the primary decision maker's participation in off-farm labor markets.

### **By tobacco type**

Results suggest an association between the proportion of hired labor and tobacco type (i.e., burley, flue-cured, dark air and dark-fired). The percentage of hired labor-dependent growers is higher among flue-cured and dark-fired tobacco than among burley and dark air tobacco (Figure 1). Among flue-cured growers, 43 percent were hired labor-dependent. Similarly, among dark-fired tobacco growers, 37 percent of growers were hired labor-dependent. In contrast, among burley and dark air tobacco

growers, roughly 28 percent of them were hired labor-dependent. A likely explanation for the relative importance of hired labor on flue-cured and dark-fired tobacco compared to burley and dark air tobacco is that the former have relatively larger acreage than do the latter. While dark-fired and dark-air may require similar hours of labor per acre, the average number of dark-fired acres per farm is roughly 3 times larger than that of dark air. Flue cured requires much less labor per acre, but due to the much larger tobacco acreage on flue cured farms compared to other types, it has the highest proportion of hired labor-dependent growers.

**Figure 1: The percentage of growers by tobacco type who were hired labor-dependent ( $\geq 75\%$  hired labor) in 2009.**



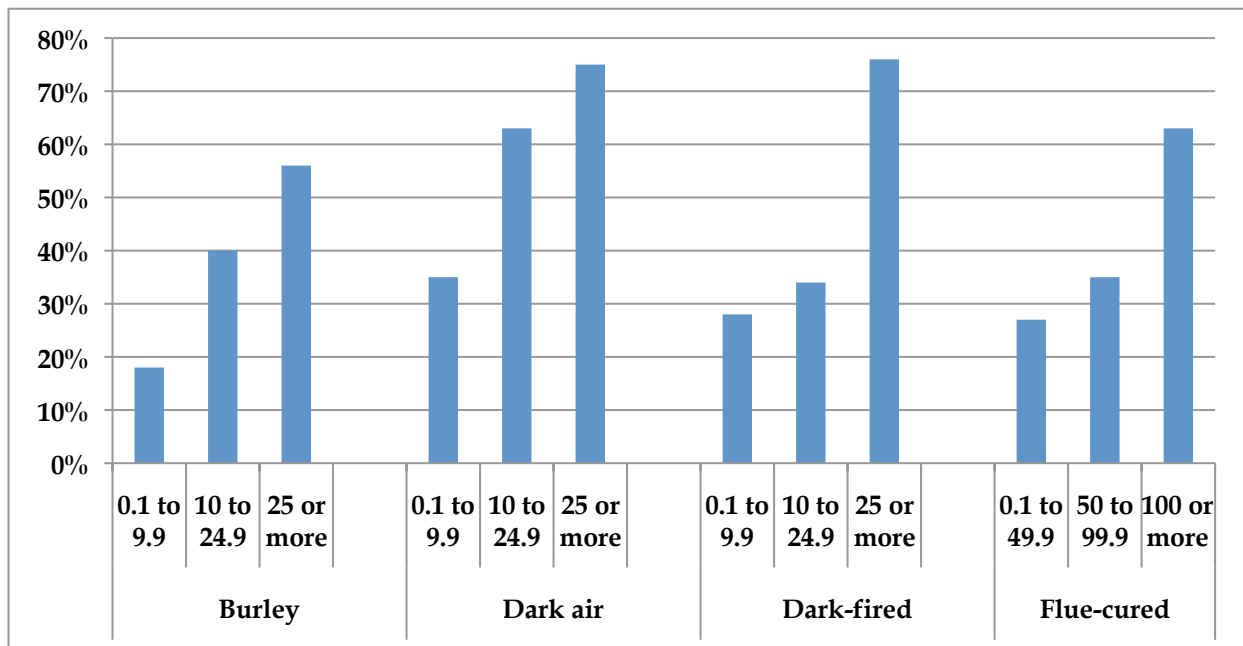
### By State

As in the case with tobacco types, the proportion of hired labor is also related to regions of production, with a slightly greater percentage of growers in North Carolina and Virginia classified as hired labor-dependent compared to Kentucky and Tennessee. Among growers in North Carolina and Virginia, approximately 37 percent of the farms are hired labor-dependent. In contrast, among growers in Tennessee and Kentucky, 27 and 32 percent of tobacco farms, respectively, are hired labor-dependent. Recall that the overall proportion of tobacco growers who are hired labor-dependent in 2009 was just over 30 percent. This suggests that use of hired labor is slightly more important among growers in North Carolina and Virginia, who predominantly grow flue-cured, than among Kentucky and Tennessee, who predominantly grow burley and dark tobaccos.

### By scale of operation

Not surprisingly, the proportion of hired labor is associated with the scale of operation, as represented by harvested tobacco acreage, total farm size and total farm cash receipts. The percentage of hired labor-dependent growers is higher among medium and large farms than among small farms in terms of tobacco acreage, total farm size (number of acres owned and rented) and total farm cash receipts. For instance, while 76 percent of growers with 25 acres or more of dark-fired tobacco are hired labor-dependent, only 28 percent of growers with small harvested acreage (i.e., 0.1 to 9.9 acres) are hired labor-dependent. Irrespective of tobacco type, hired labor is relatively more important among growers who operate the largest tobacco farms than it is for those operating smaller tobacco farms. A similar relationship was established between level of dependence on hired labor and total farm size and total farm cash receipts. That is, growers with larger total farm size and total farm cash receipts tend to be highly dependent on hired labor. However, in terms of tobacco acreage as percent of total acreage, there was no difference between hired-labor dependent and family-labor dependent growers. Both groups of growers allocate about 15 percent of their total farm acreage to tobacco production.

**Figure 3: The percentage of growers who reported that 75 percent or more of their total labor in 2009 was hired labor by number of acres**



#### By level of dependence on tobacco income

The results also suggest a relationship between the proportion of hired labor and level of dependence on tobacco income, as represented by the proportion of total farm cash receipts provided by tobacco. About 37 percent of growers who earn 50 percent or more of farm income from tobacco in 2009 are hired labor-dependent while among those who earned less than 50 percent of farm income from tobacco, 25 percent were

hired labor-dependent. This suggests that hired labor is relatively more important among growers most dependent upon tobacco for farm cash receipts.

### **By extent of participation in off-farm employment**

The extent of participation in off-farm employment is represented by the number of days the operator is working off the farm and the proportion of net household income accounted for by off-farm income. The number of days the operator is working off the farm is inversely related to the proportion of hired labor. That is, the greater number of days the operator is working off farm, the lower the proportion of hired labor. This could be due to the fact that growers who work off the farm for most of the days in the year have smaller acreage. Among growers working 1 to 49 days off farm, 35 percent of them are hired labor-dependent. The average tobacco acreage for this group of growers in 2009 was 32 acres. In contrast, among growers working 200 days or more, just less than 20 percent of them are hired labor-dependent. They have an average acreage of 12 acres.

Also, results indicate that growers earning more than half of their net household income from off-farm employment tend to have a relatively lower proportion of hired labor than those less dependent on off-farm income. This might be explained by the fact that the former have smaller farm size than do the latter. The smaller the farm size, the lower the share of hired labor used.

In terms of demographic characteristics, there is no association between household size, age of the farm's primary decision maker or farming experience and the level of dependence on hired labor. The average age and farming experience of hired labor-dependent growers is 54 years and 36 years, respectively while that of the family labor-dependent growers is 55 years and 35 years, respectively. The household size of both groups of households is 3.

### **Conclusion**

While all farms which use hired labor can be affected by labor shortage, lack of consistency in availability of adequate farm labor and increase in labor costs, the magnitude of the effect can vary depending on the share of hired labor in the total labor force used on a particular farm. This study has looked into the relative importance of hired labor in tobacco farms by type of tobacco grown, region of production, scale of operation, level of dependence on tobacco for farm income, and the level of participation in off-farm activities as well as demographic characteristics of the farm's primary decision maker. The relative importance of hired labor in tobacco farms was assessed using the share of hired labor in the total number of farm workers at the farm level.

Results have shown that the share of hired labor is relatively higher among flue-cured and dark-fired tobacco than among burley and dark air tobacco farms, implying

that hired labor is relatively more important among the former than the latter. This can be explained by the difference in the number of acres and the number of labor hours required per farm among the different tobacco types. Given the number of acres per farm and number of labor hours required per acre, flue-cured and dark-fired tobacco growers need to use more labor than do burley and dark air growers. In terms of regional distribution, the use of hired labor is relatively more important among growers in North Carolina and Virginia, which predominantly grow flue-cured than among Kentucky and Tennessee, which predominantly grow burley and dark tobaccos. Irrespective of the type and region of production, full-time growers heavily relying on tobacco for farm income tend to have higher share of hired labor.

The results suggest that full-time flue-cured and dark-fired tobacco growers operating large farms and relying on tobacco for an increasing proportion of farm income tend to be most dependent on hired labor. The fact that hired labor is so important among such tobacco farms suggests that they are more sensitive to potential changes in immigration policy and labor regulations pertaining to the supply of labor and wages. They could face disproportionate impacts compared to other types of farms. However, with a continuing shift toward larger farms in the face of very limited readily available and affordable mechanical technologies, burley and dark air farms are also vulnerable to the adverse effect of the lack of a sustained availability of hired labor. In other words, even if the use of hired labor is currently relatively lower in burley and dark air tobacco farms compared to flue-cured and dark-fired tobacco farms, the ongoing expansion of the scale of operation in these farms makes the issue of hired farm labor availability and cost very important on these farms as well. Particularly considering the limited level of mechanization in burley and dark tobaccos, it can be inferred that growers of these tobacco types could face particularly difficult challenges in their endeavor to expand the scale of operations to remain competitive. This inference is consistent with the USDA/ERS report (Dohlman *et al.* 2009)<sup>vi</sup> noting that one of the challenges tobacco farmers face today is finding the labor to support the increased scale of production.

Considering inadequate availability of hired labor and rising labor costs, and the lack of readily available and affordable mechanical technologies, the prospect of greater reliance on hired labor could be a barrier to entry. This is because new entrants should enter with larger farms to be competitive, thus requiring more hired labor. The CTGR's 2010 tobacco survey report indicates that only less than 1 percent of growers had 5 years or less farming experience, suggesting that only very few farmers entered tobacco farming since the end of the federal tobacco program. As a barrier to entry, inadequate availability of hired labor and rising labor costs can negatively impact the ongoing structural change in search of scale economies and production efficiencies to achieve competitiveness, which was the very objective for which the federal program was terminated.

Since the trend towards greater reliance on hired farm labor has important cost implications, growers may have to consider adopting labor-saving technologies.

However, it is important to note that the lack of long-term tobacco contracts, technical and economic infeasibility of mechanical technologies currently available in the market may cause some growers to be less willing to adopt such technologies whose benefits are recovered in the long term. Under the circumstances, ensuring the availability of adequate and affordable hired farm labor supply appears to be the best option. Currently, the plausible and only route available for tobacco growers to increase hired labor availability is the H-2A program. For further information about the use of the H-2A program, please visit <http://tobaccogrowerresearch.com/tobgrow.html>. While they seem to be comfortable with the H-2A for its dependability for now, they are concerned about the wage rate and provision of free housing and the payment for transportation from the worker's place of recruitment to and from the place of employment instead of to and from the U.S. consulate or port of entry. Strengthening the H-2A program by addressing their concerns seems to be the practical way out to address the labor issue.

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<sup>i</sup> 2011-2012 Kentucky & Tennessee Tobacco Production Guide. The University of Tennessee and University of Kentucky. Available at <http://www.ca.uky.edu/agc/pubs/id/id160/id160.pdf>

<sup>ii</sup> NC State University. Flue-cured Tobacco Guide 2010. Available on [http://ipm.ncsu.edu/Production\\_Guides/Flue-Cured/flue\\_cured.pdf](http://ipm.ncsu.edu/Production_Guides/Flue-Cured/flue_cured.pdf)

<sup>iii</sup> Dohlman, E., L. Foreman, and M. Da Pra. 2009. *The Post-Buyout Experience: Peanut and Tobacco Sectors Adapt to Policy Reform*, United States Department of Agriculture-Economic Research Service (USDA-ERS). Economic Information Bulletin No. 60. Available on [www.ers.usda.gov/publications/eib60](http://www.ers.usda.gov/publications/eib60)

<sup>iv</sup> Dohlman, E., L. Foreman, and M. Da Pra. 2009. *The Post-Buyout Experience: Peanut and Tobacco Sectors Adapt to Policy Reform*, United States Department of Agriculture-Economic Research Service (USDA-ERS). Economic Information Bulletin No. 60. Available on [www.ers.usda.gov/publications/eib60](http://www.ers.usda.gov/publications/eib60)

<sup>v</sup> Martin, P. 2009. Immigration Reform: What Does It Mean for Agriculture? Policy Issues: Agricultural and Applied Economics Association. Available on <http://www.aaea.org/publications/policy-issues/PI5.pdf>

<sup>vi</sup> Dohlman, E., L. Foreman, and M. Da Pra. 2009. *The Post-Buyout Experience: Peanut and Tobacco Sectors Adapt to Policy Reform*, United States Department of Agriculture-Economic Research Service (USDA-ERS). Economic Information Bulletin No. 60. Available on [www.ers.usda.gov/publications/eib60](http://www.ers.usda.gov/publications/eib60)