



BC Forest Safety Council
Unsafe is Unacceptable



Health and Safety in the Tree Planting Industry

Western Silvicultural Contractors' Association

BC SAFE Silviculture Project

Prepared by Jordan Tesluk

December 2006



Table of Contents

Table of Figures.....	ii
Introduction.....	1
Executive Summary	3
Background	5
Methodology	8
The Questionnaires	9
Interviews.....	12
Sampling	13
Research schedule.....	16
Ethical Considerations	16
Findings.....	17
The Sample	17
Demographics	18
Sex.....	18
Age.....	18
Levels of Experience.....	20
Industry Classification	22
Health and Safety Performance	25
Specific Safety Measures	25
General Safety Measures	28
Comparisons 2004-2006.	30
Health and Safety Training and Supervision	34
Job Satisfaction	38
Conclusion	42
Acknowledgements	45
Appendix 1: Planter Questionnaire.....	46
Appendix 1: Supervisor Questionnaire.....	53

TABLE OF FIGURES

Figure 1: Job Title.....	17
Figure 2: Type of Operation	17
Figure 3: Participation Rate	18
Figure 4: Gender Ratio.....	18
Figure 5: Age of Workers 2004-2006.....	19
Figure 6: Levels of Experience 2004-2006.....	21
Figure 7: Worker Classifications 2004-2006.....	23
Figure 8: Specific Safety Measures Set One.....	26
Figure 9: Specific Safety Measures Set Two.....	27
Figure 10: General Measures Set One	28
Figure 11: General Measures Set Two.....	29
Figure 12: Planters and Unsafe Behaviour 2004-2006.....	30
Figure 13: Planters' Expectations of Others 2004-2006.....	31
Figure 14: Planters Reporting and Refusing Unsafe Work 2004-2006	31
Figure 15: Supervisors and Quads 2004-2006.....	32
Figure 16: Supervisor Correcting Unsafe Behaviour 2004-2006	32
Figure 17: Training and Supervision of Workers	34
Figure 18: OH&S Program and Organizational Characteristics.....	35
Figure 19: Job Satisfaction Responses.....	38
Figure 20: Job Satisfaction 2004-2006	39

INTRODUCTION

The tree planting industry of British Columbia is vital to sustaining the province's forest industry. In order to maintain a vigorous reforestation sector, the health and safety of the workforce must be fostered and protected. In support of this goal, reliable measures of performance must be established in order to determine the success of efforts to improve health and safety practices in the industry. This is particularly important to the British Columbia Forest Safety Council (BCFSC) and the British Columbia Safe Silviculture Project (BCSSP) as they develop and implement strategies to eliminate fatalities and injuries in the forest sector

Prior to the formation of the BCSSP, the Western Silvicultural Contractors' Association (WSCA), in collaboration with the then Forestry Industry Safety Association (FISA), began measuring critical silviculture workplace health and safety indicators in 2004. Initially these efforts included the completion of an industry health and safety needs analysis and the provision of support for an academic field study of health and safety behaviour in the tree planting industry. The original field pilot provided an opportunity to test the proposed methodology and gauge the industry's response to this kind of study. This reports builds on the success of the previous 2004 study continuing with a more detailed examination of leading indicators of health and safety performance in the industry.

Besides focusing on worker behaviours, such as their tolerance for risk-taking in the workplace, the report expands beyond the previous study. It tracks significant shifts in the workforce composition to which safety performance is sensitive. Given the recent challenges in recruiting and retaining workers across the Canadian economy the report also explores the reasons why workers may be choosing to leave or remain in the tree planting industry. Time is also spent examining the levels of compliance and competency with which silviculture firms live up to their health and safety obligations.

The BC SAFE Silviculture Project is a collaboration between the Western Silvicultural Contractors' Association and the BC Forest Safety Council. Its purpose is to eliminate fatalities and injuries in the province's silviculture sector, including tree planting, brushing, spacing, weeding, eco-system restoration and wildfire fighting work.

EXECUTIVE SUMMARY

During 2006, a survey of 31 tree planting companies was conducted in British Columbia, obtaining responses from over 800 workers. Companies were visited on the coast and the interior of the province between April and October, including a combination of camp, motel, and commuter-based operations. Questionnaires were administered to the workers along with a series of face-to-face interviews regarding important issues in the industry. The results were compared with a study of 660 workers conducted in 2004 in order to identify demographic shifts in the workforce and changes in health and safety performance. The survey data was also combined with interview feedback to explore issues surrounding job satisfaction and industry participation.

The survey results indicate that the average age and experience level of workers has dropped over the past two years, and the percentage of the workforce that identifies silviculture as a career has decreased. However, the health and safety performance and regulatory compliance of the workers appears to be improving based on the analysis of responses regarding workers' likelihood to engage in unsafe behaviour. This provides an encouraging sign that efforts to improve the performance of the workforce and resources committed to improving health and safety programs are already beginning to produce positive results. However, the data indicate that there are still areas in need of improvement, and some recommendations have been provided in regard to what program measures appear to be most strongly related to positive worker behaviours.

Although levels of satisfaction with earnings and accommodations appear to have improved over the last two years, 23% of all workers indicate that they do not intend to return to the tree planting industry next year. A sharp increase in reliance upon inexperienced workers appears to support the assertion that companies are having increased difficulties in retaining their workforce on a year-to-year basis. Interview feedback indicates that although financial considerations are the most frequently mentioned influence on industry participation, there are several different types of financial concerns that tree planters evaluate. Reliability of work schedules and consistent earning potential emerged as important issues, along with the

ability to meet expected levels of pay as additional dimensions of financial consideration. Furthermore, workers generally feel that their physical capabilities have been pushed to their workable limits, and the ability to increase production in order to keep up with increasing demands is unachievable without physical risks that are not only dangerous for workers, but also problematic for an industry determined to improve health and safety performance.

In order to maximize the value of improved health and safety training and education for their workers, employers may need to develop new methods of encouraging their workers to return on an annual basis. The internet appears to be a popular tool among workers for finding work and learning about companies, and employers may be well served by devoting increased attention to utilizing the internet as a hiring venue and to responding to the needs identified by workers.

BACKGROUND

In 1997, the Coopers & Lybrand Corporation completed a quantitative study of the tree planting industry and its workforce (1997).¹ The study focused predominantly on company characteristics, but also included a telephone survey of 50 workers, regarding demographics and industry involvement. However, the small size of the sample limited the reliability of the findings² and the telephone-based methodology excluded workers that may not have been available by phone (such as students and workers who live outside of the province or the country). Nonetheless, the survey provided some basic indicators of workforce characteristics, and supplied a useful method of categorizing workers as seasonal, student, occasional, or career silviculture workers, according to their involvement in the industry.

In the spring and summer of 2004, a more in-depth study of the industry was conducted by Jordan Tesluk as part of his Masters thesis at Simon Fraser University. The research was performed in cooperation with FISA and the WSCA. The study focused on the principal demographic characteristics of the workforce, and attitudes and behaviours related to various health and safety issues. A total of 27 different worksites were visited in various regions throughout the province. The study included a mixture of camp, hotel, and commuter based operations. A total of 661 questionnaires were collected, with a response rate approximating 85%. The high response rate provided evidence that field-based methodologies are a viable method of collecting such data.

The data gathered during the research indicated the presence of a highly transient and youthful workforce consisting of a minority of career workers combined with a larger group of individuals who participate in the industry on a temporary basis. Comparisons between the 2004 study and the 1997 Coopers & Lybrand study indicated that during the time between the studies, the workforce became younger, more highly educated, and less likely to identify silviculture as a career. There also appeared to be increases in the percentage of women

¹ Coopers & Lybrand. (1997). *Profile of Core Silviculture Contracting Activities in British Columbia: Forest Renewal British Columbia.*

² The reliability of the findings were limited only in regard to the workforce, and not the companies.

involved in the industry and the percentage of workers arriving from outside of British Columbia. However, due to the limited sample size utilized in the Coopers & Lybrand study, and differences between field-based and telephone-based survey methods, these apparent shifts may have been produced by methodological differences in the studies, rather than actual changes in the workforce.

Nonetheless, the apparent shifts in the workforce corresponded with general perceptions of the industry and anecdotal observations of the changes it had undergone during recent years. The findings paralleled a general concern among contractors that the industry was losing a substantial portion of its most experienced and productive workers. Following the 2004 study, the BCSSP determined that a replication of the study would provide not only a more meaningful method of gauging any changes in the workforce, but also an opportunity to gather detailed information regarding changes in other key areas of the industry, such as health and safety related activities. In addition to demographics and health and safety performance, the BCSSP and the WSCA determined that a further study should also examine the health and safety programs and training relied upon by employers, and explore issues surrounding worker job satisfaction and industry involvement.

The retention of workers and the maintenance of a skilled and experienced workforce has become a growing source of concern among employers in the tree planting industry. The importance of this issue is twofold. Firstly, retention of a skilled and experienced workforce is essential for the success of the industry and the ability of companies to maintain production and complete their objectives on a contract-to-contract and year-to-year basis. Secondly, the effort to increase training and education in the area of health and safety will only be strengthened if workers remain in the industry long enough to utilize the skills and knowledge they acquire, thus increasing the return on the investment in education and training programs.

The WSCA has formed a workforce capacity committee to discuss issues surrounding workforce retention, and efforts have been made to explore methods and strategies of increasing the attractiveness of the industry to the workers. However, there has been limited

knowledge of job-satisfaction among the workforce, and only anecdotal understandings of why workers may be leaving the industry. For this reason, this study was designed to provide a more in-depth understanding of the forces that influence workers to remain in or exit the industry. A preliminary report on the findings regarding industry involvement was presented to the industry on August 8th, at a WSCA conference in Kamloops and at an October 11th meeting in Richmond, BC. The findings included in the preliminary reports did not include the complete set of data contained in this report, and this report should be considered to be a more accurate representation of the changes in workforce characteristics.

METHODOLOGY

The 2004 research included a wide range of health and safety measures that indicated a wide range of behaviours and attitudes towards issues such as seatbelts, personal protective equipment, personal hygiene, and refusal of unsafe work. The research also examined the relationship between variables such as age and experience with health and safety related attitudes and behaviours. However, the 2004 study did not collect information related to the health and safety programs of the companies visited. While the study was able to produce a set of recommendations regarding which patterns of behaviour require attention, it did not provide insight into the types of health and safety management and training that are being relied upon in the field, and which styles of management are most effective in producing a health and safety conscious workforce. Therefore, the BCSSP determined that future studies should also collect information regarding the type of training that workers have received by their employers, and the manner in which health and safety programs are administered in the workplace.

Although the 2004 study produced a valuable examination of worker safety, it was designed for academic purposes as well as industry use. As such, it focused on many issues that were not central to the immediate goals of the industry, while excluding other issues that were not compatible with academic objectives. However, the format of the questionnaires and the general methodology used in the 2004 study proved to be useful tools, and were deemed to provide a suitable approach for further research. Therefore, the 2004 study was redesigned in order to provide information that is better suited to the needs of the industry and those involved in the development of health and safety programs.

This current study was designed and conducted by Jordan Tesluk, the same researcher who conducted the 2004 study. Jordan Tesluk has 14 years of experience in the silviculture industry and possesses a Masters degree in criminology with a specialization in the regulation of occupational health and safety. The use of the same researcher in both studies facilitated the replication of conditions between the 2004 study and the 2006 study to the closest possible extent, and helped preserve the inter-rater reliability, thus strengthening the

ability to make comparisons between the two studies. In effect, this limited any intervening effects produced by comparing surveys administered by two different parties.

The Questionnaires

This study utilized the same general research model that was employed in the 2004 study. Questionnaires were administered to planters and supervisors in a number of different worksites throughout the province. As with the 2004 study, the term “supervisor” in this study includes forepersons, checkers, contract supervisors, and owners. This distinction was clearly indicated on the front page of all questionnaires. It is acknowledged that there are important distinctions between the roles played by supervisors and forepersons in the industry. However, this research adhered to the WorkSafeBC definition of a supervisor as being any person in the workplace “who instructs, directs and controls workers in the performance of their duties”.³ Most of the supervisors included in this research were actually forepersons. The questionnaires were based upon the 2004 model, with some notable modifications listed below.

The questionnaires were 6 pages long, and 40% shorter than in the previous study. While the 2004 questionnaires required up to 20 minutes of respondents’ time, the new questionnaires required approximately 10 minutes.

The questions utilized were initially developed based on interviews with members of the industry, and a review of the most common health and safety problems in the industry. During the 2004 study, feedback was gathered from the respondents regarding their opinions on the validity of the questionnaire and their interpretations of the questions. This feedback was used to eliminate questions of limited value, and to refine the questionnaire to be more representative of actual workplace situations, and questions identified as unsuitable by respondents in the 2004 study were removed. However, a large portion of the questions remained unchanged, which allows for accurate comparisons with the 2006 research.

³ *Occupational Health and Safety Regulation Part I Definitions.*

Comparisons between the 2004 and 2006 studies are based only on questions that remained identical within both studies.

The 2006 questionnaires included demographic questions identical to those used in the 2004 study. In addition to the basic inquiries concerning age, experience, sex, and place of residence, workers were asked questions regarding issues included in the following categories:

- Likelihood to engage in unsafe behaviour
- Likelihood to report unsafe behaviour
- Likelihood to stop working under unsafe conditions
- Likelihood of unsafe behaviour to be corrected
- Level of health and safety training and supervision received
- Satisfaction with earnings
- Satisfaction with accommodations
- Whether or not they have achieved their earning expectations
- Whether or not they plan on returning to the industry next year
- Whether or not they are able to obtain enough tree planting work throughout the season
- Whether or not they visit tree planting web pages on the internet*
- Whether or not they use web pages to find work*

The final two issues were examined in order to evaluate the utility of the internet as a forum for establishing communication between workers and employers for the improvement of industry relations and as a means of recruitment. The planter questionnaire is included in Appendix I, and the supervisor questionnaire is included in Appendix II.

The questionnaires did not directly ask respondents if they had engaged in unsafe behaviour. There were several key reasons for only asking respondents about the likelihood of engaging in unsafe behaviour. Firstly, this approach avoided any ethical or legal complications associated with respondents reporting actual workplace infractions. Secondly, it is believed that respondents would be more likely to answer questions honestly if presented with

hypothetical situations, rather than questions that asked them to disclose past activities. One might suggest that the most accurate method of measuring unsafe behaviour would be to actually observe workers during their daily tasks. However, the influence of the observers would confound the validity of such observations, and the ethical and legal implications would make such research difficult to accomplish. Furthermore, the time and resources required for in-field worker observations would make it extremely difficult (if not impossible) to obtain a sufficient sample of workers. Thus, the social scientific method utilized in this research is recognized as possessing limitations in regards to the accuracy of its representation of actual behaviour. However, the research has also been carefully designed to provide the most meaningful and reliable information possible. While the data produced from the questionnaires cannot be assumed to reflect actual unsafe behaviour, it is believed to be a meaningful approximation of workers' likelihood to engage in unsafe behaviour and an accurate representation of their tolerance for risk. It is expected that workers that are less tolerant of risk are less likely to actually be safer in the workplace and avoid the unsafe behaviours identified. In turn, workers that avoid unsafe behaviours are expected to be injured less frequently and pose fewer hazards to themselves, other workers, and their employers.

The questionnaires were administered to workers at the end of their working day during a meeting at their camp or hotel, or their daily meeting place in the case of commuter crews. In exchange for the time required to complete the questionnaires, workers were provided with drinks, pens, draw prize entries, and a variety of information resources regarding health and safety in silviculture. The information resources were distributed following completion of the questionnaires, and were made available regardless of participation in the study. The information resources that were provided included the following items:

- Bear safety pamphlets from the Get Bear Smart Society
- Nutrition and wellness information based upon the research of Dr. Delia Roberts
- Hitchhiking warnings for young workers and women
- Safety alerts on recent issues in the industry such as lightning events and driving hazards

In addition to the questionnaires, companies were asked to provide basic information on the way in which they administer health and safety in their workplace. The information collected covered the following issues:

1. Does the company have an official occupational health and safety worker-management joint committee? Or (in the case of smaller operations) an official worker OH&S representative?
2. Are records kept for the activities of the OH&S committee/representative?
3. Has the client or licensee visited the camp/crew and discussed health and safety matters with the workers?
4. Has the company been visited by WorkSafeBC during the current working season?
5. Does the company have a written health and safety policy?
6. Has the licensee been given a written copy of the company health and safety program?
7. How frequently are health and safety meetings conducted?
8. Are records kept for health and safety meetings?
9. Do workers participate in health and safety drills?
10. Does the company owner maintain an on-site presence?
11. Are supervisors/forepersons commissioned or salaried?

All of the responses from the questionnaires were entered into a database and analyzed using common statistical methods.

Interviews

A series of informal interviews were conducted with each crew, gathering input from at least one or more workers at each location. Workers were asked to discuss what factors influence them to remain in the industry and what factors may be pushing them out. These interview sometimes included company owners who were asked about their experiences hiring workers for the 2006 season. The interview input was transcribed and compiled, and has been used in this report to provide additional context on certain issues.

Sampling

Obtaining a random sample of the tree planting workforce has always been a challenge to conducting research on the sector. It continues to pose obstacles to producing research that is representative of the entire workforce. Obtaining a truly random sample of the workforce is not possible because there is no available list of all workers in the industry. If companies were randomly selected from a list, a representative sample of all the workers in the province would not necessarily be obtained, because workers are not evenly distributed among all of the companies in the province. There are a wide variety of company sizes, ranging from just a few workers, to companies including hundreds of employees, and it is believed that a large portion of the workforce belongs to a small number of larger companies.

Furthermore, there is no list of companies according to the exact number of employees as companies have generally been classified according to the size of the payrolls. The payroll classification scheme obscures company sizes as smaller companies with longer work seasons may have payrolls resembling larger companies with shorter payrolls. However, it would not necessarily be desirable or practical to classify companies according to their number of employees, as this number may change significantly over the course of the work season. Therefore, payroll classification may be the most appropriate method of classifying planting companies. However, because a detailed list of companies according to payroll was not available for this study, an alternative method of selecting companies to study was utilized.

Nevertheless, it is possible to obtain a representative sample, even if the sample is not truly random, as long as there is no reason to believe that the sampling has been biased or that the individuals selected are different from the individuals that comprises the rest of the population in any meaningful way.

For the purposes of this study, the most practical method was to select crews, and survey them in their entirety. This approach involved visiting a variety of operations in a variety of different locations, and recording company characteristics as the research progressed. An

effort was made to obtain responses from workers on crews at companies of varying characteristics in order to provide a cross-section of the methods and styles of administering health and safety in the industry. One of the goals of the research was to examine the various different methods of administering health and safety in the field. Therefore, the inclusion of a variety of different operations assisted in ensuring that a wide range of approaches was included. One product of this strategy was the ability to examine the relationship between company programs (independent variables) and worker behaviours (dependent variables). The result of this design is a set of observations that may help company owners understand how different methods of health and safety administration influence worker behaviour.

Attention was also paid to the characteristics of the 2004 sample, and an effort was made to collect a sample that was similar according to relevant factors. Although a stratified model was not utilized in this regard, the research did follow a similar route over the course of season, progressing from the coast to the interior and back to the coast. The factors considered in deciding which companies were selected included the following factors:

- Company size – to include large, medium, and small companies
- Company history – to include both older companies and new entrants to the industry
- Geographical location - to represent all major parts of the province
- Season – to include spring, summer, and fall contracts
- Type of operation - to include camp, motel, and commuter-based operations
- Base of operations - to include both locally based and non-locally based operations

Because of the unpredictable nature of scheduling in the industry, it was not practical to base the research schedule exclusively on long-term advance arrangements to visit specific companies at pre-determined times. It is not practical to visit companies on days off or on the last days of a shift, and it is not possible to predict the scheduling of such days a long time in advance. Attempting to do so would make it difficult to complete the research within a single planting year. Therefore, a partial schedule was assembled based on moving from one area of the province to another as the planting season unfolded, beginning in the southwest in the early spring, moving north as summer progressed, and returning to the coast in the fall.

Companies were initially selected from a list of contractors known to be active in the selected area. Once a company was selected and contacted, an arrangement was made to visit a crew at an approximated time. Following this tentative arrangement, additional companies were contacted based on their activity in the area at the same time. Identifying and contacting additional active companies was accomplished by inquiring with local forestry offices and local businesses, inquiring with other contractors, and by making contact with the companies directly by approaching their employees or visiting their base of operations. If companies based in the local area and companies based outside the area are both found to be operating at the time of the research, an effort was be made to visit both styles of operation. In all situations, permission of the company ownership was obtained before proceeding to survey the crew.

FINDINGS

The Sample

A total of 31 different crews were surveyed during the research. This included a mixture of camp, hotel, and commuter based operations. Participation was obtained from both WSCA and non-WSCA affiliated companies, with crew sizes ranging from less than 6 to more than 60. The sample included 833 workers, with 730 planters and 103 supervisors represented. By comparison, the 2004 sample included 661 workers, with 573 planters and 88 supervisors from 27 different worksites.

Participation rates remained high, and the 2006 research was able to obtain a slightly higher rate of participation from the crews surveyed (see figure 3). This may have been due to the provision of incentives for the respondents. Approximately 23% of the workers surveyed participated in coastal planting. Only 10% of the workers surveyed in 2006 participated in the 2004 survey.

Job Title	Number of Workers 2004	Number of Workers 2006
Planter	573	730
Supervisor	88	103
Total	661	833

Figure 1: Job Title

Type of Operation	Number of Crews 2004	Number of Crews 2006
Camp	12	15
Hotel	9	12
Commuter	3	2
Hotel-Commuter Mixture	2	2
Total	27	31

Figure 2: Type of Operation

Job Title	Participation Rate	Participation Rate
	2004	2006
Planter	84.7	86.8
Supervisor	86.3	82.4
Total	84.9	86.2

Figure 3: Participation Rate

Demographics

Sex

The gender ratio in the 2006 sample was approximately 70% men and 30% women, very similar to the ratio observed in 2004.

Sex	2004	2006
Male	466 (70.5%)	575 (69.2%)
Female	195 (29.5%)	256 (30.8%)
Total	661	831*

*2 respondents did not answer this question

Figure 4: Gender Ratio

Age

The average age among workers (planters and supervisors) in the 2006 study was 25.7 years of age, down from 26.5 years of age in 2004, a difference of 0.8 years. Among planters, the average age fell from 25.7 to 24.8 for a difference of 0.9 years. Both of these declines were deemed to be statistically significant.⁵ This provides a strong indication that the average age of workers in the tree planting industry is decreasing.⁶ The average of supervisors also fell from 31.6 to 31.3, but due to the smaller number of supervisors included in the sample, the difference was not deemed statistically significant.

⁵ Significant at the .01 level of probability according to t-test analysis.

⁶ It should be noted by readers of the preliminary report filed in August 2006, that the figures supplied in this report are more accurate as they are based on the complete data. Moreover, some of the figures utilized in the preliminary report focused only on planters, while this report examines all workers (planters and supervisors).

The decline in worker ages is illustrated by the graphical comparison shown on the following page (see Figure 5), according to age classification. Most noticeable is the increase in the percentage of workers between the ages of 19 and 22. This corresponds with a large increase in the percentage of first year workers (rookies) in the workforce.

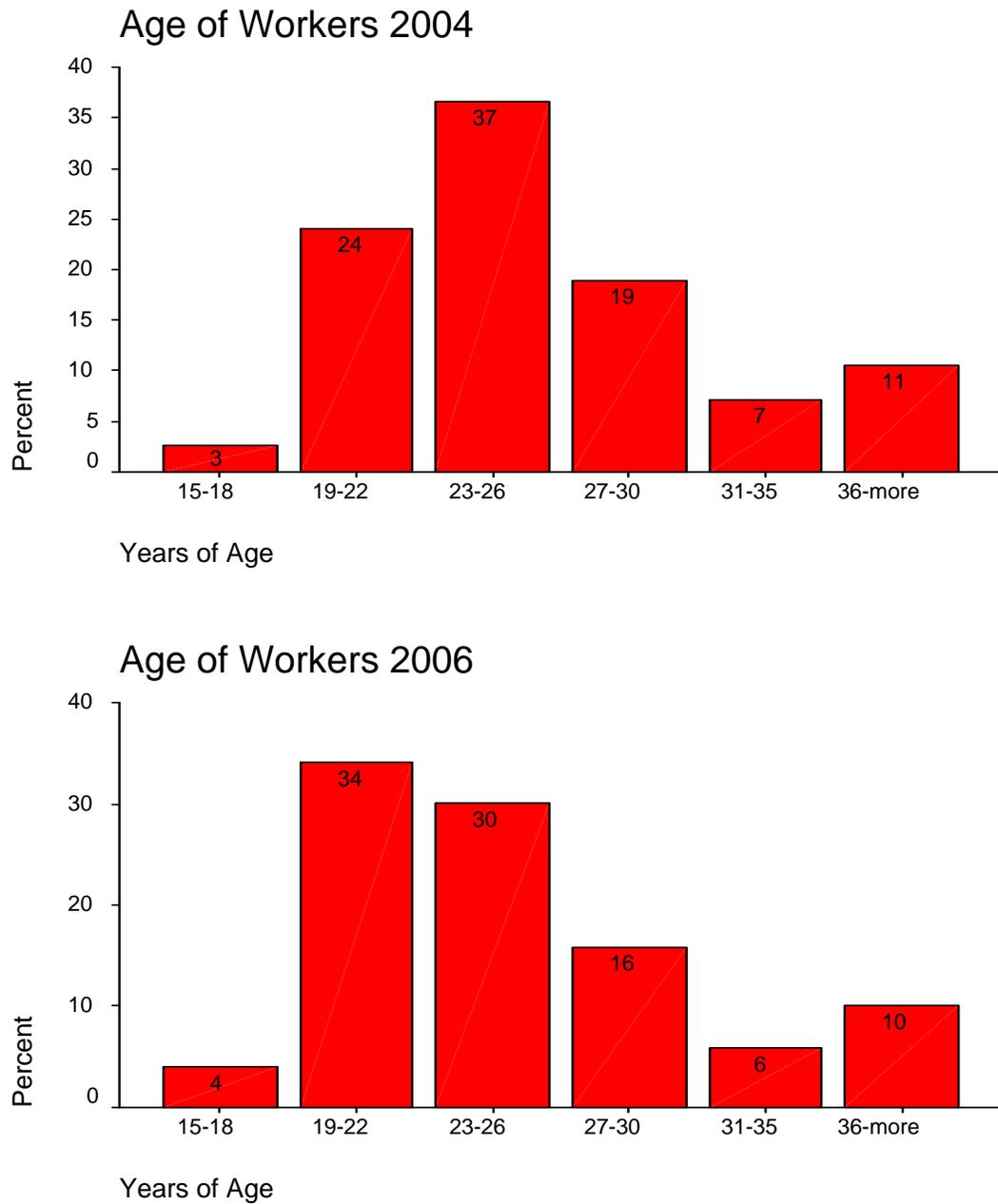


Figure 5: Age of Workers 2004-2006

Levels of Experience

The decline in the age of planters has coincided with a decline in levels of experience. The average amount of experience among all workers has dropped from 6.02 years of experience to 4.99, a difference of almost one full year of experience on average.⁷ This decrease was almost identical among both planters and supervisors.

The main source of these declines appears to be a substantial drop in the number of workers with 4 or more years of experience. While 4th and 5th year workers comprised 25.2% of the workers surveyed in 2004, they accounted for only 14.1% of the workers in 2006.

Meanwhile, the portion of workers with 6 to 10 years of experience has declined from 23.9% to 17.6%, signalling the departure of workers with extensive experience and training.

Perhaps, the most noticeable change has been a substantial increase in the number of rookie workers in the industry, from 15.1% in 2004 to 29.5% in 2006. This trend was reflected in feedback gathered from contractors, indicating that many of them had hired more rookies than usual for the 2006 planting season. Furthermore, several contractors that traditionally receive a surplus of experienced job applicants were forced to advertise in new locations to obtain enough workers to fill their crews. The graphical comparison shown on the following page illustrates this shift in the experience levels of workers according to experience classification.

⁷ Difference is significant at the .01 level of probability according to t-test analysis.

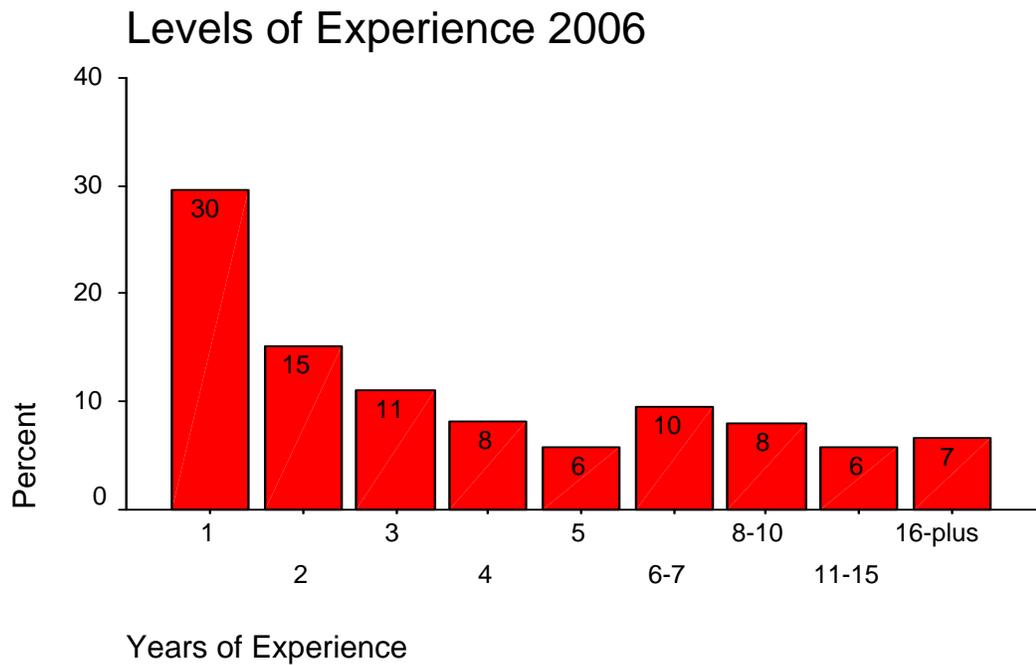
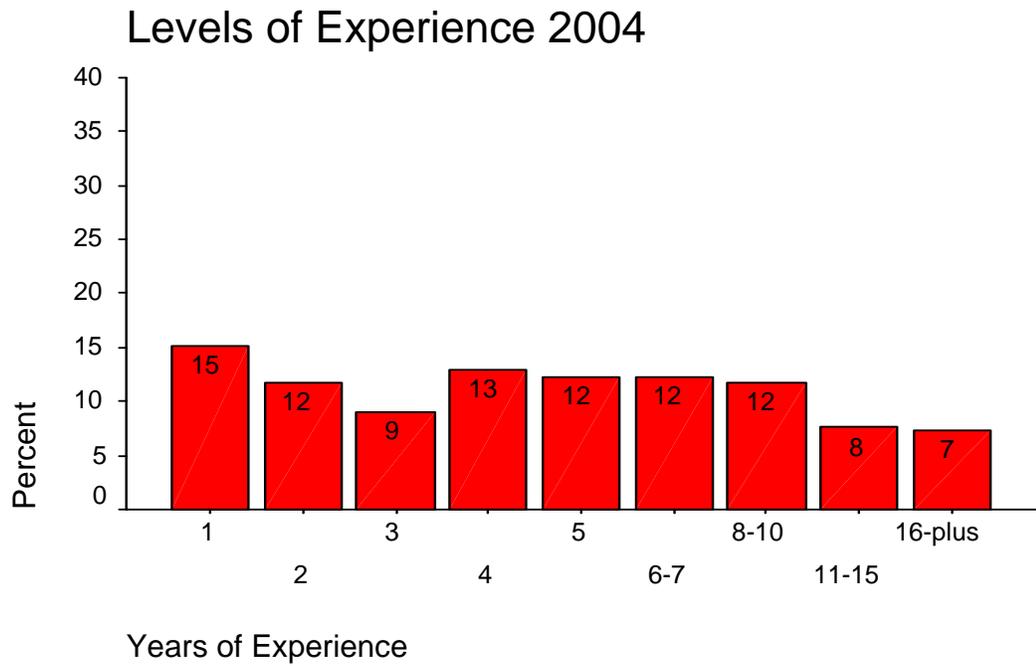


Figure 6: Levels of Experience 2004-2006

Industry Classification

The increasing reliance upon rookie planters indicates an increased turnover rate in the workforce, a trend supported by the finding that 23% of all workers have reported that they do not plan to participate in the industry in 2007. The loss of experienced workers is also reflected in a corresponding decrease in the percentage of career-oriented workers from 25.5% to 20.8%.⁸ This decline continues the trend observed in the comparison between the 2004 study and Coopers & Lybrand study, which estimated the percent of career-oriented workers at 64% in 1997.⁹ In turn, contractors appear to be relying more heavily upon students that plan to leave the industry at the conclusion of their education and occasional workers that would prefer to be involved in other industries. The correspondence of the data with previous observations and interview feedback supports the assertion that fewer workers are choosing silviculture as a career. This trend is illustrated in the graphs on the following page, which indicate the rise in students and seasonal workers (see Figure 7).

Career-oriented silviculture workers form a vital part of the tree planting industry, as they supply the bulk of the labour for the coastal planting industry, and they provide the leadership and mentorship that assist new workers in becoming efficient and productive members of the industry. Tree planting employers generally report that veteran planters are twice as productive as inexperienced planters, and that this difference in productive value is even greater in coastal conditions. Interviews indicate that the increased reliance upon rookies creates problems for contractors due to higher demands on supervisory staff to provide training and monitoring while keeping up with rising levels of paperwork. Supervisors also report that it is more difficult to predict the daily production level of rookie planters, making it more difficult to plan out daily and weekly work schedules.

⁸ The drop in career-oriented workers versus non-career-oriented workers is statistically significant at the .05 level of probability according to chi square analysis. The decline is less than reported in the interim report in August, 2006 due to the inclusion of several coastal crews in the later fall season which included a large percentage of career-oriented workers.

⁹ A more in-depth comparison of the Coopers & Lybrand data is not possible due to the unavailability of the 1997 raw data. Moreover, some of the 1997 data included other silviculture operations other than tree planting companies.

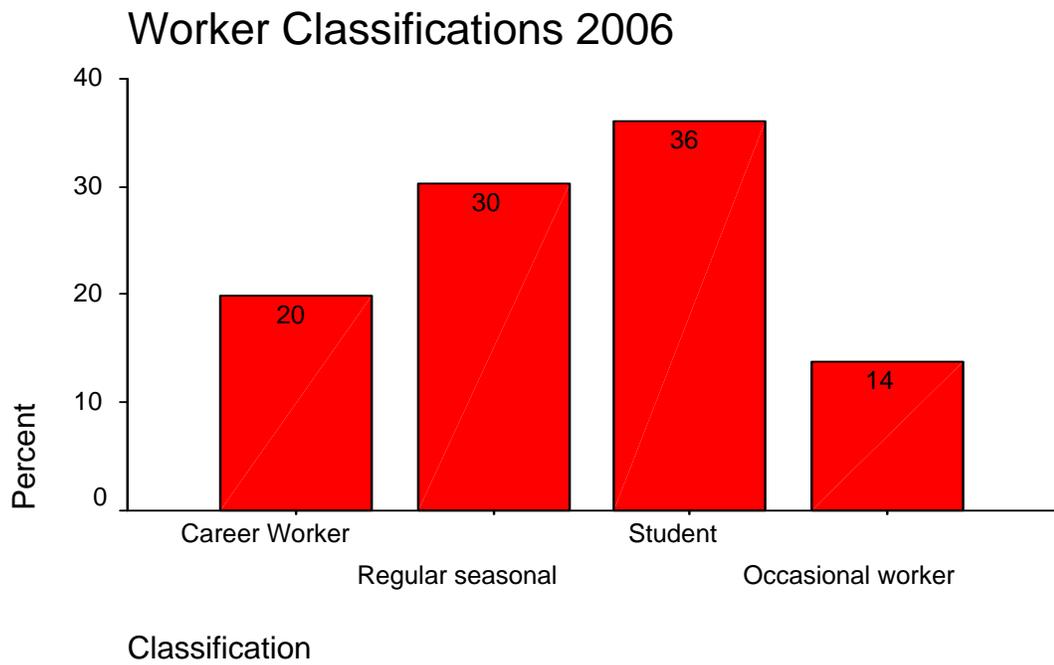
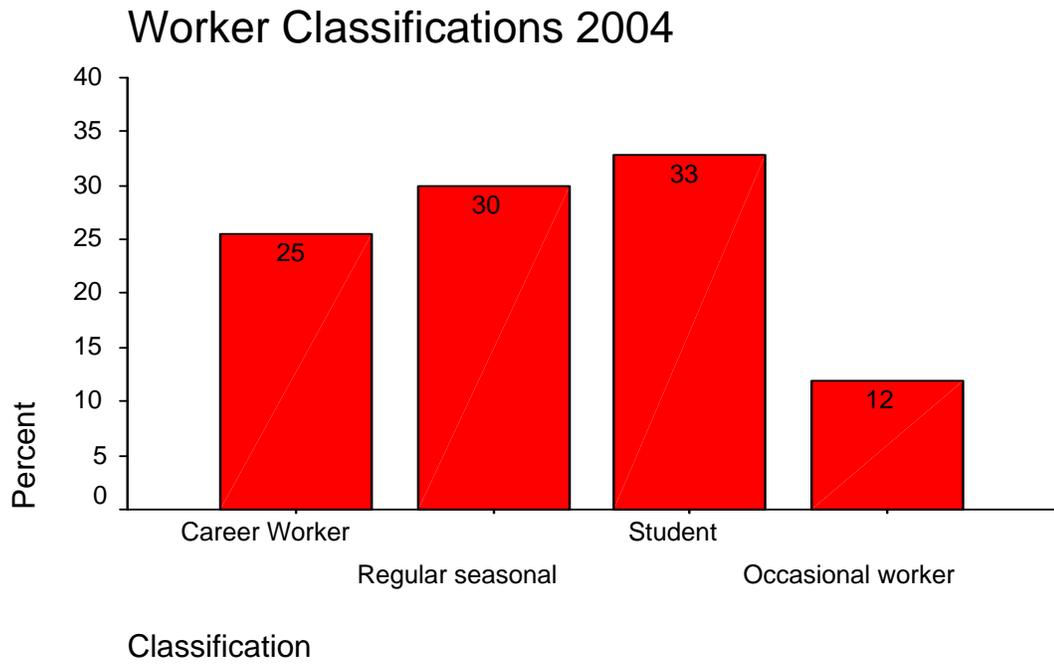


Figure 7: Worker Classifications 2004-2006

The loss of veteran and career-oriented workers poses long-term problems that go beyond season-to-season recruitment concerns due to the time required to develop such workers and the high turnover rate that removes many workers before they achieve higher levels of experience and production. The loss of such workers in the tree planting sector also signifies a loss for other sectors (such as brushing and spacing) as career oriented workers often participate in multiple sectors of the silviculture industry. These losses may take many years to reverse, and further losses may create serious problems with the stability of the workforce and the ability to guarantee productive capabilities on both a long-term and short-term basis.

A further complication associated with the loss of career-oriented workers is the limitation on the available workforce in the early spring and late fall seasons, when they form a larger portion of the workforce. Any proposal to increase production during either of these timeframes in order to accommodate possible worker shortages, or seasonal and climactic exigencies, could be limited by the availability of a sufficient number of career-oriented workers.

These findings may also be of importance to employers in other sectors of the silviculture industry, as approximately 15% of the tree planting workforce is regularly involved in other silviculture jobs, such as brushing, spacing, and firefighting. Moreover, career-oriented workers (who appear to be leaving the tree planting industry at a rapid rate) are more than twice as likely as other classifications of workers to be involved in other sectors of silviculture. Therefore, the loss of experienced workers in tree planting may also signal the loss of such workers in other sectors.

An examination of job satisfaction and an exploration of factors influencing workers' decisions to leave or remain in the industry is contained later in this report.

Health and Safety Performance

The data explored in this section are aimed at establishing baseline measures for health and safety performance in the industry, and at the identification of any shifts in worker behaviours over the last two years. Workers were asked several questions in regard to a number of health and safety related scenarios. Workers answered questions in regards to three dimensions of the identified situations, including:

1. Their likelihood to engage in the behaviour
2. The likelihood of others to engage in the behaviour
3. The likelihood that a supervisor would correct the behaviour if witnessed

Specific Safety Measures

A summary of the scores for the questions regarding health and safety related behaviours has been presented in the tables on the following pages to provide a list of specific safety measures. Specific safety measures reflect the likelihood of workers to engage in specific behaviours.

Responses have been coded green, yellow, and red. Green responses represent safe behaviour, while red answers represent unsafe behaviour, and yellow represents moderate levels of behaviour between safe and unsafe. These colour schemes will be important reference points later in order to illustrate changes in behaviour over the last two years.

The specific measures are presented in two sets. The colour schemes have been switched around in the second set in order to maintain consistency with the raw data.

#	Description of Behaviour	% Very Likely	% Likely	Neither Likely nor Unlikely	% Unlikely	% Very Unlikely
1	Likelihood of planter to enter a common dining area without washing hands	9.1	6.3	9.2	15.4	60.1
2	Likelihood of planter to run recklessly through jobsite	10.7	11.1	18.9	19.5	39.9
3	Likelihood of planter to fail to wear a seatbelt	9.9	7.2	9.7	13.4	59.9
4	Likelihood of planter to smoke marijuana while working	15.2	8.9	14.8	9.9	51.1
5	Likelihood of planter to work without wearing gloves	14.0	6.0	10.0	9.9	60.1
6	Likelihood of planter to work without wearing caulks	39.5	11.8	11.6	7.8	29.3
7	Likelihood of <u>other</u> planters to fail to wash hands	6.0	9.2	25.4	34.7	24.7
8	Likelihood of <u>other</u> planters to run recklessly through jobsite	5.5	11.1	30.9	29.5	23.0
9	Likelihood of <u>other</u> planters to fail to wear a seatbelt	11.7	9.2	19.0	25.5	34.6
10	Likelihood of <u>other</u> planters to smoke marijuana while working	27.4	16.6	26.9	14.7	14.4
11	Likelihood of <u>other</u> planters to work without wearing gloves	16.0	11.5	22.8	23.3	26.3
12	Likelihood of <u>other</u> planters to work without wearing caulks	60.0	24.0	19.4	13.8	12.8
13	Likelihood of supervisor to use chainsaw without wearing leggings	11.9	14.9	13.9	17.8	41.6
14	Likelihood of supervisor to fail to wear a seatbelt	2.9	6.9	11.8	16.7	61.8
15	Likelihood of supervisor to operate quad without wearing a helmet	11.8	9.8	9.8	16.7	52
16	Likelihood of supervisor to carry passengers on a quad	6.9	5.9	15.7	15.7	55.9
17	Likelihood of <u>other</u> supervisors to use chainsaw without wearing leggings	6.9	10.8	27.5	17.6	37.3
18	Likelihood of <u>other</u> supervisors to fail to wear a seatbelt	3.9	5.9	14.7	19.6	55.9
19	Likelihood of <u>other</u> supervisors to operate quad without wearing a helmet	7.8	10.8	19.6	13.7	48.0
20	Likelihood of <u>other</u> supervisors to carry passengers on a quad	4.9	2.9	21.6	21.6	49.0

Figure 8: Specific Safety Measures Set One

In the next set of specific measures, responses of “Very Likely” and “Likely” represent safer behaviours and have been coded green because correcting, refusing, and reporting unsafe work are considered to be desirable workplace behaviours. As in the previous set of measures, green represents safe, and red represents unsafe, with yellow representing moderate behaviour in between.¹⁰

#	Description of Behaviour	% Very Likely	% Likely	Neither Likely nor Unlikely	% Unlikely	% Very Unlikely
21	Likelihood of supervisors to correct failure to wash hands	22.2	15.2	24.2	15.2	23.2
22	Likelihood of supervisors to correct running recklessly	18.1	15.3	27.2	16.7	22.7
23	Likelihood of supervisor to correct failure to wear seatbelt	51.7	15.5	12.7	8.3	11.8
24	Likelihood of a supervisor to correct marijuana smoking	30.4	10.7	17.8	12.9	28.2
25	Likelihood of supervisor to correct failure to wear gloves	17.3	13.2	19.7	14.9	35.0
26	Likelihood of supervisor to correct failure to wear caulks	14.2	11.5	25.0	15.4	33.9
27	Likelihood of planter to stop working as result of toxic hazard	28.9	21.7	19.8	14.3	15.2
28	Likelihood of planter to stop work due to wind hazard	18.4	18.2	24.7	19.5	19.2
29	Likelihood of planter to report supervisor for speeding	22.3	20.7	20.6	12.8	23.6
30	Likelihood of planter to report co-worker for drinking and driving	21.7	16.9	19.7	16.4	25.3

Figure 9: Specific Safety Measures Set Two

¹⁰ As explained previously, the numbers shown in the previous two tables should not be assumed to represent the actual level of the activities identified. Instead, the numbers most accurately represent workers' self-reported likelihood to engage in the identified behaviours and their tolerance for specific forms of risk.

General Safety Measures

The specific safety measures were combined and re-categorized to form a number of general safety measures that reflect the likelihood of workers to engage in unsafe behaviour on a broad level.¹¹ The graphics shown below suggest that unsafe behaviour, as a general habit, is an exception to the norm, but there is still a significant group of “red category” workers that need to improve their practices.

#	Description of Behaviour	% Likely ¹²	Neither Likely nor Unlikely	% Unlikely ¹³
31	Likelihood of <u>planters</u> to engage in unsafe behaviour. ¹⁴	9.9	16.3	73.9
32	Likelihood of <u>other</u> planters to engage in unsafe behaviour. ¹⁵	25.9	28.6	45.5
33	Likelihood of <u>supervisors</u> to engage in unsafe behaviour. ¹⁶	9.9	16.8	73.3
34	Likelihood of <u>other</u> supervisors to engage in unsafe behaviour. ¹⁷	8.8	15.7	75.5

Figure 10: General Measures Set One

¹¹ It would be impossible to include questions that address every task and situation in the workplace, but it is felt that the questionnaires cover a wide array of behaviours and supply a meaningful representation of safety-related behaviour as a general category

¹² Includes workers that are either likely or very likely.

¹³ Includes workers that are either unlikely or very unlikely

¹⁴ Based on specific measures 1,3,4,5, and 6.

¹⁵ Based on specific measures 7,9,10, 11, and 12.

¹⁶ Based on specific measures 13 to 16

¹⁷ Based on specific measures 17 to 20.

For the next set of general measures, responses of “Very Likely” and “Likely” represent safer behaviours and have been coded green because correcting, refusing, and reporting unsafe work are considered to be desirable workplace behaviours. As in the previous set of measures, green represents safe, and red represents unsafe, with yellow representing moderate behaviour in between.

#	Description of Behaviour	% Likely	Neither Likely nor Unlikely	% Unlikely
35	Likelihood of supervisors to correct unsafe behaviour. ¹⁸	37.2	24.8	38.0
36	Likelihood of planters to report unsafe work and avoid unsafe conditions. ¹⁹	38.0	28.9	33.1

Figure 11: General Measures Set Two

The general measures shown in the preceding tables are the primary measures of health and safety performance in this research. They include a range of behaviours that supply an overall appraisal of workers probabilities. As baseline measures of performance in the industry, these can be compared directly with the 2004 data, and can be replicated in future research if necessary.

¹⁸ Based on specific measures 21,23,24,25, and 26

¹⁹ Based on specific measures 27 to 30

Comparisons 2004-2006.

The 2006 findings have been compared with the 2004 findings to assess the presence of and direction of any changes in health and safety performance in the industry. It was not possible to compare every single specific and general measure in the two studies, but the all of the central measurements were available for comparison. The results are generally positive, with a clear shift towards lower probabilities of unsafe behaviour. The following series of graphics illustrate the most substantial shifts. The main trend that should be noticed is the reduction in percentages in the red columns (unsafe behaviour) from 2004 to 2006, and the increase in the green columns (safe behaviour).

The chart shown below indicates that the percentage of planters that are likely to engage in unsafe behaviour as a general habit has sharply declined.

Likelihood of planters to engage in unsafe behaviour.	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	17.4	20.5	62.1
2006	9.9	16.3	73.9

Figure 12: Planters and Unsafe Behaviour 2004-2006

According to further analysis, the observed declines in the percentage of planters that are likely to engage in unsafe behaviour is statistically significant.²⁰ This trend has also corresponded with a similar decline in the percentage of planters that expect other planters to engage in unsafe behaviour as a general habit (see figure 13 on following page).

²⁰ Differences are significant at the .01 level of probability using both chi square and Cramer's V.

Likelihood of other planters to engage in unsafe behaviour.	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	42.5	28.1	29.4
2006	25.9	28.6	45.5

Figure 13: Planters' Expectations of Others 2004-2006

One area in which positive shifts have not occurred is among workers' likelihood to report unsafe behaviour and refuse unsafe work. Again, the main trend that should be noticed is the reduction in percentages in the red columns (unsafe behaviour) from 2004 to 2006, and the increase in the green columns (safe behaviour). However, the chart below illustrates the relative consistency in findings between 2004 and 2006. Therefore, this is an area that could benefit from increased attention in the field.

Likelihood of planters to report a supervisor for speeding (.05)	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	42.9	21.4	35.6
2006	43.0	20.6	36.4

Likelihood of planters to stop working as a result of a toxic hazard	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	51.2	19.9	28.9
2006	50.6	19.8	29.5

Figure 14: Planters Reporting and Refusing Unsafe Work 2004-2006

Substantial shifts have also occurred among supervisors' behaviours. The only two comparable measures in 2004 and 2006 dealt with supervisors' use of quads. In both

measures very large improvements were observed, with supervisors reporting considerably safer work habits with quads (see figure 15).²¹

Likelihood of supervisors to operate a quad without wearing a helmet	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	41.6	7.9	50.5
2006	21.6	9.8	68.7
Likelihood of supervisors to carry passengers on a quad	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	29.1	18.6	52.4
2006	12.7	15.7	71.6

Figure 15: Supervisors and Quads 2004-2006

The likelihood of supervisors to correct unsafe behaviour has also increased substantially, based on both planters' expectations of supervisors to correct unsafe behaviour and supervisors' own reported likelihood of doing so (see figure 16).

Likelihood of supervisors to correct unsafe behaviour	% Likely	Neither Likely nor Unlikely	% Unlikely
2004	22.0	21.8	56.2
2006	37.2	24.8	38.0

Figure 16: Supervisor Correcting Unsafe Behaviour 2004-2006

²¹ Differences are significant at the .01 level of probability.

- As observed in the 2004 research, planters that expect other planters to engage in unsafe behaviour are far more likely to engage in unsafe behaviour themselves. This supports the tendency for workers to choose behaviours that are consistent with group around them, and reinforces the need for proper health and safety role modeling in the industry.
- Planters that expect supervisors to correct unsafe behaviour are far less likely to engage in unsafe behaviour. This suggests that proper supervision and monitoring is an important component of workforce management.
- Planters that entered the industry at a younger age and have remained in the industry for at least 5 years appear to represent a group with an increased likelihood of unsafe behaviour. Planters with 5 to 7 years of experience displayed a far greater likelihood of engaging in unsafe behaviour. Planters in these experience categories were actually close to twice as likely to fall into a “red” category for likelihood of engaging in unsafe behaviour. This pattern corresponded with an elevated level of unsafe behaviour among workers between the ages of 19 and 26.²² Further examination indicated that workers in the target group (between the ages of 19 and 26 and possessing 5 to 7 years of experience) represent a high-risk group among which unsafe behaviour is more than twice as likely to occur.²³ Thus, if younger workers are not provided with proper training at the beginning of their careers, they may go on to participate in high-risk behaviours later in their careers. This target group may benefit from increased training and supervision in order to reduce their likelihood of unsafe behaviour.

²² Both of these differences were deemed to be significant at the .01 level of probability.

²³ This group represented approximately 10% of the overall sample.

Health and Safety Training and Supervision

Workers were asked a battery of 10 yes-and-no questions related to the health and safety training and supervision that they received in their workplace. The following table summarizes the results of the questions, with the indicating percentage representing positive (yes) responses.

Training or supervision issue	Percentage yes
Checked on by a supervisor for health and safety requirements	74.7
Corrected by a supervisor for health and safety issues	41.7
Told by a supervisor to report health and safety problems	79.9
Informed of the right to refuse unsafe work	84.3
Given specific warnings or information regarding health and safety hazards	91.2
Informed of the activities of the OH&S committee or representative	45.9
Received a written copy of company health and safety policy	62.8
Signed a contract with company regarding health and safety issues	69.4
Able to locate a first kit in case of an emergency	93.8
Able to contact medical aid by radio in the case of an emergency	85.6

Figure 17: Training and Supervision of Workers

Only the first two training and supervision measures in the table could be compared with the 2004 data. Both of these measures showed significant and substantial improvement, indicating a large increase in the level of health and safety supervision in the workplace. The percentage of workers that reported being checked on by a supervisor increased from 48.7 per cent in 2004, to 74.7 per cent in 2006. The percentage of workers that reporting being corrected by a supervisor for health and safety activities increased from 33.3 per cent in 2004 to 41.7 per cent in 2006.²⁴

Information was also collected on the OH&S practices at the companies that were visited. This inquiry not only provided a snapshot of the health and safety practices currently

²⁴ Both of these increases were significant at the .01 level of probability.

followed in the industry, but also created the opportunity to explore any potential relationships between specific practices and behaviours among the workers. The following table summarizes the yes-and-no questions relating to OH&S practices²⁵.

	%Yes	%No
Does the company have an official OH&S worker-management joint committee or the OH&S worker representative?	37.5	56.3
Are records kept for the activities of the OH&S committee or representative?	37.5	56.3
Has the client or licensee visited the crew and discussed health and safety matters with the workers?	53.1	40.6
Has the company been visited by WorkSafeBC during the current working season?	28.1	65.6
Does the company have a written health and safety policy?	75.0	18.8
Has the licensee been given a written copy of the company health and safety program?	65.6	28.1
Are records kept for health and safety meetings?	62.5	31.3
Do workers participate in health and safety drills?	40.6	53.1
Does the company owner maintain an on-site presence? ²⁶	43.8	53.1

Figure 18: OH&S Program and Organizational Characteristics

The pay system used for supervisors was also examined, and 62.5 per cent of the companies visited utilized a salary system for their supervisors and 34.4 per cent used a commission-based pay system.

Examination of the relationship between health and safety performance of the workers and the health and safety programs of the companies they worked for revealed a number of significant observations. A short summary of the most noticeable patterns appears on the following pages.

²⁵ The total percentages do not add up to 100 per cent because complete information was not available from every company visited.

²⁶ This issue is not an OH&S issue per se, but was included in the survey to enable examination of the affects of on-site owners.

- Planters that participate in health and safety drills were less likely to engage in unsafe behaviour, more likely to expect unsafe behaviour to be corrected, and more likely to report and refuse unsafe work. Furthermore, planters that participate in drills were also far more likely to know how to contact medical aid on the radio and find a first aid kit in the case of an emergency.
- Planters at companies with OH&S committees were less likely to engage in unsafe behaviour, less likely to expect others to engage in unsafe behaviour and more likely to expect unsafe behaviour to be corrected. Generally, it appears that companies with OH&S committees display a generally higher level of health and safety performance among their planters.
- Planters that signed contracts regarding health and safety did not show any lesser likelihood to engage in unsafe behaviour. In fact, planters that signed contracts but were not checked up on by a supervisor reported lower levels of health and safety performance than planters that did not sign a contract at all. However, supervisors that signed contracts not only displayed a lower likelihood of engaging in unsafe behaviour, but also appeared more likely to correct unsafe behaviour among planters. This suggests that contracts have a positive influence on supervisor behaviours, but this influence does not appear to extend to the planters.
- Planters that received printed copies of OH&S programs were less likely to expect unsafe behaviour among other planters, and were more likely to expect unsafe behaviour to be corrected by supervisors. Furthermore, they were also more likely to know how contact medical aid on the radio and locate a first aid kit in the case of an emergency.
- Planters that were informed of their rights or had been told to report unsafe work were far more likely to refuse unsafe work and report unsafe work by others.

- Planters that were checked on by a supervisor were far less likely to engage in unsafe behaviour, far less likely to expect unsafe behaviour among other planters, and far more likely to expect unsafe behaviour to be corrected.
- Planters at companies where supervisors were paid according to salary were far less likely to engage in unsafe behaviour than planters at companies with commissioned supervisors. Planters with salaried supervisors were also far less likely to expect unsafe behaviour among other planters. Furthermore, supervisors paid by salary were far more likely to correct unsafe behaviour among planters. In fact, the percentage of salaried supervisors (65.2%) that were likely to correct unsafe behaviour in general was approximately double the percentage of commissioned supervisors (35.2%) that were likely to correct unsafe behaviour.²⁷ The higher level of performance among crews with salaried supervisors suggests that the method in which supervisors are paid and the administrative system they operate in may have a strong influence on their ability to properly manage the workers under their supervision.

The data generally supported the assertion that workers that are directly involved in health and safety activities (such as drills and committees) are less likely to engage in unsafe behaviour. Monitoring workers and programs that involve integrated planter and supervisor participation in health and safety related activities are associated with workers that are less likely to engage in unsafe behaviour. Meanwhile, the use of contracts to encourage compliant behaviour is related to higher levels of performance among supervisors, but not among planters. And finally, commissioned supervisors do not appear to be as likely to correct unsafe behaviour and provide an effective monitoring presence as supervisors paid by salary.

²⁷ This difference is significant at the .01 level of probability.

Job Satisfaction

The responses obtained regarding survey questions concerning job satisfaction were compared with interview feedback to explore some of the factors that may be related to worker retention in the industry. The main purpose of conducting this line of inquiry is to understand worker needs, and to explore methods of attracting workers to the industry and keeping them involved long enough to maintain an optimum level of production. The table below summarizes the responses received concerning 5 job satisfaction questions.

How good of a job has your company done on health and safety	43.1% Very Good	35.1% Good	13.7 Average	6.1% Poor	1.9% Very Poor
How satisfied are you with your accommodations	35.1 Extremely Satisfied	36.7 Satisfied	17.8 Average	8.3 Dissatisfied	2.1 Extremely Dissatisfied
How satisfied are you with your earnings	14.3 Extremely Satisfied	32.9 Satisfied	32.5 Average	14.4 Dissatisfied	5.9 Extremely Dissatisfied
How would you describe your earnings	8.3 Above Expectations	25.7	41.1 Met Expectations	18.4	6.5 Below Expectations
How many days of work do you expect to obtain	15.8 Far more than enough	24.8	45.7 Just the right amount	11.2	2.5 Not nearly enough

Figure 19: Job Satisfaction Responses

Among interviewees, the most frequently reported reason for leaving the industry has been the perceived failure of tree prices to keep pace with inflation. Planters generally feel that they have been forced to work harder every year in order to maintain their earnings, and that their earnings have not allowed them to cope with an increased cost of living.

Furthermore, there are limits to the ability of workers to increase their production, and the impact of long-term and short-term physical breakdown may be having a harmful impact on the overall productivity of the workforce. However, according to interviews, financial considerations are not the only factor influencing involvement in the industry – they are simply the most frequently mentioned factor. In fact, the responses obtained regarding job satisfaction indicated a slightly higher level of satisfaction in relation to earnings and accommodation than observed in 2004. The percentage of workers satisfied with their earnings and the percentage of workers satisfied with accommodations both increased between 2004 and 2006. Meanwhile and the percentage of workers dissatisfied with their earnings and the percentage of workers dissatisfied with accommodations both decreased during the same time period (see figure 20).²⁸

Satisfaction with Earnings	% Dissatisfied	Neither	% Satisfied
2004	29.6	29.5	40.8
2006	13.1	34.9	52.0
Satisfaction with accommodations	% Dissatisfied	Neither	% Satisfied
2004	13.7	21.7	64.7
2006	8.0	14.8	77.3

Figure 20: Job Satisfaction 2004-2006

Upon further examination, correlation analysis indicates there was no significant relationship between satisfaction with earnings and whether or not planters planned to return to the

²⁸ Both differences are significant at the .01 level of probability.

industry in the following season. Thus, the simple assertion that higher wages are required to retain workers is not initially supported by the responses provided in the survey data. However, other aspects of the survey data reveal some additional observations.

The ability to meet one's earning expectations was positively related to intentions to continue working in the industry. Thus, although workers may be generally satisfied with their earnings, their decision to remain in the industry may be related to a more complex array of economic considerations than is reflected by general satisfaction with wages. During interviews, workers reported a wide variety of other issues that were influential on their decisions to leave or remain in the industry, including strong preferences for well-organized companies that are able to provide reliable daily work details, a sufficient number of working days over the course of the season, and a consistent schedule of days off. This feedback suggests that wages are an important consideration for workers in remaining in the industry, but predictability and reliability are important dimensions of the workers economic needs.

The survey data also indicated that satisfaction with accommodations was positively related to intentions to remain in the industry. This was supported by commentary collected during the interviews, and many workers made positive remarks about extra efforts employers had made to make camp or hotel living more comfortable.

Many planters feel that the stress on maintaining production has also created health and safety risks by pushing planters beyond their limitations and providing motivation to place production before personal well being. In essence, like "peak oil", planters believe that they have reached their maximum level of productivity. If this is true, the optimum level of productivity where physical demands and financial rewards are balanced has likely been left behind. Many workers feel that they would be able to earn similar wages in less physically demanding jobs with better long-term benefits and more comfortable surroundings. Oil & gas, construction, and retail were among the most frequently reported destinations for planters leaving the industry. Many workers indicated that the working and living conditions offered by other city-based industries appeared more enticing than those offered within the

tree planting industry, thus supporting the suggestion that employers may be able to encourage workers to return by seeking improvements in the living conditions of the job.

Employers may be well served to take note that workers that have returned to the industry have been making extensive use of the internet when seeking work and deciding which company to work for. Approximately 85 % of workers surveyed report having visited tree planting internet sites, and 65 % of workers indicate that they use information from internet sites to learn about companies or find themselves a job. The sharing of information regarding company practices may thus be an important factor in ensuring success in attracting and retaining workers, and employers may benefit from paying attention to the issues that workers identify as being important in deciding to return to the industry.

CONCLUSION

The data collected during this research could produce several hundred pages of relevant charts and observations. However, this report has focused only on the issues that have been deemed to be most important and useful for the industry, based upon input received prior to the research. It will be possible to provide additional information in the future if there is a desire to explore other aspects of the data. A top ten list of recommendations for OH&S program development has been assembled based on the observations derived from the survey data and the interview feedback.

1. The data analyzed in this report indicate that there has been a widespread improvement in health and safety performance throughout the industry based on the measurement of the leading indicators examined in this research. Although performance may not yet have reached desired goals, the direction of change is positive. However, findings suggest that increased emphasis should be placed on encouraging workers to refuse unsafe work and to report unsafe work by others.
2. Workers at the highest risk for engaging in unsafe behaviour are those between 19 and 26 years of age and those with 5 to 7 years of experience. Employers with a large portion of their crew composed of this group should take care to ensure that their workers are receiving adequate training and supervision.
3. Checking on workers and proper enforcement of health and safety regulations appears to have a strong influence on worker performance. Employers should ensure that their supervisors are fulfilling their duties in regard to ensuring the compliance of the workers under their care and maximize the opportunities for letting workers know that they are subject to inspections and review by their supervisors. However, increased reliance on inexperienced workers may create obstacles to achieving these goals if additional time is required for their training while others are neglected.

4. Increased attention should be paid to the use of personal protective equipment. Although the use of PPE such as seatbelts, caulks, and gloves appears to have increased, specific safety measures indicate there is still room for substantial improvement in this area.

5. Employers should increase the use of, and importance of OH&S management-worker joint committees and OH&S worker representatives in the industry. Workers at companies where committees or representatives are present report uniformly higher levels of health and safety performance. Fewer than 40% of the companies visited during the research had an active OH&S committee or representative, despite their requirements of the Workers Compensation Act. Workers at companies with OH&S committees also report more positive views regarding how good of a job the company is doing on health and safety.

6. Employers should ensure that all workers receive printed copies of health and safety programs. Only 62.8 per cent of workers surveyed received such information, but those that did were more likely to exhibit higher levels of health and safety performance. Furthermore, workers provided with printed information were more likely to recall being warned of hazards, being informed of their rights, and of being told to report unsafe work. The provision of printed information thus appears to effectively reinforce directions workers receive, and support the process of due diligence.

7. Regular monitoring of workers and use of emergency drills should be encouraged as both programs are associated with higher levels of health and safety performance among the workers. Previous research on health and safety regulation indicates that efforts to reform OH&S practices are most successful when all members of the workforce are directly involved in OH&S programs.

8. Employers should ensure that production incentives do not interfere with compliance with health and safety requirements. Planters at companies where supervisors were paid by commission were more likely to exhibit lower levels of health and safety performance, and were far less likely to expect unsafe behaviour to be corrected. Furthermore, commissioned supervisors were far less likely to correct unsafe behaviour. This pattern is supported by the observation that workers are less likely to engage in unsafe behaviour if they expect supervisors to correct it. Therefore, it is important to ensure that supervisors are provided with enough time and support to complete their daily tasks and maintain an efficient training and monitoring presence among the workers under their care. Every employer should ensure that their administrative system (whether it is based on salary or commission or any other system) does not create incentives for supervisors or workers to neglect their duties and responsibilities according to OH&S regulations.

9. Employers should ensure that the use of contracts does not replace the use of proper monitoring of their workers. Planters that signed contracts but were not checked on by a supervisor exhibited lower levels of health and safety performance than other workers. Employers must not assume that a contract can compel safe behaviour without being accompanied by proper supervision. Signed contracts were, however, associated with higher levels of performance among supervisors.

10. Employers should pay close attention to their ability to retain experienced employees, and their ability to attract new workers on an annual basis. Demographic shifts indicate that the workforce is becoming younger and less experienced. In order to maximize the benefit of education and training investments, employers may be well served by taking steps to ensure their workers are satisfied with their job and return for future planting seasons.

If you have any questions in regards to this report, please contact the researcher at jordan@symbioticsolutions.ca.

ACKNOWLEDGEMENTS

Several companies supplied support for this research by donating draw prizes to the workers that participated in the research. A draw prize ballot was provided to each respondent and a random draw was conducted at the conclusion of the field research. The supporting companies included:

Deakin Equipment

Ono Trading Company

Motoca All Terrain All Weather Endurance Workware



Rob Scagel is also recognized for assisting in the data analysis. Most importantly, the head researcher would like to acknowledge the contributions made by all the companies that participated in the research, and especially the workers that took time at the end of their working day to fill out questionnaires and participate in interviews.

APPENDIX 1: PLANTER QUESTIONNAIRE

Please read this carefully before proceeding

Your assistance is requested in this research project on occupational health and safety in the tree planting workplace. This research is an important step in developing a better understanding of our workplace, so that effective programs can be developed to reduce the number of injuries that are occurring in the industry.

This study is being conducted by Jordan Tesluk, a researcher who has planted trees and worked as a first aid attendant for the last 14 years. He is working in cooperation with the British Columbia Safe Silviculture Project (BCSSP), the British Columbia Forest Safety Council, and the Western Silviculture Contractors Association. The information gathered in this study will be submitted to the BCSSP for health and safety program development and to evaluate changes in the industry.

The BCSSP has also sponsored research on pesticide and fertilizer exposure among tree planters and the physical demands of the job, amongst other topics. The council is committed to developing health and safety training programs that fit the needs of the industry and assist in protecting workers from the hazards of their job.

You will not be required to write your name or any other identifying information on research materials. **Your identity, and the identity of your company, will not be revealed** to anyone as a result of this research. Any information that is obtained during this study will be kept confidential. The results of your questionnaire will be included with the results of hundreds of other questionnaires from other workers at different companies, and used to create an overall description of the industry. The questionnaires will be kept secure within the possession of the researcher, and not shared with your employer, other members of industry, or any regulating or government agency.

What follows is a questionnaire that deals with a number of health and safety issues in the tree planting environment. No question will ask you to identify an individual or company. Please do not include your own name, or the name of anyone else anywhere on the questionnaire.

Your participation will make a valuable contribution to the research. However, **your participation is strictly voluntary**, and you are under no obligation to participate in this research. Nobody in your workplace or any other agency will take any action towards you if you decide not to participate. If you have any concerns about this research or want to find out more about it, you can contact the head researcher by email at jdtesluk@sfu.ca.

You may keep the pen, but please hand the clipboard and questionnaire back to the researcher when you are finished. **A draw prize entry** has also been attached for a number of prizes that will be awarded by a random draw at the conclusion of the research later in the summer.

***Please note that the term “SUPERVISOR” in this questionnaire includes supervisors, forepersons, crew chiefs, checkers, or any supervisor-type personnel in your workplace.**

How many years have you been working in tree planting? _____
 How many years have you been working with your current company? _____
 How many days have you worked so far this year? _____
 What is your age? _____
 Are you male or female? Male Female
 Are you a year-round British Columbia resident? Yes No
 Do you currently have a valid first aid ticket? Yes No

What is your current level of education? (check one)
 Some high school High School Vocational training
 Some University/College University/College Diploma/Certificate/Degree

How would you classify yourself? (check one)

- Career Silviculturalist: Silviculture is your main source of employment. You return each year to the silviculture industry and work for more than 4 months per year.
- Regular seasonal: You return each year, working 4 months or less
- Student: You are working to put yourself through school and will leave the industry upon graduation.
- Occasional worker: You take the occasional job in the silviculture industry when they are available- silviculture is not your preferred occupation but you work in it when you need employment.

Do you do any other jobs in silviculture on a regular basis? (check all that apply)

- Firefighting Chemical brushing or weeding Chemical tree thinning, or spacing
 Cone-picking Mechanical brushing or weeding Mechanical tree thinning, or spacing

The next section of this questionnaire deals with specific health and safety issues in the tree planting workplace. You will be presented with a number of scenarios. Each scenario will be followed by a number of questions. You will be asked to either circle a number on a five-point scale, or fill in a blank. An example of a five-point scale is shown below.

EXAMPLE:

How likely do you think you will be to plant trees again next year?

Very likely 1 **2** 3 4 5 Very Unlikely

The response shown for the question would indicate that you think it is quite likely that you will be planting trees again next year. Circling "5" would indicate you are almost certain you will not be planting trees again next year. Circling "3" would indicate there is about a 50% chance that you will be planting trees next year.

Please be sure to read the scenarios carefully. Try not to give the same answer for every question automatically. The first 6 scenarios will be followed by identical questions.

1) At the end of the day, a planter returns to camp for dinner. The planter does not wash their hands before sitting down to eat with the rest of the crew.

How likely do you think OTHER PLANTERS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

2) A planter finishes a bag-up at the top of a steep hill, and runs at top speed down the hill to the cache, and barely avoids falling down.

How likely do you think OTHER PLANTERS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

3) A planter is smoking pot during the day while tree planting.

How likely do you think OTHER PLANTERS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

4) A planter is not wearing a seatbelt while traveling as a passenger in a company vehicle on the way to work.

How likely do you think OTHER PLANTERS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

5) A planter is working without wearing gloves. Although the trees have been treated with pesticides and warnings on the box say that gloves are required, the planter continues to work without gloves on.

How likely do you think OTHER PLANTERS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

6) A planter is working on a steep piece of ground (a 45 degree slope) where the ground is littered with many dead trees that were left over by the logging operation. The planter must walk on the logs to move around the land, and is not wearing caulked (spiked) boots.

How likely do you think OTHER PLANTERS at your workplace would be to work in this situation without wearing caulked boots?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely do you think a supervisor would be to correct a planter who is seen doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would you be to stop working in the following situations?

You are working on a contract where fertilizer pellets must be planted along side of the trees. Although wearing gloves, you develop an itchy red rash on your hands and arms. You have also been feeling nauseous since work began with the fertilizer.

VERY LIKELY 1 2 3 4 5 VERY UNLIKELY

You are working in a selectively logged area. The wind has increased during the day and at 2:00 you notice that the tops of the trees are swaying and small branches are occasionally breaking off and falling to the ground. At one point, you see a 50 foot tall tree fall over at the other end of the block, but there is no one close to it and it is about 500 feet away from you.

VERY LIKELY 1 2 3 4 5 VERY UNLIKELY

How likely would you be to report the following behaviour?

A supervisor is driving a crew to work. The supervisor is travelling at 80 km per hour on a road where the speed limit is 60 km per hour. One planter asks the foreperson to slow down, but the foreperson continues at the same rate of speed.

VERY LIKELY 1 2 3 4 5 VERY UNLIKELY

It is the last day of the shift and at the end of the day the crew has returned to their camp, which is located 50 km out of town. One planter, who has been drinking (4 beer in 2 hours), decides to drive into town in a personal vehicle.

VERY LIKELY 1 2 3 4 5 VERY UNLIKELY

Please indicate your overall level of job satisfaction

How good of a job do you feel your current company is doing to ensure the health and safety of the workers?

Very Good 1 2 3 4 5 Very Poor

How SATISFIED are you with the camp or accommodations supplied to you by your company?

EXTREMELY Dissatisfied 1 2 3 4 5 Extremely SATISFIED

How SATISFIED are you with the wages you are currently earning?

EXTREMELY Dissatisfied 1 2 3 4 5 Extremely SATISFIED

How would you describe your earnings so far this season?

Below my expectations 1 2 3 4 5 Exceeded my expectations

Met my expectations

How many days of tree planting work do you expect you will be able to obtain this year?

Not Nearly Enough 1 2 3 4 5 Far More Than Enough

Just the Right Amount

Please check either yes or no for the following questions

Has a supervisor in your current workplace checked on you during this season to ensure that are complying with a health and safety requirement?	<input type="radio"/> Yes <input type="radio"/> No
Has a supervisor in your current workplace ever corrected you during this season for an activity related to health and safety?	<input type="radio"/> Yes <input type="radio"/> No
Has a supervisor in your current workplace ever clearly told you that you must report any unsafe work practices or potentially dangerous problems in your workplace?	<input type="radio"/> Yes <input type="radio"/> No
Has a supervisor in your current workplace ever clearly told you that you have the right to refuse any unsafe work?	<input type="radio"/> Yes <input type="radio"/> No
Has a supervisor in your current workplace ever warned you or given you specific information about specific hazards in your workplace?	<input type="radio"/> Yes <input type="radio"/> No
Has a supervisor or another worker in your current workplace ever informed you of the activities of the company occupational health and safety committee or invited you to participate in such a committee?	<input type="radio"/> Yes <input type="radio"/> No
Have you ever received a printed copy of your current company's health and safety rules?	<input type="radio"/> Yes <input type="radio"/> No
Did you sign a contract with your current company that addressed health and safety issues?	<input type="radio"/> Yes <input type="radio"/> No

Would you know exactly where to find a first aid kit if you were asked to go and get one during an emergency?	<input type="radio"/> Yes <input type="radio"/> No
If you had to call for help during an emergency on the worksite, would you know exactly how to use a radio in order to reach assistance in an emergency?	<input type="radio"/> Yes <input type="radio"/> No
Have you ever visited tree planting webpages on the internet?	<input type="radio"/> Yes <input type="radio"/> No
Have you used tree planting webpages on the internet to learn about companies or find yourself a job?	<input type="radio"/> Yes <input type="radio"/> No
Do you plan on working in the tree planting industry again next year?	<input type="radio"/> Yes <input type="radio"/> No
Did you plant trees on the coast in the early spring (between January and early April) of this year?	<input type="radio"/> Yes <input type="radio"/> No
Did you fill out a similar questionnaire two years ago?	<input type="radio"/> Yes <input type="radio"/> No

Please feel free to use this space to include any comments or concerns you may have in regard to this research or any other health and safety issue not addressed in this survey

This concludes the questionnaire. Thank you very much for your participation in this research. If you have any further questions regarding this research, please refer to the front page of the questionnaire, which you can detach and keep for your own purposes.

Please hand the rest of the questionnaire and the clipboard back to the researcher.

Remember to fill out your draw prize ballot. You may keep the pen, and some additional health and safety information is available from the researcher.

APPENDIX 1: SUPERVISOR QUESTIONNAIRE

Please read this carefully before proceeding

Your assistance is requested in this research project on occupational health and safety in the tree planting workplace. This research is an important step in developing a better understanding of our workplace, so that effective programs can be developed to reduce the number of injuries that are occurring in the industry.

This study is being conducted by Jordan Tesluk, a researcher who has planted trees and worked as a first aid attendant for the last 14 years. He is working in cooperation with the British Columbia Safe Silviculture Project (BCSSP), the British Columbia Forest Safety Council, and the Western Silviculture Contractors Association. The information gathered in this study will be submitted to the BCSSP for health and safety program development and to evaluate changes in the industry.

The BCSSP has also sponsored research on pesticide and fertilizer exposure among tree planters and the physical demands of the job, amongst other topics. The council is committed to developing health and safety training programs that fit the needs of the industry and assist in protecting workers from the hazards of their job.

You will not be required to write your name or any other identifying information on research materials. **Your identity, and the identity of your company, will not be revealed** to anyone as a result of this research. Any information that is obtained during this study will be kept confidential. The results of your questionnaire will be included with the results of hundreds of other questionnaires from other workers at different companies, and used to create an overall description of the industry. The questionnaires will be kept secure within the possession of the researcher, and not shared with your employer, other members of industry, or any regulating or government agency.

What follows is a questionnaire that deals with a number of health and safety issues in the tree planting environment. No question will ask you to identify an individual or company. Please do not include your own name, or the name of anyone else anywhere on the questionnaire.

Your participation will make a valuable contribution to the research. However, **your participation is strictly voluntary**, and you are under no obligation to participate in this research. Nobody in your workplace or any other agency will take any action towards you if you decide not to participate. If you have any concerns about this research or want to find out more about it, you can contact the head researcher by email at jdtesluk@sfu.ca.

You may keep the pen, but please hand the clipboard and questionnaire back to the researcher when you are finished. **A draw prize entry** has also been attached for a number of prizes that will be awarded by a random draw at the conclusion of the research later in the summer.

***Please note that the term “SUPERVISOR” in this questionnaire includes supervisors, forepersons, crew chiefs, checkers, or any supervisor-type personnel in your workplace.**

How many years have you been working in tree planting? _____
 How many years have you been working with your current company? _____
 How many days have you worked so far this year? _____
 What is your age? _____
 Are you male or female? Male Female
 Are you a year-round British Columbia resident? Yes No
 Do you currently have a valid first aid ticket? Yes No

What is your current level of education? (check one)
 Some high school High School Vocational training
 Some University/College University/College Diploma/Certificate/Degree

How would you classify yourself? (check one)

- Career Silviculturalist: Silviculture is your main source of employment. You return each year to the silviculture industry and work for more than 4 months per year.
- Regular seasonal: You return each year, working 4 months or less
- Student: You are working to put yourself through school and will leave the industry upon graduation.
- Occasional worker: You take the occasional job in the silviculture industry when they are available- silviculture is not your preferred occupation but you work in it when you need employment.

Do you do any other jobs in silviculture on a regular basis? (check all that apply)

- Firefighting Chemical brushing or weeding Chemical tree thinning, or spacing
 Cone-picking Mechanical brushing or weeding Mechanical tree thinning, or spacing

The next section of this questionnaire deals with specific health and safety issues in the tree planting workplace. You will be presented with a number of scenarios. Each scenario will be followed by a number of questions. You will be asked to either circle a number on a five-point scale, or fill in a blank. An example of a five-point scale is shown below.

EXAMPLE:

How likely do you think you will be to plant trees again next year?

Very likely 1 2 3 4 5 Very Unlikely

The response shown for the question would indicate that you think it is quite likely that you will be planting trees again next year. Circling "5" would indicate you are almost certain you will not be planting trees again next year. Circling "3" would indicate there is about a 50% chance that you will be planting trees next year.

Please be sure to read the scenarios carefully. Try not to give the same answer for every question automatically. The first 6 scenarios will be followed by identical questions.

1) At the end of the day, a planter returns to camp for dinner. The planter does not wash their hands before sitting down to eat with the rest of the crew.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

2) A planter finishes a bag-up at the top of a steep hill, and runs at top speed down the hill to the cache, and barely avoids falling down.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

3) A planter is smoking pot during the day while tree planting.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

4) A planter is not wearing a seatbelt while traveling as a passenger in a company vehicle on the way to work.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

5) A planter is working without wearing gloves. Although the trees have been treated with pesticides and warnings on the box say that gloves are required, the planter continues to work without gloves on.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

6) A planter is working on a steep piece of ground (a 45 degree slope) where the ground is littered with many dead trees that were left over by the logging operation. The planter must walk on the logs to move around the land, and is not wearing caulked (spiked) boots.

How likely would you be to correct a planter that you see doing this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

The next series of questions deal with the activities of supervisors

7) A supervisor is operating a chainsaw and is not wearing protective cut-resistant leggings.

How likely do you think OTHER SUPERVISORS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

8) A supervisor is using an all terrain vehicle (a quad) and is not wearing a helmet.

How likely do you think OTHER SUPERVISORS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

9) A supervisor is driving a company vehicle without wearing a seatbelt.

How likely do you think OTHER SUPERVISORS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

10) A small crew of workers must walk into a block that cannot be accessed by truck. The supervisor suggests that they can save 45 minutes of planting time if the planters ride on the quad's cargo rack while the supervisor drives.

How likely do you think OTHER SUPERVISORS at your workplace would be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

How likely would YOU be to do this?

VERY LIKELY	1	2	3	4	5	VERY UNLIKELY
-------------	---	---	---	---	---	---------------

Please indicate your overall level of job satisfaction

How good of a job do you feel your current company is doing to ensure the health and safety of the workers?

Very Good 1 2 3 4 5 Very Poor

How SATISFIED are you with the camp or accommodations supplied to you by your company?

EXTREMELY Dissatisfied 1 2 3 4 5 Extremely SATISFIED

How SATISFIED are you with the wages you are currently earning?

EXTREMELY Dissatisfied 1 2 3 4 5 Extremely SATISFIED

How would you describe your earnings so far this season?

Below my expectations 1 2 3 4 5 Exceeded my expectations

Met my expectations

How many days of tree planting work do you expect you will be able to obtain this year?

Not Nearly Enough 1 2 3 4 5 Far More Than Enough

Just the Right Amount

Please check either yes or no for the following questions

Has another supervisor in your current workplace checked on you during this season to ensure that are complying with a health and safety requirement?	<input type="radio"/> Yes <input type="radio"/> No
Has another supervisor in your current workplace ever corrected you during this season for an activity related to health and safety?	<input type="radio"/> Yes <input type="radio"/> No
Has another supervisor in your current workplace ever clearly told you that you have the right to refuse any unsafe work?	<input type="radio"/> Yes <input type="radio"/> No
Has another supervisor in your current workplace ever warned you or given you specific information about specific hazards in your workplace?	<input type="radio"/> Yes <input type="radio"/> No
Has another supervisor or an owner in your current workplace ever clearly told you that you must correct any unsafe behaviour that you witness in the workplace?	<input type="radio"/> Yes <input type="radio"/> No
Have you ever received a printed copy of your current company's health and safety rules?	<input type="radio"/> Yes <input type="radio"/> No

Did you sign a contract with your current company that addressed health and safety issues?	<input type="radio"/> Yes <input type="radio"/> No
Would you know exactly where to find a first aid kit if you were asked to go and get one during an emergency?	<input type="radio"/> Yes <input type="radio"/> No
If you had to call for help during an emergency on the worksite, would you know exactly how to use a radio in order to reach assistance in an emergency?	<input type="radio"/> Yes <input type="radio"/> No
Have you ever visited tree planting webpages on the internet?	<input type="radio"/> Yes <input type="radio"/> No
Have you used tree planting webpages on the internet to learn about companies or find yourself a job?	<input type="radio"/> Yes <input type="radio"/> No
Do you plan on working in the tree planting industry again next year?	<input type="radio"/> Yes <input type="radio"/> No
Did you plant trees on the coast in the early spring (between January and early April) of this year?	<input type="radio"/> Yes <input type="radio"/> No
Did you fill out a similar questionnaire two years ago?	<input type="radio"/> Yes <input type="radio"/> No

Please feel free to use this space to include any comments or concerns you may have in regard to this research or any other health and safety issue not addressed in this survey

This concludes the questionnaire. Thank you very much for your participation in this research. If you have any further questions regarding this research, please refer to the front page of the questionnaire, which you can detach and keep for your own purposes.

Please hand the rest of the questionnaire and the clipboard back to the researcher.

Remember to fill out your draw prize ballot. You may keep the pen, and some additional health and safety information is available from the researcher.