Integrating Forestry Best Management Practices (BMP) Research into Extension Programs to Improve BMP Implementation

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ABSTRACT
Virginia Tech has an active research program focused on BMPs for water quality and also has an active logger training Extension program (SHARP Logger Program). While logger training programs often incorporate research findings into a variety of programs, workshops specifically focused on applied research results had not previously been offered in Virginia. Loggers invest a substantial amount of resources implementing BMPs for water quality and could benefit from applied research results that help them to more effectively implement those BMPs. Virginia Tech Forestry Extension and research faculty offered a series of workshops across Virginia, targeting loggers and foresters. Workshops included presentations by Virginia Tech researchers highlighting results of applied forestry BMP research while Virginia Department of Forestry inspectors highlighted common issues associated with BMP implementation in the local region.

Utilizing workshops specifically focused on applied research results provided an opportunity to reach operators directly involved in BMP implementation. A total of 141 participants attended 5 workshops throughout Virginia. Ninety-Eight percent of participants indicated information provided in the workshop could help them improve BMP implementation. Participants were asked how likely they would be to use information from the class to improve BMP installation on their jobs, or improve recommendations related to BMP installation. On a scale of 1 to 5 where 5 = very likely, the average response was a 4.26, indicating participants were likely to use the information provided in the workshops to improve BMP implementation and protection of water quality in Virginia.

Keywords: Logger training, continuing education, water quality

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Introduction

Forest utilization is a vital component of Virginia’s economy however it is critical that harvests are conducted in a sustainable manner because improper harvesting practices have the potential to adversely impact water resources. Therefore, Virginia’s Silvicultural Water Quality law (§10.1-1181.2) was developed to provide additional protection of water quality during silvicultural operations such as timber harvesting. The Virginia Department of Forestry (VDOF) is responsible for inspecting all timber harvesting operations to ensure compliance with the water quality law. In 2013, 5,658 timber harvests were performed on over 233,714 acres (VDOF, 2013). Virginia has an outcome based BMP enforcement program where there are often multiple BMP options that could be utilized to achieve the desired result of protecting water quality.

Logging businesses and forest industries expend considerable resources implementing BMPs for protecting water quality during timber harvesting. Choosing the most appropriate BMPs to utilize for protecting water quality can be a subjective decision. These decisions can impact the effectiveness of the BMP at protecting water quality and can also impact the costs required to implement the BMPs.

Virginia is also currently experiencing a rapid growth in the use of woody biomass for energy. Five wood fired electricity generating facilities became operable in 2013 and have the capacity to produce approximately 300 Megawatts of electricity and utilize approximately three million additional tons per year of woody biomass. Much of this new supply of biomass for energy will be produced by utilizing logging residues from ongoing harvesting operations. As logging operations adapt to utilize logging residues for bioenergy, many loggers and forest managers are uncertain about the adequacy of current BMPs to protect water quality on sites where logging residues are harvested. Providing research based information to professionals involved in decision making related to BMP installation could improve outcomes related to protecting water resources, minimize the associated cost, and support sustainability of the forest resources and forest industry.

Virginia Tech has been active in conducting research on BMP effectiveness (e.g. Wade et al. 2012, Aust et al. 2011, Lakel et al. 2010), however, existing Extension programming such as the SHARP Logger program (www.SHARPlogger.vt.edu) and training efforts by the VDOF typically do not focus on specific research results. Inclusion of these recent BMP research efforts could help inform practitioners about efficacy and cost of various BMP options. The Virginia SHARP Logger Program (www.SHARPlogger.vt.edu) is an Extension program coordinated through the Virginia Tech Department of Forest Resources and Environmental Conservation. The SHARP logger program has over 1300 active participants representing the vast majority of logging production capacity in Virginia. As part of the program requirements, participants must earn 12 hours of continuing education (CE) credits every 3 years. CE programs are offered on a variety of topics to meet the needs of a diverse audience. Workshops often incorporate research results into the training materials, however applied research results have not been the main focus of logger training workshops.
Methods
We developed a 3 hour workshop focused on applied BMP research results from nearly 20 years of applied BMP research conducted at Virginia Tech. The workshop was delivered in the format of a SHARP logger continuing education workshop (3 CE credits) and was advertised through the SHARP Logger Program newsletter to all participants in the program. The workshop included a brief overview of the history of BMP requirements including results from research focused on pre-harvest planning as well as general harvest research focused on implementation of BMPs on harvest sites across Virginia. Additionally the presentation covered results from designed experiments related to forest roads, decks, stream crossings, and skid trails. Results presented in the workshop focused primarily on the effectiveness of different BMPs at preventing erosion. Results often included cost estimates for each treatment to help illustrate the relative cost for specific BMPs compared to their overall effectiveness. Each workshop also included recent research related to BMP implementation of BMPs on biomass harvesting and discussion of considerations when harvesting biomass on integrated harvesting operations.

Workshops were offered at a total of five locations across Virginia. One of the five workshops was at the Virginia Tech Reynold’s Homestead Forest Resources Research Center. Many of the BMP research projects discussed in the workshop were conducted at Reynold’s Homestead site. For this workshop, a field tour was also included to highlight research projects conducted at Reynold’s Homestead (Figure1). At each of the workshop locations, the local VDOF field staff were invited to discuss common BMP implementation issues found during local harvest site inspections.

Figure 1. Workshop instructor discusses recent research related to stream crossings at the Reynold’s Homestead Forest Resources Research Center in the Piedmont region of VA.
Results
A total of 128 participants attended one of the five workshops. Participants were primarily logging business owners (60%) but also included logging employees, VDOF employees, industry foresters, consulting foresters, and others (Figure 2). A post-training evaluation was utilized to gauge the effectiveness of the workshop. One hundred percent of participants indicated the workshop provided them with information that would be useful to them in their jobs and that it provided them with a better understanding of the research that supports the use of BMPs to protect water quality. Ninety-Eight percent of participants indicated the workshop provided them with information that would either help them to improve BMP implementation on their jobs or to make better recommendations to those that implement BMPs to protect water quality.

Figure 2. Occupation of participants attending applied BMP research workshops.

We also used the post-training evaluation to determine how likely the participants would be to actually use the information from the workshop to improve BMP implementation. Using a scale from 1 to 5 where 1 = Very Unlikely, and 5 = Very Likely, 72 of 123 participants (Figure 3) indicated they were very likely to use the information from the workshop to improve BMP implementation. The post-training evaluation also included the option for participants to provide written comments related to the workshop or any suggestions to improve future trainings. In general the comments were positive and indicated the participants found the workshops to be useful. Comments related to the field exercise in particular indicated the field trip was especially beneficial.
Conclusions
Integrating applied BMP research results into a workshop for logging business owners was a unique and effective training format. The SHARP logger program strives to offer a variety of Continuing Education workshops to meet the needs of a diverse group of participants. While not all logging business owners would be interested in BMP related research, those that attended these workshops found them to be applicable to their harvesting operations and gained knowledge that will help improve BMP implementation and protect water quality on their future harvesting operations. As additional opportunities arise to incorporate applied research results into logger trainings, logging business owners as well as other forestry professionals could benefit from applied research results related to BMP implementation. Workshops that incorporate a field exercise in particular can be beneficial for communicating the concepts related to the most appropriate and cost effective implementation of BMPs to protect water quality.
References


