The Costs of BMP/SFI Compliance: Arkansas Loggers’ Perspectives

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Abstract: This study presents the results of an Arkansas survey of loggers regarding the costs of their adherence to Arkansas Best Management Practices (BMPs) and Sustainable Forestry Initiative (SFI) principles. The survey comprised of questions on monetary and other costs of BMP/SFI compliance, frequency of BMPs implemented, and participation in BMP training sessions; as well as general questions on types of logging jobs, level of production, and equipments. Analysis of the survey data revealed that the most expensive BMP/SFI requirement for the loggers was brush cutting followed by constructing waterbars, wing ditches, road resurfacing and others. The most time consuming BMP, on the other hand, was revegetation, followed by constructing waterbars, wing ditches, and others.

Key Words: Best Management Practices, Sustainable Forestry Initiative, Arkansas loggers, cost of forestry operations.

INTRODUCTION

Costs associated with forestry operations have always been of particular interest to economists. This includes traditional forestry operations such as site preparation, planting, fertilization, competition control, thinning, harvesting and transportation. However, there are also operations or measures that may not be essential, but are either required by law, or are simply accepted as good forestry practices. Examining the costs and benefits of such practices has always intrigued economists because of their potential impact to both industry and the society. Best Management Practices (BMPs), generally referred to a set of guidelines designed to protect water quality, are examples of such practices. BMPs have their roots in the federal Clean Water Act, and they originated as the Environmental Protection Agency (EPA) delegated some of the non-point source water pollution protection responsibilities to the states. While a handful of the states made BMPs mandatory, most (including Arkansas) opted for these guidelines to be voluntary. The word “voluntary” in this case, however, can be rather misleading. Other events in the policy arena have in fact made BMPs de facto mandatory. For example, much of the forest products industry has signed on to the Sustainable Forestry Initiative (SFI), which requires compliance with BMPs. A timber producer, therefore, would not be able to deliver timber to an SFI certified firm without complying with SFI requirements. This effectively results in serious restrictions on available options for a timber producer. Adherence to BMPs is obviously not without cost. Like any other operation, there are costs associated with implementing BMPs, and currently there is no structure in place to internalize these costs. Due to competition and the voluntary nature of BMPs in most states, the price of timber generally does not reflect these costs. It appears that, at least for now, timber producers are left with no choice but to absorb these costs.

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It is important to note that BMP implementation also has benefits. These regulations or guidelines (depending on whether BMPs are mandatory or voluntary) are designed to protect water quality and minimize soil erosion. There are certainly benefits from such protection to a landowner, and to the society. However, much like the costs, there exists no structure for internalizing the benefits as well. According to economic theory, in the absence of such structures, economic inefficiencies will occur. While it is important to remember the benefits, the focus of this article, however, is the costs of BMP implementation.

Due to these characteristics mentioned in the preceding paragraphs, BMPs have attracted substantial attention from economists and policy analysts. Studies on this issue ranges from compliance monitoring (Ellefson et. al. 2001), analyses of costs and benefits (Blinn, et. al. 2001; Haney et. al. 2001; Shaffer and Aust 1999; Worrell et. al. 1999; Shaffer et. al. 1998; Kluender et. al. 1997), comparison of voluntary and mandatory BMPs (Shaffer and Aust 1994; Shaffer and Aust 1993a; Shaffer and Aust 1993b), and analyses of BMPs as a policy measure (Rice 1992; Cubbage and DeForest 1991; DeForest et. al. 1990).

This study originated from our interest in performing time and motion studies and economic welfare analyses of BMP implementation in Arkansas. Since no previous study of Arkansas loggers regarding BMPs exist, we decided to conduct a survey of Arkansas loggers in order to understand their perception of the costs of BMP implementation. Therefore the objectives of the study were twofold. 1) To compile and understand Arkansas loggers’ perception of costs involved in BMP implementation. 2) Collect information on Arkansas loggers that can serve as a baseline for future studies.

THE SURVEY

Loggers listed on the Arkansas Timber Producers’ Association (ATPA) roster were the participants in this study. The ATPA list contained 276 members as loggers. Each of these individuals was mailed a BMP/SFI survey instrument in Fall of 2002. The survey consisted of an introduction letter, survey, and stamped, self-addressed return envelope. The survey was followed by a reminder post card. Two of the surveys were undeliverable. Fifty-four people returned their survey, of these returned surveys, five were unusable. The response rate was approximately 20 percent. All non-respondents were contacted by phone and asked if they would participate in the study. Twelve respondents stated that they did not wish to participate in the study. Those who responded positively (n=39) were sent a subsequent survey, introduction letter, and stamped self-addressed return envelope. If the respondent still did not return his/her survey, another phone call and survey mailing followed. A total of 11 surveys were received from non-respondents. Although the response from non-respondents was low, their responses were not significantly different than those of the respondents.

The survey included a variety of questions regarding the respondents’ logging operations. The first part of the survey contained general questions on the respondent’s business such as number of jobs owned and completed in 2001, minimum and maximum production, types of land ownership, distribution of logging jobs based on physiographic regions, Number of full-time and part-time employees, and the type of equipment owned. The second part of the survey included specific questions on the impacts of BMP compliance on the respondent’s business practices.
SURVEY RESULTS AND DISCUSSION

Figure 1 represents the number of logging jobs completed by the respondents of this survey. The question regarding the number of logging jobs owned had apparently caused some confusion among the loggers. We later determined that this was probably due to the use of the word “owned”. The answers to this question showed a pattern of inconsistency and therefore we decided to disregard the responses to the question. Figure 1 reveals that roughly a quarter of the respondents had completed either between 0-5 or 21-50 logging jobs. Another fifth completed between 11 and 15 jobs. It is important to note that these figures do not imply anything about the relative size of those jobs, or the size of the respondent’s operation. Since these two factors are implicitly variable within these figures, they should be treated carefully. However, from Figure 1 we still get an idea of the diverse nature of logging operations in terms of scale. The survey clearly included large-scale logging companies, as well as so-called “mom and pop” operations. Further insight into the scale issue was gained through the questions regarding their handling of multiple logging jobs at a time. About 46 percent of the loggers affirmed that they did handle multiple jobs at the same time in 2001. About 42 percent of the loggers said that they typically handle 2 logging jobs at the same time. When asked about the maximum number of jobs ever handled at the same time, about 42 percent said that they had handled more than 5 jobs at a time in the past.

Figure 1. Number of logging jobs completed in 2001.

The survey contained several questions regarding production from logging jobs. When asked about the loggers’ minimum production per job in 2001, there seemed to be an even distribution with the average being between 500 and 1,000 tons (Figure 2). Approximately 28 percent of the loggers said that their minimum production from a job was between 500 and 1,000 tons. Indeed most of the respondents, about 61 percent had put their minimum production from a logging job in 2001 at 500 tons or more. When asked about maximum production from a job, 35 percent chose between 1 and 5 thousand tons, while 25 percent said it was between 5 and 10 thousand tons (Figure 3). A substantial proportion, about 16 percent, said their maximum production was in excess of 50 thousand tons. Average total production for the year 2001 was between 50 and 100 thousand tons (Figure 4).
Figure 2. Minimum production per logging job, 2001.

Figure 3. Maximum production per logging job, 2001.
When asked about the type of ownership of the land that they worked on, about half of the respondents said between 75 and 100 percent of their jobs were on NIPF land. Almost exactly the same proportion of respondents gave the same response about industry lands. More than 90 percent of the respondents had only a quarter or less of their jobs on public lands. On a regional basis most of the logging jobs were in the Coastal Plain region of the state. This was no surprise since that is in fact the pine growing part of the state. Almost 90 of the loggers had between 75 and 100 percent of their jobs in the Coastal Plain region. Between 50 and 70 percent of the respondents had only a quarter or less of their jobs in the Delta, Ouachita, or Ozark regions.

For any firm, the number of employees is an indicator of size. Number of employees is also an important determinant of cost. About 37 percent of the respondents said they had either between 1 and 5 or 6 and 10 full-time employees (Figure 5). About 12 and 10 percent of the loggers had 11-20 and 21-50 full-time employees, respectively. A much smaller proportion, about 3 percent, had more than 50 full-time employees. All of the respondents had 5 or less part-time employees.
In order to understand the cost impacts of BMP implementation, several questions were asked. When asked about lost work-days due to BMP implementation, 26 percent said they had not encountered any such loss (Figure 6). However, about 29 percent estimated that they had lost between 11 and 25 days due to following BMPs in 2001. Between 10 and 15 percent respondents opted for 1-5, 6-10, or 26-50 days. About 7 percent gave somewhat of a large estimate of 50 lost work-days in 2001 due to BMPs. This, however, is not a surprise. Due to cost implications, some loggers are unhappy about having to bear the costs of BMPs. This may have influenced their estimate of lost work-days.
Many forest products industries require loggers to attend BMP training sessions. Sending their employees to these training sessions also imposes a cost on the loggers since they still have to pay these employees for the time they spend in training. When asked about the number of employee-days spent on BMP training, majority of the loggers (65 percent) estimated it to be between 1 and 5 employee-days (Figure 7). About 12 percent had not spent any employee-days on training, while an equal number spent between 6 and 10 days. About 9 percent of the loggers spent more than 10 employee-days on BMP training. On a related note, about 70 percent of the loggers had sent between 1 to 5 employees per training session.

Figure 7. Number of employee-days spent on BMP training, 2001.

Another important factor as far as costs are concerned is the terrain type. On a marginal basis, it is more expensive to operate on mountainous terrains. Most of the logging jobs appeared to be on relatively flat terrain. Between 60 and 70 percent of the loggers had a quarter or less of their jobs in mountainous, hilly, or bottomland terrain in 2001. On average about a quarter of the loggers had between 26 and 50 percent of their jobs in mountainous, hilly, or bottomland terrain. Not surprisingly, very few (5 percent or less) respondents had 75 percent or more of their jobs on mountainous, hilly, or bottomland terrain.

In terms of frequency, the most frequently used BMP measure was avoiding tree tops from stream channels. About 85 percent of the loggers had employed this measure in all of their jobs. Between 40 and 45 percent had used road planning or building waterbars in all of their jobs. Loggers were asked to estimate costs in dollar values for BMP measures employed. In order to analyze costs of different BMPs, these dollar values were added for all respondents by BMP measure. These total values for each BMP gave us the total amount spent across all respondents for each BMP measure. Figure 8 presents the percent share for these values of the grand total for the 7 most expensive BMPs. Brush cutting (commonly known as bush hogging), was the most expensive BMP having a share of 19 percent of the total amount spent by all loggers on BMPs in 2001. Other expensive BMPs were building waterbars (15%), wing ditches (13%), rutting repair (11%), road planning (9%), avoiding tree tops from streams (7%), and culverts (7%).
The loggers were also asked to estimate the amount of time spent for each of the BMPs. Total time spent for each of the BMPs across all respondents was found in exactly the same manner as in the previous case. In terms of total time spent, revegetation was the most demanding taking 32 percent of the total time spent by all respondents on BMPs in 2001 (Figure 9). Other BMP measures were not nearly as time consuming and included brush cutting (15%), building waterbars (11%), wing ditches (10%), rutting repair (8%), temporary bridges (7%), and site stabilization (2%).

Figure 8. Percent share of total expenditure by all respondents on BMP measures, 2001.

![Figure 8](image)

Figure 9. Percent share of total time spent by all respondents on BMP measures, 2001.

![Figure 9](image)
CONCLUSIONS

The objective of this study was to better understand and gather some basic information about the loggers’ perspective on the costs of BMP/SFI compliance in Arkansas. Based on the survey, road/harvest planning, site stabilization/erosion control, waterbars, and keeping tree tops out of streams appeared to be the most frequently used BMP measures. Brush/slash cutting was the most expensive measure to implement, followed by waterbars, wing ditches, and repair of rutting/road resurfacing. Although brush cutting is not a part of the BMP guidelines in Arkansas, it is however a part of SFI requirements for aesthetics and revegetation. In terms of time spent, re-vegetation was by far the most time consuming, followed by brush/slash cutting, waterbars, wing ditches, and repair of rutting/road resurfacing. These results provide us with information necessary to better understand the cost structure involved in Arkansas loggers’ compliance to BMP/SFI guidelines. Such information will be crucial for planning future research in this area. In addition, this information may also be useful to policy makers for refining BMP guidelines, or for developing policies aimed at internalizing the costs of BMP/SFI compliance. The results will also be useful to timber producers for developing their strategies on how to approach policy makers.

LITERATURE CITED


