UNIVERSITY OF ALBERTA

PUBLIC PERCEPTIONS OF TREE PLANTATIONS:
A MIXED-METHODS STUDY OF TREES AS AN ALTERNATIVE CROP, FAMILY FARMING, AND THE POPLAR FARM PROGRAM

By

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Dedication

This is dedicated to Rob and Baby Neumann. Thank-you for three extra letters, white picket fences, and an expanding waistline - I am truly blessed.

Abstract

This research describes public perceptions of tree plantations, and calls for greater public participation in their development and establishment. The study consists of two separate elements. The interview study describes findings from 31 interviews with key informants, indicating farming identity, trust, and competition as important central themes. The survey study is based on a questionnaire developed using the key themes uncovered in the interview study. Using indices and path analysis, I model the structure underlying opinions of Alberta-Pacific Forest Industries' Poplar Farm Program, specifically relations to family farming and the meaning of trees on farmland. Valuation of family farming is found to have the strongest predicting effect on resistance to planting trees on farmland, which, in turn, is found to have a significant negative effect on support for the Poplar Farm Program. The findings between the two stages of the study are compared and contrasted, and policy recommendations are presented.

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This work was done for the Lord Jesus Christ's glory.

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Chapter One: Introduction

Over the past fifty years farmers in North America have faced increasing uncertainty. Local markets have expanded into global ones, and the need to compete with an expanding worldwide market and shrinking profit margins has forced many farms out of business. This abandonment of farming as a "household livelihood strategy" has been termed the "agricultural transition" by Lobao and Meyer (2001:104). Those Canadian farms which have survived are bigger and more specialized (Dasgupta 2001:169), often growing only one or two types of produce. These changes have affected farm families as well. As families are forced to leave farming, the legacy of farming as a way of life and identity is lost.

Farming is not the only Canadian industry in transition. Since the mid-twentieth century, attempts have been made to coordinate Canadian forest harvesting practices alongside environmental, economic, and social values using a method called multiple-use management. In multiple-use management single parcels of forested land are managed for all values simultaneously. Conflicting values can lead to tension where various stakeholders suggest their needs are not adequately met (Binkley 1999:75). One proposed solution to conflict over forest use is to allocate different parcels of forest land for different uses. Key to the land-use allocation model is the division of the forested landscape into three management zones including *multi-use forestry zones* often referred to as *extensive management areas* (many uses are managed for on a single parcel of land), *protected areas* (land is set aside for the preservation of sensitive ecological or cultural attributes), and *intensive*

forestry or *plantation zones.* Plantation forestry refers to the planting of trees specifically selected for their rapid growth characteristics on carefully chosen sites. By actively managing these trees through fertilization, pruning, and thinning, more timber can be produced on a smaller land base with a shorter rotation than those grown under extensive management.

In northern Alberta, the challenges the agriculture and forestry industries are facing have culminated in a new proposal. Much of the land previously cleared for agricultural purposes in this area is of lower soil quality and is often referred to as 'marginal'. It is more difficult to produce high yields of crop from this land, and it is less valuable to farmers looking to buy or rent land for their own use. Rather than continue to farm this land in a traditional way, some suggest the establishment of tree plantations on marginal farmland would be profitable for both the agriculture industry and the forest industry. Farmers who own marginal land would now have a valuable 'crop' to grow, and forestry companies would have a new, reliable source of fibre or timber.

Alberta-Pacific Forest Industries Inc. (Al-Pac) has begun to implement intensive forestry practices within a 200-kilometre radius of their mill, located in northern Alberta, near the southern border of their Forest Management Agreement (FMA) area. Through the 'Poplar Farm Program', the company is establishing plantations consisting of hybrid poplar trees on private, locally-owned land. The company hopes to establish a total of 25,000 hectares of hybrid poplar plantations over the next two decades (Alberta-Pacific Forest Industries 2002).

One of the major industries in the area Al-Pac is operating in is agriculture, principally cereal crops and raising cattle. This is the first time in this region hybrid poplars have shifted from windbreaks around fields and homes to an alternative crop. Al-Pac's Poplar Farm Program is currently in its sixth year, and aside from some town information meetings designed to recruit landowners for the program, systematic sociological investigation around local acceptance of this land use had not previously been done.

Research Purpose and Objectives

Using both qualitative and quantitative techniques, I will describe public opinions of the Poplar Farm Program and connect these perceptions to rural identity and family farming literature. Specifically, I focus on *farmers*' perspectives as they are key stakeholders - both the landowners signing up for the program and potential neighbours of the plantations.

The qualitative techniques are explored in Chapter Two: Paper #1 (Interview Study) "Public Perceptions of Hybrid Poplar Plantations: Trees as an Alternative Crop". An interview study with 31 key informants reveals perceptions of the Poplar Farm Program and is used to identify key themes associated with land use change and preservation of rural identity.

Quantitative techniques are employed in Chapter Three: Paper #2 (Survey Study) "'My Grandfather Would Roll Over in His Grave': Family Farming and Tree Plantations on Farmland". A survey of farming residents in two Alberta counties is

analysed to explore determinants of support for the Poplar Farm Program, specifically valuation of family farming and resistance to trees on farmland.

My objectives are to gain a clear understanding of perceptions of changes in farmland use, specifically the establishment of tree plantations and the Poplar Farm Program. Also, I will examine the role that values and personal frame of reference play in predicting opinions of land use change. Finally, this study addresses how farm residents respond to farmland use change, and employs a way to measure these perceptions, as well as providing results that can inform policy-makers of the complexity behind support for and against specific programs. The results of this information may be used to determine the appropriateness of land use change programs, potentially minimizing conflicts and expanding democratic decision-making.

Theoretical Guidance

This study was initially informed by the risk society literature (Beck 1992; Giddens 1991) which suggests, "as part of a 'reflexive modernization', we have become a society obsessed with environmental risks resulting from techno-industrial processes" (Wakefield and Elliot 2000:1140). In addition, risk perception, as defined by Slovic (1987), was a key theory considered in the initial stages of this project. However, upon completion of the interview data collection and initial qualitative analysis it became clear the perceptions expressed did not conform to traditional conceptions of risk. In addition, participants did not appear to view the plantations as a technological innovation with coinciding environmental and health risks as they

would from a risk society perspective. Rather, participants seemed to see the establishment of the plantations as a radical change in land use and a threat to rural identity.

This discovery resulted in a fairly fundamental shift in the theoretical orientation of this study. Though I was still studying local perceptions, theories associated with land use change, specifically place identity (Wester-Herber 2004), became the guiding body of literature. Rural identity, as described by Barlow and Cocklin (2003), is closely related to place identity, and was used to guide interpretation of references to landscape changes and their impact on farming. In addition, I incorporated 'citizen expert' theory (Fischer 2002) by considering local perceptions as reflective of individual ability to participate in democratic landscape decision-making. This theory also guided my recommendations for the Poplar Farm Program, as well as suggestions for future research.

As the project progressed, and analysis began on the survey stage, my theoretical orientation became more specialized. I began to explore the concept of rural identity further, specifically focusing on family farming. Family farming as a symbol of rurality (Taylor 1954) was a concept detailed infrequently in the literature, but references to the symbol defined it as a set of interrelated values (Pfeffer 1989). By embracing this conceptual definition of family farming, I was led to examine the theory connecting personal values to behaviour and opinions (Schoon and Te Groteenhuis 2000). This allowed me to consider valuation of family farming as a predictor of support for the Poplar Farm Program.

Significance and Contributions of the Research

The following study is designed to be beneficial to land use decision-makers, social scientists interested in perceptions of land use change, and, most importantly, the local peoples in Athabasca, Westlock, and surrounding counties. As the Poplar Farm Program represents the intensive management component of Al-Pac's overall fibre procurement strategy, the results of this study are an important component of socially-responsible forestry practices. In addition, as the provincial government often plays a pivotal role in approving widespread land use change, this information may shed light on the impact of those decisions, as well as the complex values underlying resistance to them in rural Alberta.

Land use change and its connection to rural identity is an important area of study in rural sociology (Barlow and Cocklin 2003), and the planting of trees on previously cleared farmland is an especially multifaceted example of landscape change. The social impact of converting traditional farmland to tree plantations has not been studied in North America, despite suggestions that intensive forest management is beneficial to overall landscape management (Binkley 1999). In addition, despite theory connecting personal frame of reference to opinions and decision-making in the field of social-psychology (Schoon and Te Groteenhuis 2000:19), little research has been conducted which examines the impact of traditional farming values on 'on-the-farm' opinions. By examining valuation of family farming and considering it as a predictor of resistance to trees on farmland, this research will add considerably to this body of literature. This new body of research will also contribute to the methodology of the social science literature. By combining both

qualitative and quantitative techniques in this investigation, a richer picture of public perceptions is created. Also, these techniques are an example of how exploratory interviews can be used in both the final analysis of a subject of interest and the development of a survey on a topic previously unexplored in questionnaire form.

Finally, I hope this study will be beneficial to the people who participated in it, and, by extension, their neighbours. For the participants, this was an opportunity to voice their opinions in a field often dominated by industry and government decision-makers. In addition, they may benefit from the knowledge that they contributed to a study designed to encourage decision-making that reflects local concerns and needs, which in turn will give a voice to often marginalized rural Canadians.

Limitations of the Research

This research is limited by several factors. Firstly, though I have been careful to detail how my results may impact a wider field of interest, this project is a cross-sectional representation of a small region in Alberta. Some of the conclusions made in this study may be time and/or location specific. In addition, this study considered a specific tree plantation program, and though many of the findings clearly relate to the establishment of tree plantations in general, some of the participants' perspectives, specifically those concerned with Al-Pac's trustworthiness and ability to manage the program, may be specific to Al-Pac's Poplar Farm Program.

This concern ties into another limitation of the study. Though response rates for the survey were good, it is possible Al-Pac's financial support of this project resulted in a lower rate than would otherwise have been attained. Some people I

contacted expressed concerns about industry-funded research, specifically the amount of influence Al-Pac may have had over findings. This concern was repeated in many of the survey's open-ended responses (specifically those received from residents of Athabasca County), and it is possible some people with a negative orientation toward Al-Pac had difficulty cognitively separating this project from the company.

My sampling frame for the survey stage was limited in its scope. Firstly, the website used to generate the phone numbers for the county landowners (www.canada411.com) only contains listed numbers, and it may not have been up-to-date. This limited the landowners I could contact. In addition, of those landowners I did obtain numbers for, many were not home or did not answer their phones. As all of the phoning occurred during work hours, it is possible these people have certain characteristics in common (e.g. all work off-farm), leading to a bias in my final sample. Another concern is the potential bias associated with my refusal-rate. Many of the reasons given for not participating in the study were age-related, specifically 'too old' or 'I'm retired'. This suggests I may have over-sampled younger landowners, though the age distribution of my respondents (average age of 53 years), suggests perhaps this is not the case as the average age of farmers in the community is 50 years (Statistics Canada 2001a, 2001b).

Finally, the questionnaire employed in this survey was very comprehensive. As one of my goals was to write and submit articles to peer-reviewed journals, I was limited in the amount of information I could analyze and discuss. For example, both the interview and survey study revealed many perceived benefits of the Poplar Farm Program (see Appendix A and D for details). Participants frequently referred to the

program as a low-risk option for landowners considering renting out their land, a benefit to the environment, and a preferred land use to other types of non-agricultural conversion such as industrial or municipal expansion. As the research is presented in journal article format, and I was limited in the amount of information I could present, I decided to focus on the concern categories only. My hope is that this data will be revisited so more of the information contained in the coding can be analyzed and discussed.

Reflections on my Social Location

In this study my social place was an important determinant of success. Firstly, I have an academic background in forest genetics. This allowed me to discuss the Poplar Farm Program with Al-Pac employees as well as other participants interested in the hybrid-nature of the trees. In addition, I grew up in rural Alberta, and many participants were very interested in my family background, specifically my connection to the area the project took place in. Another factor possibly contributing to my success was my husband's family's active involvement in the communities the research took place in. This connection with the participants led to more open discussions at the interview stage and possibly a higher response rate for the survey. Finally, as I am a white, female Canadian, my appearance was likely non-threatening for participants. This is also another area I had in common with the local people, and allowed me to blend in and appear as less of an outsider.

However, my social place in this study also likely contributed to some bias in the interpretation of results. As a rural Albertan I was likely more sympathetic and

attentive to those participants with which I had this in common. In addition, as I have a background in environmental science and sociology, my 'ear' was probably trained to these fields, and the qualitative analysis is likely coloured by this resulting in more themes associated with these categories.

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Chapter Two: Paper #1 (Interview Study)

"Public Perceptions of Hybrid Poplar Plantations: Trees as an Alternative Crop"

(Target Journal - *International Journal of Biotechnology* (in press))

The forestry industry has faced a relatively new challenge to address: public opposition to the application of intensive plantation forestry and tree improvement methods. Though public conflicts over rights to land and ecological issues have occurred for many decades, the industry is now facing public concerns over the establishment of tree plantations on previously cleared lands, particularly traditional agricultural lands.

In Canada and the United States, the intensive management of hybrid tree plantations is currently a widespread forestry technique. Hybrid trees are created using greenhouse-based breeding techniques and are designed to have certain benefits such as resistance to certain abiotic and biotic conditions, as well as increased growth rates and specialized wood properties. Hybrid poplars must be grown intensively in plantations in order to be efficient. By examining public reaction to hybrid tree plantations, one can gain a greater understanding of how the public reacts to land use changes, especially in areas that have been cleared for agricultural use. In addition, an awareness of the public's key concerns associated with hybrid tree plantations can assist policy makers, industry decision-makers, and other land managers with the possible future establishment of tree plantations by finding areas of compromise with local residents. Finally, these studies shed light on how the public may react in the future to tree plantations established using less conventional methods to derive material (e.g. genetic engineering) as both may involve similar land use changes. Although the technologies used to create these trees are different, what they may have in common are the social impacts of a fundamental land use change: from traditional agricultural management to intensive tree production.

The objective of this paper is to report social concerns about plantation forestry, thereby detailing the discrepancy between expert and public views. My analysis suggests the need for more research in this area, and, ultimately, greater public participation in forestry decision-making. I begin by discussing the concerns currently viewed by scientists as relevant to plantation forestry. As a contrast, I describe an interview study recently completed that explores public perceptions of the planting of hybrid poplar plantations in the agricultural belt of Alberta, Canada. I then compare the findings in this study of public perceptions to the expert views expressed in the literature. Finally, some conclusions about the role of public perceptions in the establishment of tree plantations in general are made.

Plantation Forestry in Canada

Worldwide, there are approximately 100 million hectares of tree plantations (Boyle 1999:5), with 12.5 million hectares in North America (Sedjo 1999:347). In Canada, plantations have been established for decades in the provinces of Ontario, Quebec, and British Columbia. To the north, despite shorter growing seasons, plantations have recently been implemented on a trial basis in the boreal forest. Specifically, in Alberta, Alberta-Pacific Forest Industries Inc (Al-Pac) has begun contracting local landowners to lease private farmland for the establishment of fast-growing tree plantations.

Plantation forestry involves planting and managing relatively small areas (e.g. 30 to 50 hectares) of land with fast growing trees that are selected for their growth characteristics and subject to chemical inputs, such as fertilizers and herbicides. One

proposal for plantation forestry is the use of hybrid poplars, typically developed through greenhouse-based cross-breeding of different species. Throughout the prairies, dispersed planting of these trees has occurred for many decades as windbreaks around fields and farmsteads and for ornamental purposes, but only recently has extensive, concentrated planting for forestry harvest taken place.

Most expert-based literature on the subject of forest plantations in Canada extensively covers ecological and economic concerns, with disproportionately less attention to social impacts (e.g. Lautenschlager 2000; Binkley 1999; Sedjo 1999). While studies are underway in Alberta around the possible ecological impacts of these trees on native ecosystems and the economic viability of hybrid poplar plantations, the social aspects of this program remain unexplored. Concerns of landowners under contract with the forest company to grow the trees, and perceptions of community members neighbouring the plantations, have not been documented until now.

Perceptions of Land-use

Land is much more than topography. Landscapes, especially those that have been inhabited by generations, are closely linked to the values and identity of the people that live there (Wester-Herber 2004). Research in place-identity suggests that "an individual has more complex relations to the environment than simply living in it" (Wester-Herber 2004:111). The very concept of a landscape suggests a dialectical relationship between the natural and the human and goes beyond "ecological and economic functions and utility" (Antrop 2005:23). In defining land use as economic

values or ecological functions, forestry experts often disregard the importance of numerous social values which are difficult to quantify.

Following this, public perceptions of land use change based on personal feelings of lack of control and community disruption have been labelled as irrational by some technical experts. Sedjo and Botkin (1997), economists studying plantation forestry, suggest the public's fear simply reflects "a failure to realize" intensive management's potential (16). This perspective reflects assumptions about legitimate understanding, and presumes that an ideal, quantitative, universal measurement of benefits and concerns exists. This use of 'objective discourse' permeates public debates over the use of land, generally influencing policies and attitudes in favour of scientifically-preferred methods of analyzing impacts (Hamersley Chambers and Beckley 2003:141).

The ability of individuals and organizations to "penetrate and influence different aspects of (land production) issues may vary greatly" (Le Heron and Roche 1985:40) depending on their position in society. The local citizen's ability to participate in the debate is hampered not only by the technical nature of the discussion, but also the forums in which these discussions take place. Local people are often bypassed in the decision-making process, being informed after the fact. As Fischer (2002) puts it:

> (We need to consider) whether the public is inherently incompetent to engage intelligently...or whether its low level of activity only reflects the populace's limited opportunities to develop the interests and participatory skills to engage meaningfully in public issues. (35)

Rather than being limited by 'irrationality' and a low level of understanding, Fischer would suggest that public participation is hindered by a lack of opportunity to learn about the issues and develop a framework from which to debate them.

The greatest concern associated with an expert-dominated discourse around land use is the effect of land use *change* on local residents. Landscape changes are seen as a threat because they are characterized by a loss of diversity, consistency, and identity of the existing landscape (Antrop 2005:22). Therefore, it is necessary to acknowledge public perceptions of landscapes in order to predict responses to land use management decisions (Bergen et al. 1995).

Expert Perceptions of Plantation Forestry

Experts have acknowledged that though the benefits of plantation forestry considerably outweigh the costs, it may present some concerns environmentally, economically, and socially.

Generally, foresters and environmentalists agree that one of the main environmental benefits of establishing tree plantations on previously cleared land is the potential to reduce pressure on native forests (Gladstone and Ledig 1990:70). Though some natural forest will continue to be harvested, fewer trees are necessary to supply nearby mills, reducing the intensity and frequency of harvests needed. In addition, tracts of forest can be set aside completely for conservation purposes, which would not have been otherwise. One study in Canada, however, warns that plantation forestry may lower soil fertility (Carlisle and Chatarpaul 1984). In addition, Carlisle and Chatarpaul (1984) suggest that the natural genetic structure of

surrounding forests may be affected if plantation species crossbreed with native species. Further research is currently being conducted in this area, especially with hybrid poplars (e.g. Huybregts 2001). Other studies have examined the impact of plantations on biodiversity (Christian et al. 1997; Hanowski et al. 1997), finding that bird and mammal biodiversity in plantations is lower than levels found in natural forest stands, but higher than levels generally found in agricultural fields.

Various studies on the overall economic costs (and potentials) of plantation forestry have also been conducted (e.g. Chopra and Kumar 2004; Stanton et al. 2002; Sedjo 1999). Costs are reduced when timber production is intensified. By using technological improvements, productivity and yields increase (Sedjo and Botkin 1997:15), resulting in timber harvests ranging from two (Sahajananthan et al. 1998:S78) to ten times (Gladstone and Ledig 1990:70) larger than harvests from land managed for multiple uses. Often studied are the economic costs to the individual landowner considering establishment (e.g. Yap 2004; Jain and Singh 2000), as well as the efficiency of planted forests versus natural forests for forestry companies. Another consideration is the effect plantation forestry has on employment, as compared to traditional forestry and traditional agricultural crops. Jain and Singh (2000) found that poplar plantations in India generated high employment early on in establishment, but resulted in fewer jobs than traditional agriculture after the first few years (269).

Forestry experts seldom recognize the social concerns associated with plantation forestry. Though it is widely acknowledged that the development of plantation forestry is accompanied by "concern and controversy" (Barlow and

Cocklin 2003:504) and "social resistance" (Sedjo and Botkin 1997:15), rarely do these issues make it into scientific discourses over the concerns and benefits of plantation forestry. In North America, public perceptions of plantation forestry are poorly understood, thus recommendations for offsetting negative social impacts of plantation forestry have remained unaddressed. The author of "Relief for Canada's Forests", Alberta environmentalist Vivian Pharis (1993), claims that "(plantations) are a compromise that environmentalists and the public must accept and promote" (38). Rather than forcing such an extensive landscape change on local peoples, if both public and expert views are taken into account a more comprehensive picture of the concerns associated with plantation forestry can be developed, thereby addressing emerging public demands for democratic land management.

Public Perceptions of Hybrid Poplar Plantations in Alberta, Canada

The Al-Pac mill, located in north-eastern Alberta (see Figure 2.1), was completed in August, 1993 and is the largest single-line kraft pulp mill in North America (Alberta-Pacific Forest Industries 2001). The mill processes poplar wood from the company's 60,000 square kilometre FMA (forest management agreement) area, which is located on Crown (public) land in northern Alberta, and harvested through an agreement with the provincial government. The mill is currently producing an average of 1,800 air-dried metric tonnes of pulp per day.

Recently Al-Pac has begun to implement intensive forestry practices within a 200-kilometre radius of the mill. Through the 'Poplar Farm Program' the company is establishing plantations consisting of hybrid poplar trees on private, locally-owned

land. The government of Alberta has stipulated that no foreign-owned company can lease private land for more than 20 years and that foreign leases are to be non-renewable. The government of Alberta made an exception in Al-Pac's case, and through a provincial order-in-council the company has been given approval to lease land for a 30 year period with the possibility of renewal. The land Al-Pac leases is restricted by soil class (the company cannot lease the most valuable agricultural areas for greater than 32 hectares contiguous) as well as size (the company requires at least 20 hectares to establish a plantation). The company hopes to establish a total of 25,000 hectares of hybrid poplar plantations by 2030 (Alberta-Pacific Forest Industries 2002). Landowners have the option of also being paid to manage the plantations on their land, which would involve weeding, disking, and/or some chemical applications (Alberta-Pacific Forest Industries 2002).

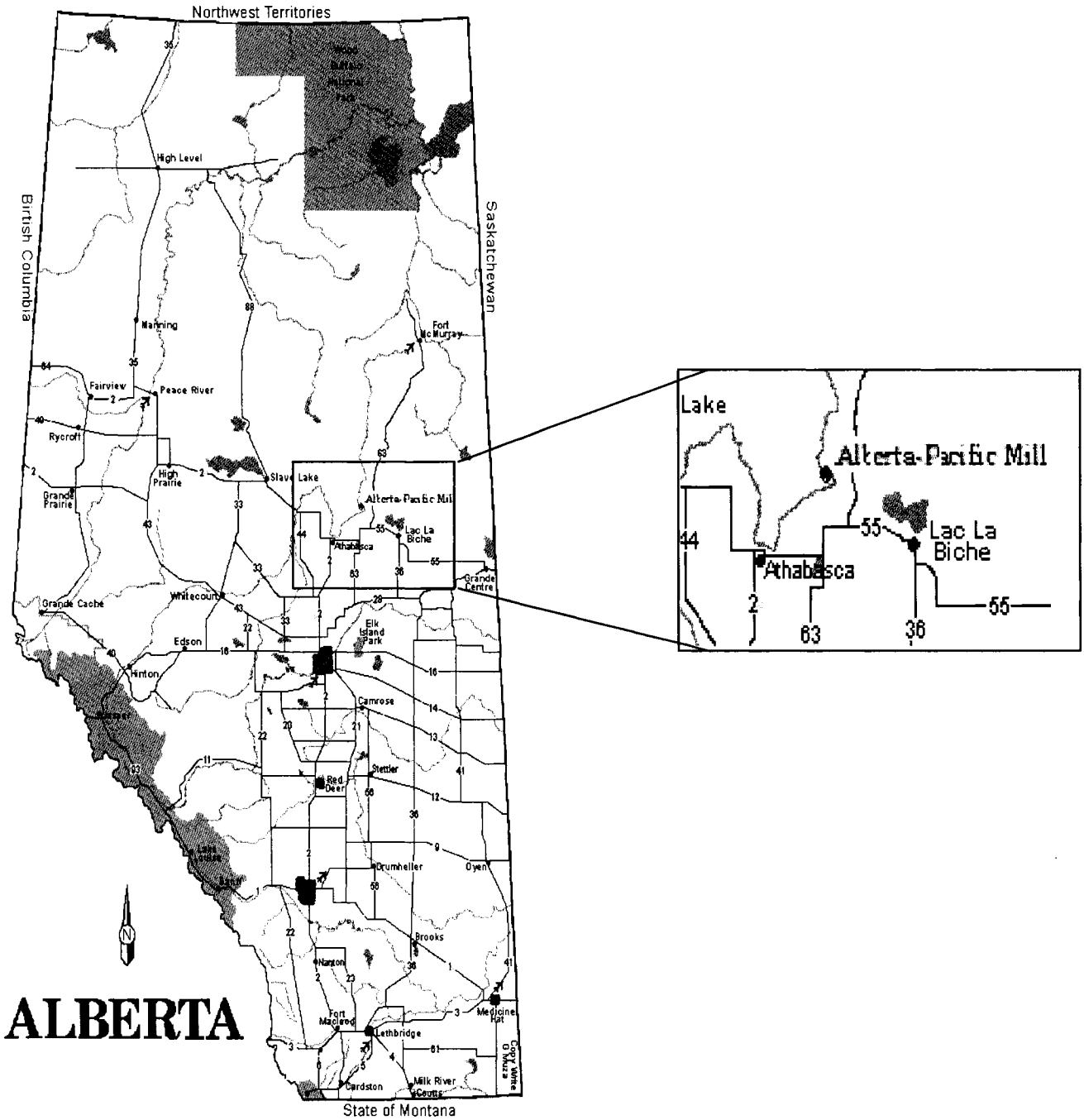

Figure 2.1 Map of Alberta with location of Al-Pac mill
(from http://www.watertonpark.com/maps/mapab.htm)

One of the major industries in the area Al-Pac is operating in is agriculture, principally growing cereal crops and raising cattle. This is the first time in this region hybrid poplar plantations have shifted from windbreaks to an alternative crop. Al-Pac's Poplar Farm Program began operational planting in 2000, and aside from some town information meetings designed to recruit landowners for the program, systematic sociological investigation around local acceptance of this land-use had to date not been done.

Data and Methods

This paper reports findings from a set of semi-structured interviews with 31 key informants in northern Alberta. Key-informants are people who are believed to have some specific knowledge and/or opinions about the Poplar Farm Program. The questionnaire was designed to explore the opinions and perceptions associated with hybrid poplar plantations in Alberta, and was drafted by a cross-disciplinary team comprised of a sociologist, forest geneticist, and graduate student with training in the social and biological sciences. The goal of this study was to identify central perceptions of the Poplar Farm Program, rather than get an overall picture of the average, or typical view. By only interviewing people who had been identified as having some interest in the Poplar Farm Program, I was not looking for a representative sample of the overall population of interest, but rather seeking a diversity in views, and an increased understanding of the richness of the individual issues that heretofore have not been documented.

Key-informants were identified through a variety of means. Some people were identified based on their position in the community, previous involvement in hybrid poplar discussions, or recommendation from persons involved in this debate (e.g. the managers with the Poplar Farm Program, local environmental groups). Our initial selection of persons to interview comprised of landowners already signed up for the program, Al-Pac employees, and visible persons of influence in the community (e.g. government officials, college professors, members of activist groups). These initial ten interviews 'snowballed' into a second wave of interviews, whereby I generated new names of persons to contact by asking interviewees at the end of each interview to recommend other people in the community who would also have an opinion about plantation forestry, particularly a perspective different than their own. Purposive, snowball sampling with key informants is a common method used in sociology for exploratory interviews on a topic that is salient to a select group of people, for which an exhaustive sampling frame does not exist (Krogman and Beckley 2002). There was a significant amount of repetition regarding appropriate persons to interview. This snowball sampling process continued until the respondents were repeating the same range of views gathered to date, suggesting that key issues had been exhausted, or that I had reached 'saturation' of key issues around poplar farming. The final 31 person sample included four local government officials, six members of non-profit groups, six landowners participating in the program, ten landowners not participating in the program, as well as five employees at the Al-Pac mill. With the exception of one participant, all persons interviewed were male.

Community members were first contacted by phone in June of 2004 to explain how I obtained their name as well as to request an interview. If consent was given, I set a time and location for the interview. I conducted all of the interviews, which took place in north-central Alberta, specifically in the communities of Athabasca and Lac La Biche, as well as at the Al-Pac mill site. Throughout July and August of 2004, interviews were held in personal homes, as well as in offices, and restaurants. Interview lengths ranged from less than fifteen minutes to almost two hours. The interviews were semi-structured in nature, and began with demographic questions such as name, occupation, and personal connection to plantation forestry (e.g. neighbour to the fields, academic interest, etc.). Participants described their experiences with the Poplar Farm Program, and shared their views about the program in general. In addition, participants were asked to share their perception of the views held by other community members.

The interviews were professionally transcribed from audiotape, and the text was analysed using the qualitative analysis software QSR NVivo. The data was coded to identify major themes in the responses across 225 pages of transcripts. Key themes were identified according to a number of criteria including relevance to the research question, number of interviews in which the theme was mentioned, and emphasis. The key themes were then collapsed into broader categories.

Though the focus in this paper is on concerns expressed, almost every respondent believed the program could be a positive asset to the community by providing options for landowners who prefer a long-term tenant on their land. In many cases it was suggested this was an alternative to selling the land, and especially

appealing to farmers close to retirement whose children were not taking over the farm.

However, most participants qualified their support for the program with many concerns and calls for change in how Al-Pac dealt with landowners and how rental land was acquired. I present the three dominant concern categories, with a coinciding discussion of their possible impact on the future of this program. Some quotations have been modified slightly to make them more readable.

Findings

Farming Identity

Agriculture has been the core of Alberta rural communities since nineteenth century settlement. Many participants referred to their community as a 'farming community':

> This community is here to begin with because of agriculture and that was the first industry that came here. And it'll always be around, you know. That's why we have towns like Athabasca and Boyle and all these towns, not because of people growing poplar trees, but because of people growing cereal grains and raising cattle. It's because of the farmers.

In communities historically defined by agricultural use, farming is much more than just another land use, it is a way of life: "The cultural importance of farming has spatial and temporal dimensions. Farms are part of the cognitive landscape as well as the physical landscape" (Fitchen 1991:46; also see Salamon 1993 and Hanson 2001). Identity formation theory suggests personal identities are created through an evolving process of "configuring the relationships among childhood identifications" (Schachter 2004: 170; also see Dunk 1994) leading to an "invigorating sense of personal

sameness and historical continuity" (168). In the case of farming residents, these identities are closely tied to the objective, physical nature of the landscape (Enticott 2003), as well as the economic enterprises occurring there (Hinrichs 1998).

This 'embeddedness' of identity (Hinrichs 1998) suggests extreme changes to land use patterns in farming communities may lead to disruptions in the identity of the rural community, and, in turn, the identity of the individuals within the community. Barlow and Cocklin (2003) in their study of plantation forestry in Victoria, Australia argue that:

> Community opposition to plantation forestry extends, in some measure, from the unease created by changes in the production landscape associated with land use change, because this disrupts extant social constructions of rurality. Plantations challenge long-held beliefs as to the appropriate use of agricultural land as well as challenging ideas of what defines 'rural' (514)

A major component of that rural identity is the production of food. Though the poplars are touted as being 'just another crop', for many farmers in our study crops equal food: "[Farmers] want to grow grain, they want to grow hay...that's what feeds people, not poplar trees". Another farmer explained how he justified putting his land into trees to his neighbours: "But just as a joke, when some of the farmers around ask, 'What kind of trees are you planting?' [I say], 'Well, poplar' and when they ask 'What are they going to do with the poplar?' [I tell them] 'Some of them are edible.'". These responses mirror those associated with other types of farm 'diversification' in North America. When land management experts in the United States of America suggested that struggling dairy farmers switch to new speciality crops such as miniature-ear gourmet corn, snow peas, or kiwi fruit residents strongly resisted:

> Although some farmers claimed that such alternatives were not appropriate for them because of the characteristics of their soils or elevation, their distance from urban markets, or high start-up costs, there seem to be deeper 'cultural' or image problems in these alternatives (Fitchen 1991:31)

Fitchen (1991) suggests farmers pride themselves on providing "a basic, essential food" (32). If these farmers balked at the idea of switching to non-essential *foods*, it is not surprising the idea of replacing grain and cattle with trees is even more strongly rejected.

Many participants saw the planting of poplar as an affront to farming's past and a threat to its future. A rural community is not only defined by topography and land use, but also "marriages and sibling bonds, by ties to cousins and grandparents, and these social relationships, in turn, are anchored in the land..." (Fitchen 1991:251). This community heritage is closely linked to Wester-Herber's (2004) 'continuity' concept. An important component of place-identity involves interacting continuously and consistently with the environment, and this is especially important in multi-generational interactions such as family farms (Wester-Herber 2004:112).

As this area was historically forested, a great deal of effort was required to make the land suitable for farming. Trees were cut down and cleared away, and stumps and roots manually or mechanically removed. For many of these farmers it was their generation, or parents', or grandparents' who worked to clear the land they now farm, and by planting trees back on it they would be undoing everything they had worked for: "You know, I love the trees and that's why we live up here, but there's a place for them, and I don't want my grandfather to turn over in the grave and see all these stumps back on this good land".

Plantation forestry is controversial because this land use is inconsistent with local rural conceptions of an appropriate use of agricultural land. Generations of farmers meticulously cleared the land, and continue to clear it in order to pursue a traditional farming lifestyle. Planting of trees is seen as "a reversal, of letting the country go back to how it was before White settlement came, before the land was 'tamed' and 'improved'" (Barlow and Cocklin 2003:516). Kavanagh et al. (1999) agree with Barlow and Cocklin noting that "'land taming' was a legacy of centuries of attitudes, buttressed by religious edicts, that pressed for the subjugation of the wilderness and its conversion to civilization" (101).

The Poplar Farm Program is not only seen as a threat to farming's past, but also its future. By planting trees back onto cleared land, farmland is taken out of production for at least twenty years. In a community that defines itself by agriculture, this is a perceived threat to identity. Many participants worried about the next generation of farmers. One farmer, his youngest son in his lap, reminisced about his family's future:

> [A 20 year lease] is a generation. My [other] son's 18 wanting to get into farming, [and] that's land that he will not see in his lifetime. And then after it comes out of production, it's got to be cleaned up. It's either going to go back into trees or it's going to have to be cleaned up...roots are going to have to be picked.

Some farmers went further to say that the land is out of production "forever". "If farmers in the area have been dependent on the land for farming and cattle grazing, and this land has been changed physically....it can no longer provide the means for an everyday existence...." (Weber-Herber 2004:114). This may be. With fewer and fewer members of the younger generation taking up farming (Zimmerman

and Fetsch 1994:126), the need to re-clear the land may be disincentive enough to look for other work. Although Al-Pac is contractually obligated to 'return the land to its original state' after the lease term, almost every farmer interviewed balked at the vagueness of the terms:

> Another concern is that when they were finished with it, Al-Pac says they are going to return it to agricultural conditions. Now who's going to determine what is agricultural when you've got chunks of roots like this? For a forester, it doesn't matter, but for a fellow running it through a combine....

> The other issue is I would like to be able to know for sure exactly what state that land is going to be like [at the end of the lease]. I don't care if they use a pink disk or a polka dotted disk or laser beams. I don't care if they hire the summer students here to pick the stumps. I want the land in a condition to plant a crop the year after they're done.

Respondents expressed doubt that the employees at the mill really understood what was needed to make the land farmable again. Due to the inedible nature of trees, and the past (and future) of clearing them, it seems unlikely hybrid poplar will ever be seen as 'just another crop'.

Trust and Credibility of the Company

As alluded to in the previous set of quotations, issues of trust and the credibility of Al-Pac were widespread throughout the interviews. It was clear that Al-Pac's position in the community was a mixed one, and though the majority of participants acknowledged that its presence was an *economic* boon to the community, there were numerous concerns about the company's ownership, motives, and relationship with government. Plantation forestry cannot be directly compared to traditional agriculture because it often involves changes in ownership and control (Barlow and Cocklin 2003:504).

Al-Pac is Japanese-owned (by Mitsubishi and New-Oji), and many participants expressed concerns about a foreign company planting trees on private land in Alberta. Some suggested they would prefer it if the company was Canadian-owned, and others went further to declare, in reference to the recent controversy over Japan's refusal to accept Canadian beef after the discovery of BSE (mad cow disease): "those damn Japanese, they won't eat our beef but they'll eat poplar trees" (farmer participating in the program referring to his neighbours' opinions).

Trust of the company also manifested itself in concern over the motives behind the Poplar Farm Program. Many participants, experienced farmers themselves, questioned how Al-Pac could make money on a crop that takes 20 to 30 years to grow:

> I could never understand why [they're doing it] because I'm looking at the cost, and I really have a hard time understanding how they're going to make a profit at it with the inputs the way they are. You multiply it over 20 years and what they're going to put into that quarter section [of land] to get the returns of the poplar is just astronomical.

They question whether profits are really the company's bottom-line. Many participants mentioned that before Al-Pac gained permission to rent the land, they were pursuing purchase of land, which is currently prohibited in Alberta for a foreign-owned company. One of the prevailing suggestions is that by renting the land for such a long period of time Al-Pac is trying to gain more control:

> So they get control of this land...Are they renting land in hopes that someday they will be able to buy it? That the laws will change and then all of a sudden, you have a multi-national corporation that can now own this land in this area and start farming it after they get control? I mean, what's going on here? It's a big control thing.

One participant suggested eventually residents in the community would be merely "serfs" on the company's land, leading to a loss of local control. This fear of a 'slippery slope' may not be entirely unfounded. Tonts (2003), in his review of plantation forestry in Australia, noted that though timber companies started off by leasing parts of farms, eventually they were leasing, and subsequently buying, entire farms (176).

Barlow and Cocklin (2003) similarly found that farming residents near plantation forestry in Australia expressed concern about company influence over the nature of community discussions and town decisions. Specifically, residents of the community resented the lack of consultation, with no effort made to discuss the establishment of the tree plantations, or the impact they may have on the community. Barlow and Cocklin (2003) suggest this absence of consultation has "fuelled fears and rumours" (513) and contributed to negative attitudes towards the forestry company involved. It appears this lack of consultation is having a similar effect in the Al-Pac case.

Relationships between forestry companies and governments are controversial in Canada. Environmental groups, for example, have criticized provincial governments for subsidizing forestry companies, thereby allowing for cheaper acquisition of lumber and fibre (Cordon 2001; Hamilton 2001). Such subsidies, including low tree-cutting (stumpage) fees, relaxation of environmental regulations, and forgiven loans, are seen by critics as a key reason Canada and the United States have faced difficulties reaching an agreement over free trade of softwood lumber (Marck 2001; Nikiforuk 2002; van Kooten 2002; Warnock 2001). This issue

appeared in the interviews, with participants questioning Al-Pac's preferential treatment from the Alberta government. One concern centred on the subsidies many of the participants accused the company of receiving, and the shortage of forestry revenues returned to Canadian citizens:

> Then my question to them is: Why is the Alberta Government giving away our trees? The United States-- are they saying 'we're putting the tariffs on you because Canada's giving away trees for nothing'? That's why they're putting the tariff on us? In fact, [with Al-Pac] paying so little to cut those trees, to me, Canada is growing them for nothing.

Another political concern was the government decision to make an exception about foreign leases in Al-Pac's case: "Well I thought we had government controls on some of this stuff, you know; but because of politics, I'm presuming, all of a sudden Al-Pac was able to lease for more than 20 years". In addition, participants repeatedly mentioned the fact that Al-Pac was forgiven a loan they had received from the provincial government. One resident mentioned that Al-Pac was the "number one tax rate payer" in Athabasca County, and suggested that this could explain their ability to change the rules. This echoes the concern expressed in Barlow and Cocklin's (2003) Australian study over level of influence the forestry company had in the town. By having such a powerful presence in the community Al-Pac is able to have more influence than the average resident, and as more farmers sign up for the Poplar Farm Program this influence is expected to grow.

The level of trust local residents have in the company behind an initiative like the Poplar Farm Program is intimately connected to how the program is perceived. "The level of public trust in institutions and sources of information and how the public perceives risk have been noted to work in tandem" (Juanillo 2001:1258).

Many respondents suggested this lack of trust would prevent them from signing up for the program, or supporting it in their community. Among our interviewees these trust issues hinder acceptance of the Poplar Farm Program.

Competition with the Company

With the establishment of the Poplar Farm Program Al-Pac has put themselves in the position of a competitor with local farmers looking to rent land for grain and cattle farming. Though some employees of the company and local government refer to the program as having a benign influence on local farming, the majority of farmers mentioned the competition as a detriment to the community. Many farmers rent additional land from local people, facing intense competition with other farmers for access.

Firstly, some farmers are finding themselves in *direct* competition with Al-Pac, that is they are both interested in renting the same parcel of land. One farmer lamented his neighbours considering signing up for the Poplar Farm Program:

> All of a sudden, these guys are saying 'well (maybe) trees'. And that upsets the other farmers that are trying to rent this land in the community - all of a sudden somebody wants to rent it out to the tree guy for basically the same dollars.

Already struggling with unpredictable variables such as expanding markets, shrinking profit margins, drought and disease, farmers are now facing a powerful new competitor for leasing additional land.

Another issue is *indirect* competition for land. Al-Pac is leasing land for 'the local competitive rate', and though farmers may not be directly competing for a

certain parcel of land, just having such a powerful player in the community may lead to increased prices:

> Where does that start and stop? That's how bids work... who's setting the price first? Are we setting it? Are they setting it? So if we set it, they'll match it. So when it comes back to us, they've matched it, so we have to beat it. So it goes on and on.....

This competition is intimately connected to political issues. Although Al-Pac says they are just another player in the game, farmers question the fairness of competing against a player who has the support of the Alberta government:

> Al-Pac doesn't want me to come to their [information] meetings because I bring up this subject too much: the unfair competition. I don't feel that we are as farmers able to compete. The company is highly subsidized. It's sort of an unfair advantage. We have to compete with them as far as the price we have to pay [to] rent the land. I just don't think it's fair.

Residents question why the government is choosing to support a foreign-owned forestry company rather than local farmers, suggesting the competition may be perpetuating rather than alleviating the power inequality between local people and the industry (Juanillo 2001:1255).

However, our interviews suggest the farming community is split on this issue. Farmers who are in the position of acquiring land through rentals (grain farmers, younger farmers, 'bigger business' farmers) are very concerned about the competition. Other farmers, however, who were renting out their own land, saw the program as another option and a relief from the instability of short-term rentals and poor tenants.

Other Issues

Though a few participants mentioned environmental issues such as the genetics of the trees, the monoculture nature of plantations, and the spread of weeds, by in large environmental issues were dwarfed by the social and economic concerns expressed. Environmental issues were raised almost entirely by university-affiliated respondents, who would be considered experts in this context. Only three farmers mentioned environmental concerns, specifically the fact that the plantations are a monoculture and not a mixed woodlot like natural stands in the area, and the possibility of the hybrids cross-breeding with native poplars, leading to progeny with unknown characteristics.

Summary and Interpretation of Findings

Public perceptions of the poplar plantations starkly contrast with expert views in peer-reviewed literature. Experts focus on the environmental and productivity issues surrounding plantations, emphasizing their impact on local ecosystems and efficiency in fibre production. Members of the local public, in this case, local farmers, on the other hand, are most concerned about the impact on community identity and the rural economy.

This study supports research in place-identity that has shown the complexity of relations to land. The farmers in this study had incredibly strong connections to not only the land they personally farmed, but also the agricultural landscape in their community. This land represents the production of food, and local generations, past, present, and future. With a new, long-term, inedible crop associated with increased

competition, and changing power relationships in the community, the rural identity of these people is threatened. This gives us an excellent example of the effect of radical land use changes initiated by external forces.

Three lessons can be learned from this study of perceptions of hybrid poplar plantations that can be applied to plantations in general. Firstly, experts cannot be relied on to adequately represent the public's views. The scientific literature on plantation forestry focuses on environmental and economic costs and benefits. Though environmental issues may currently be the most vocalized concern associated with intensive forestry, it is entirely possible social issues represent more significant concerns for the local public, as appears to be the case with hybrid tree plantations. This does not reduce the significance of the environmental debate, but rather adds another layer to the management of this type of fibre production. By working with the public, decisions can be made to pre-emptively deal with social concerns, with a focus on the *local* nature of many of these concerns.

Secondly, the specific social concerns brought out in this study of hybrid poplar plantations may be just as relevant to plantations established with other types of trees. Though the methods used to select and develop the trees may differ, plantations established in different areas of the world will likely be established on land that had been previously cleared for agricultural use, as in this case. Because of this, the issues presented in this study are independent of the type of tree that is planted, and completely dependent on the fact that what is being planted is a tree and not a traditional agricultural food crop. This is especially relevant when considering the concerns over loss of farming identity as well as competition for land. In

addition, issues surrounding mistrust of the company and control may carry over to other plantation types. It is clear from these interviews that it is vital governments, industry and individuals establishing plantations are transparent about their current practices as well as their future intentions, e.g. controlling land through leasing in hopes of eventual ownership.

Finally, it is essential to include the public in the front-end of decision-making for such a controversial land use because it is a significant change in the use of the land. The public is usually consulted, or informed, or even worse 'educated', after the fact. Such "decide, announce and defend" tactics have not led to trust in other natural resource management decisions and exacerbate any negative perceptions (Beierle 1999). In order to legitimately include the public in the debate around tree plantations, decisions must be diffused through two-way discussions and authentic incorporation of concerns, leading to land use decisions that reflect democratic processes.

This study is significant because it is the first of its kind in North America. In addition, proponents of plantation forestry (e.g. Pharis 1993; Sedjo 1999) have suggested that social factors such as public support will significantly influence the success of new management schemes in forestry. It is widely acknowledged that there is a relationship between public opinions on issues and the establishment of public policies (Petry 1999; Shapiro and Jacobs 1989). This research contributes to an improved understanding of public perceptions associated with these plantations, enabling a more informed dialogue between local actors and tree plantation

proponents, who have a vested interest in emerging land use policy regulating the extent and use of such tree plantations.

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Chapter Three: Paper #2 (Survey Study)

"'My Grandfather Would Roll Over in His Grave': Family Farming and Tree Plantations on Farmland"

(Target Journal – *Rural Sociology*)

European settlement of land in North America was essentially the settlement of families (Fink 1986). Despite vast changes to how agricultural goods are produced and marketed in North America, the family farm remains as the symbolically ideal production unit in the eyes of many farmers, agricultural policy makers, and even urbanites (Pfeffer 1989). By recognizing the importance of the family farm as an iconic symbol, investigation of its influence on decision-making becomes important.

It is widely acknowledged personally cherished symbols and values can work to influence how we react to options and changes presented to us (Schoon and Te Groteenhuis 2000; Taylor 1954). In the case of the family farm, the influence of family farm values on decisions such as adoption of new farming techniques has been documented with varying results. Some have suggested farmers with the fewest ties to past generations and established ways of doing things are freer to pursue new innovations (Bennett and Kohl 1963). Others suggest a focus on the future of the family farm can actually lead to increased innovation to ensure a profitable enterprise for future generations (Carlson and Dillman 1983). Of the few studies that have considered the influence of family on adoption of farm changes, all have focused on subtle changes such as the integration of soil conservation practices, the planting of alternative varieties of traditional crops, the utilization of chemicals, or the purchase of new machinery. What has not been studied from the valuation of family farming perspective is a major change facing family farms in North America today: farmland conversion to non-traditional uses.

One proposed conversion of increasing interest across the world is the planting of trees on previously cleared farmland for fibre and timber production

(Boyle 1999; Sedjo 1999). In Canada and the United States the intensive management of tree plantations is currently a widespread practice (Adams et al. 2005; Zasada et al. 2004; Sedjo 2001), and the conversion of previously cleared farmland to tree plantations is an especially contentious manifestation of this forestry technique.

In this paper I look at the influence of valuation of family farming on support for conversion of farmland, and it is hypothesized that individuals with stronger valuation of family farming will be more resistant to converting farmland to a non-traditional use. Using the planting of trees on farmland as a general example, and Alberta-Pacific Forest Industries Inc.'s Poplar Farm Program as a specific change instrument, I model responses to land use change as a function of valuation of the family farm. Relationships between attitudes toward family farming and support for hybrid poplar plantations are described, and implications regarding the receptivity of landowners to conversion of farmland to trees in general are discussed.

Understanding Family Farming as a Set of Values

Choices in a farming business are most often simplified into economic terms. However, support for a particular farm policy program is rarely based on a single category of reasons, but rather triggered by more complex factors such as social relations with family and community, societal conceptions about appropriate farming methods and personal convictions, values, experiences, and individual character (Schoon and Te Groteenhuis 2000:19). As the number of farmers dwindles and farmland is increasingly converted for non-agricultural uses, it is especially important to understand the motivations behind farmland conversion to non-agricultural uses

(Zollinger and Krannich 2002:442). By understanding the values and opinions that underlie these choices, policy makers and social scientists can obtain a clearer picture of the reasons behind farm choices. It is essential to understand how long-held values such as those connected with the family farm translate into on-the-ground family and business decisions. This understanding will allow for more sensitivity in the area of land use policy, and may lead to compromises that reflect concern for values rather than bottom-lines.

Farming was one of the first industries in North America after European settlement. Less than one hundred years ago most rural households in the United States and Canada sustained themselves by farming with all family members, including husbands, wives, and children, contributing their labour to the economic maintenance and survival of the household (Lyson 2004:8). These farms were essentially subsistence, with the majority of the produce consumed by the immediate and extended family, and a small minority of products used for trading for other goods. In this social and economic context, all farms were 'family farms', small in scale, with all the management, capital, and labour contributed by the family. Family connections, intra- and intergenerational, were extremely important, with many of the settlers bringing their interest in and passion for farming from the 'old country'. As new generations were born, many of these values were passed down and the preservation of them was inescapably linked to familial relations. Dasgupta (2001) in his historical review of family farming in Quebec, Canada noted farming families had a great deal of control over their family members: "The strongly familialistic orientation of the rural family fused its members into an integrated organic unity with

close mutual affection and regard for each other, and enabled it to function as a relatively stable entity over generations" (Dasgupta 2001:169). Throughout the twentieth century in Canada and the United States family farming was the cornerstone of local rural economies and largely defined rural society (Smithers and Johnson 2004:192), and Walter Goldschmidt (an anthropologist with the US Department of Agriculture (USDA) in the early 1940s) "was convinced the family farm's spread over the land laid the economic base for the liberties and the democratic institutions which the United States of America counts as its greatest asset" (Vallianatos 2003:42).

Today, both family farms and rural communities in Canada are changing in response to a myriad of forces. The need to compete with an expanding worldwide market and shrinking profit margins has forced many family-run farms out of business (Lind 1995). Each year from 1941 to 1991 over 8,000 Canadian farms, most of which were family owned and operated, went out of existence (Dasgupta 2001:112), and since then over 33,000 farms have disappeared (Statistics Canada 2001c). This abandonment of farming as a "household livelihood strategy" has been termed the "agricultural transition" by Lobao and Meyer (2001:104).

It is clear that the family farm as a social and economic *entity* in North American rural communities is a declining institution, having less of an impact on rural economies as agriculture becomes increasingly commercialized and specialized in response to worldwide competition. Steven Blank in his treatise, 'The End of the American Farm?' (1999) claims the family farm has become "an expensive lifestyle that America cannot afford", "an inefficient use of resources that is becoming a hobby

that leads to bankruptcy" and "a bad investment" (22 & 25). Blank (1999) sees the family farm as a dying business, and scoffs at sociologists concerned about it as a cultural institution (25). However, the family farm as a cultural *concept* appears alive and well in the minds of rural peoples. The majority of rural communities in North America have been built upon the legacy of farm families, and this legacy is deeply ingrained within rural culture and identity.

Sociologists have referred to family farming as an important cultural symbol (Sinnema 2005; Taylor 1954) and an influential set of values (Pfeffer 1989; Fink 1986; Rohwert 1951). The family farm may not exist now or ever have existed "in the manifestation of all of the characteristics for which it is extolled" (Taylor 1954:272), and yet it is a symbol of great substance, standing for more than its physical characteristics. By functioning as a cultural symbol, the family farm becomes a sanctuary for the preservation of traditional values that may not otherwise survive in modern society. Rohwert (1951) suggests the cherishment of the family farm as a symbol and a set of values has resulted in family farming being used as a political banner for individuals and groups drawing on a common set of ideas of how reality ought to be (Pfeffer 1989:59). In lauding the family farm as the last vestige of independence and self-sufficiency (Sinnema 2005), corporations, policy makers, and farmers themselves are in turn promoting the values contained within this symbol.

Family is the central value encompassed within the family farming symbol. Fink (1986) suggests modern western social and economic systems promote a dichotomy of private and public spheres that shape our concept of family. Family becomes everything good that cannot be realized in the public sphere, a place "where

resources are shared and where people love and help each other", and this idealization gives emotional power to the family farm (Fink 1986:44). When family farming is set up as the ideal, the antithesis to all negative aspects of corporate or big business farming, the values cherished as important to 'good farming' become associated with family farming.

The pioneering dream of land ownership, still strongly held across North America, values rights to private property and responsible ownership. Marty Strange (1988) in his discussion of family farming in North America notes that valuation of land ownership is vital to the maintenance of the family farming ideal. He suggests "it is important that this [family farming] dream be widely held and that the [private ownership] system provided some reasonable prospect of [its] realization" (Strange 1988:33). The idea of owning the land one works flows directly into the concept of responsible ownership, or stewardship. Land ownership is often touted as the foundation of stewardship, where not only does a personal investment deter negligence, but it follows that the person who is the most dependent on the land for survival and the most conscious of its eccentricities will be the most conscientious manager of it (Comstock 1989:19).

An important component of stewardship is ensuring the land is taken care of for perpetuity. Intergenerational transfer of the farm goes beyond the passing down of capital assets such as farm land, buildings, and equipment. The next generation also inherits an occupation and a way of life, closely tied to familial relations (Keating 1996:61). This transfer is much more than a business transaction. Keating (1996) refers to it as a "legacy" (61) and maintains it is critical to the maintenance of

family coherence (Keating and Munro 1989:215). Closely related to Keating's 'legacy' concept is the idea of continuous management of the land. Family farming is an occupation closely connected to land and place, and Wester-Herber (2004) suggests the sowing and harvest of a *particular* parcel of land may also be essential to family farming. She uses the term "continuity concept" to describe continuous and consistent interactions with the environment over long-periods of time and suggests these interactions may be important pieces of a family farmer's identity (Wester-Herber 2004:112). When farm families worked side-by-side on the traditional family farm and the younger generation was taught the lay of the land, opportunities were created for shared dreams, satisfying communication, and intimacy (Zimmerman and Fetsch 1994:125), and this bond was and is inexplicably tied to rural identity. For people who were raised by farmers and taught practices and values that had been passed down through the generations, the values and identity connected to family farming are likely to be extremely important to their sense of self, and to their opinions of more concrete farming options and policies.

Since the traditional family farm as a social and economic entity is a diminishing enterprise, family farming as a symbol and set of values may not be directly connected to the physical attributes of the farm such as size and extent of family participation. However, this symbol can have physical ramifications when it functions to unify ideas and behaviour (Taylor 1954). Though family farming as a symbol is purely conceptual, the behaviour it guides, in the form of conversion of farmland for non-traditional uses, for example, "is as real as the land...or the economic input and output of these farms" (Taylor 1954:272).

Traditional models of farm decision-making, or support for various innovations, often neglect the interrelationships between values held by family members and the technical, economic, and ecological rationality required to make choices between various land use options (Sontag and Bubolz 1985:48). Sociologists, however, often include such values as part and parcel of the arsenal farmers use to make land use decisions on the farm, and Abd-Ella et al. (1981) suggest "any attempt to understand family farm behaviour patterns must take these [family] factors into consideration" (43). Anosike and Coughour (1990), in their study of Kentucky farmers, acknowledged that while economic theory assumes farmers are profit maximizers, goals associated with leisure, pleasure, and family are also taken into account when farmers make decisions about diversification (1). The decline in income from conventional agriculture has led farm households to adjust by seeking new sources of income through conversion, diversification, and extensification (conversion to non-agricultural uses) practices (Barlas et al. 2001:342-343), and these are areas where sociologists have examined the impact of family farm values on decision-making.

Though the importance of traditional values, especially family values, are readily acknowledged by sociologists, there is some disagreement over how these values translate to decisions on the farm. Bennett and Kohl's (1963) study of Canadian ranchers found that the most agriculturally innovative individuals were those who established their operation without any parental assistance. They suggest when a farmer is connected with the previous generation of farmers (usually the father), his or her own way of doing things is anchored in the established, traditional

methods, and thereby limited to innovation. Intragenerational connections (e.g. between siblings) may also serve to maintain traditional values because of the reinforcement of familial ideals between peers (Carlson and Dillman 1983). This preservation of values, may, as in Bennett and Kohl's (1963) study, then lead to reduced innovation.

On the other hand, a few studies have found increased valuation of family farming to have a *positive* influence on agricultural innovation adoption. Abd-Ella et al.'s (1981) study of Iowa farmers found long-term family goals to act as an incentive for adoption. Farmers that were more family goal-orientated were more likely to choose innovative farm techniques. Carlson and Dillman's (1983) study of farmers in the United States supported this finding. They discovered that farmers who were actively farming with relatives were more likely to pursue innovative soil conservation practices, the planting of alternative varieties of traditional crops, the utilization of new chemicals, or the purchase of machinery (Carlson and Dillman 1983). It was hypothesized that farmers connected to family have a more long-term perspective, and the inputs they put into the farm, both capital and physical, reflect long-term family goals.

Conversion to Non-Traditional Uses: Trees on Farmland

Trees on farmland can take many forms. Some farms in North America contain natural stands of trees, or woodlots, which can be harvested for profit or set aside for environmental, aesthetic, or recreational purposes. In addition to natural trees, since European settlement North American farmers have participated in state-

sponsored tree planting initiatives for windbreaks around fields and homesteads (Droze 1977). Also, other planting techniques such as agroforestry have been implemented by some farmers manifesting themselves in alley cropping (rows of harvestable trees planted between rows of traditional grain crops), silvopasture (trees planted amongst pasture land for shade and shelter for livestock), and riparian buffers (trees planted along waterways for environmental benefits) (Raedeke et al. 2003:64).

All of these tree-farm interactions involve trees, natural or planted, growing *alongside* the production of traditional agricultural products. However, another proposal for planting trees on farmland is the *complete replacement* of traditional crops by tree plantations. Plantation forestry involves planting and managing relatively small areas (e.g. 30 to 50 hectares) of land with fast growing trees that are selected for their growth characteristics and subject to both mechanical and chemical inputs, such as fertilizers and herbicides.

Planting trees on farmland, in its various forms, is undertaken for a number of reasons. Trees provide environmental benefits, giving habitat to wildlife and preventing soil erosion. Recreational benefits for hunting and nature walks can also be realized with tree plantings of various types. Landscape benefits occur when planted trees have aesthetic appeal. Financially, trees, depending on the species, can be harvested for Christmas trees, lumber, pulp, or chips, depending on the markets in individual locations. One traditional usage for planted trees is energy production. Wood products have been burned for centuries to provide heat and light. In the woodworking industry, waste products are often burned for additional energy, and now wood is being investigated as a widespread biomass fuel (Berndes et al. 2003)

for home use and for commercial sale. Finally, the Canadian government is currently exploring a relatively new benefit of afforestation – trees may be planted on previously cleared land for carbon sequestration to offset the effects of climate change (Smith et al. 2005).

Here is often where investigations into trees as alternative crops on farmland stop. Studies focusing on economics describe the financial benefits of converting 'marginal' farmland to trees in one form or another, and suggest financial concerns as the key constraints to adoption of these practices (e.g. van Kooten et al. 2002). Not considered are the social concerns associated with the widespread planting of trees on previously cleared farmland. As much of the farmland in North America was historically forested, a great deal of effort was required to make the land suitable for traditional agriculture. Generations of farmers meticulously cleared the land, and continue to clear it in order to pursue a traditional farming lifestyle. Planting of trees may be seen as "a reversal, of letting the country go back to how it was before White settlement came" (Barlow and Cocklin 2003:516).

In addition to considering the history of trees on farmland, it is important to consider the future effects of planting trees on farmland. By planting trees back onto cleared land, farmland is being taking out of traditional crop production. In Wester-Herber's (2004) review of the sociology of land use conflicts, she argues that "if farmers in the area have been dependent on the land for farming and cattle grazing, and this land has been changed physically....it can no longer provide the means for an everyday existence...." (114).

Some studies suggest farmers have a contentious relationship with foresters where forestry operations are adjacent to agriculture (Gourlay 1986; Raedeke et al. 2003). In Raedeke et al.'s (2003) study of farm-forestry interactions, many farmers felt that forestry workers show little regard for the land and that they tend to exploit farmers when woodlots are managed in partnership (74). Further, the farmers in Raedeke et al.'s (2003) study of agroforestry questioned the legitimacy of foresters as stewards of the land suggesting they were "robbing" or "raping" the land rather than managing it sustainably (74). Farmers who have managed their land renewably for generations often view traditional agriculture as the "correct use of land" (Le Heron and Roche 1985:216).

Recently, Alberta-Pacific Forest Industries Inc. (Al-Pac), a forestry company operating in north-eastern Alberta, has begun to implement intensive forestry practices within a 200-kilometre radius of their mill (see Figure 3.1). The mill was completed in August, 1993 and is the largest single-line kraft pulp mill in North America (Alberta-Pacific Forest Industries 2001). The mill processes poplar wood from the company's 60,000 square kilometre FMA (forest management agreement) area, which is located on Crown (public) land in northern Alberta, and harvested through an agreement with the provincial government. The mill is currently producing an average of 1,800 air-dried metric tonnes of pulp per day.

Through the 'Poplar Farm Program' the company is establishing plantations consisting of hybrid poplar trees on private, locally-owned land. The government of Alberta has stipulated that no foreign-owned company can lease private land for more than 20 years and that foreign leases are to be non-renewable. The government made

an exception in Al-Pac's case, and through a provincial order-in-council the company has been given approval to lease land for a 30 year period with the possibility of renewal. The land Al-Pac leases is restricted by soil class (the Government of Alberta has stipulated that the company cannot lease the most valuable agricultural areas for greater than 32 hectares, contiguous) as well as extent of planting (the government has restricted them to a total of 25,000 hectares). In addition, the company requires at least 20 hectares to establish a plantation. Al-Pac hopes to establish of the entire 25,000 hectares of hybrid poplar plantations over the next two decades (Alberta-Pacific Forest Industries 2002).

Lease contracts include an inflationary clause as well as a stipulation that lease rates will be adjusted over time to reflect real market land value changes. In addition, Al-Pac is fully liable for any damage to the plantations not directly caused by the landowner. Landowners also have the option of also being paid to manage the plantations on their land, which would involve weeding, disking, and/or some chemical applications (Alberta-Pacific Forest Industries 2002).

One of the major industries in the area Al-Pac is operating in is agriculture, principally growing cereal crops and raising cattle. This is the first time in this region hybrid poplar plantations have shifted from windbreaks to an alternative crop. Al-Pac's Poplar Farm Program is currently in its sixth year, and though initial exploratory interviews with key informants for the program are summarized by Neumann et al.
(2006, in press), quantitative sociological investigation around local acceptance of this land use had to date not been done.

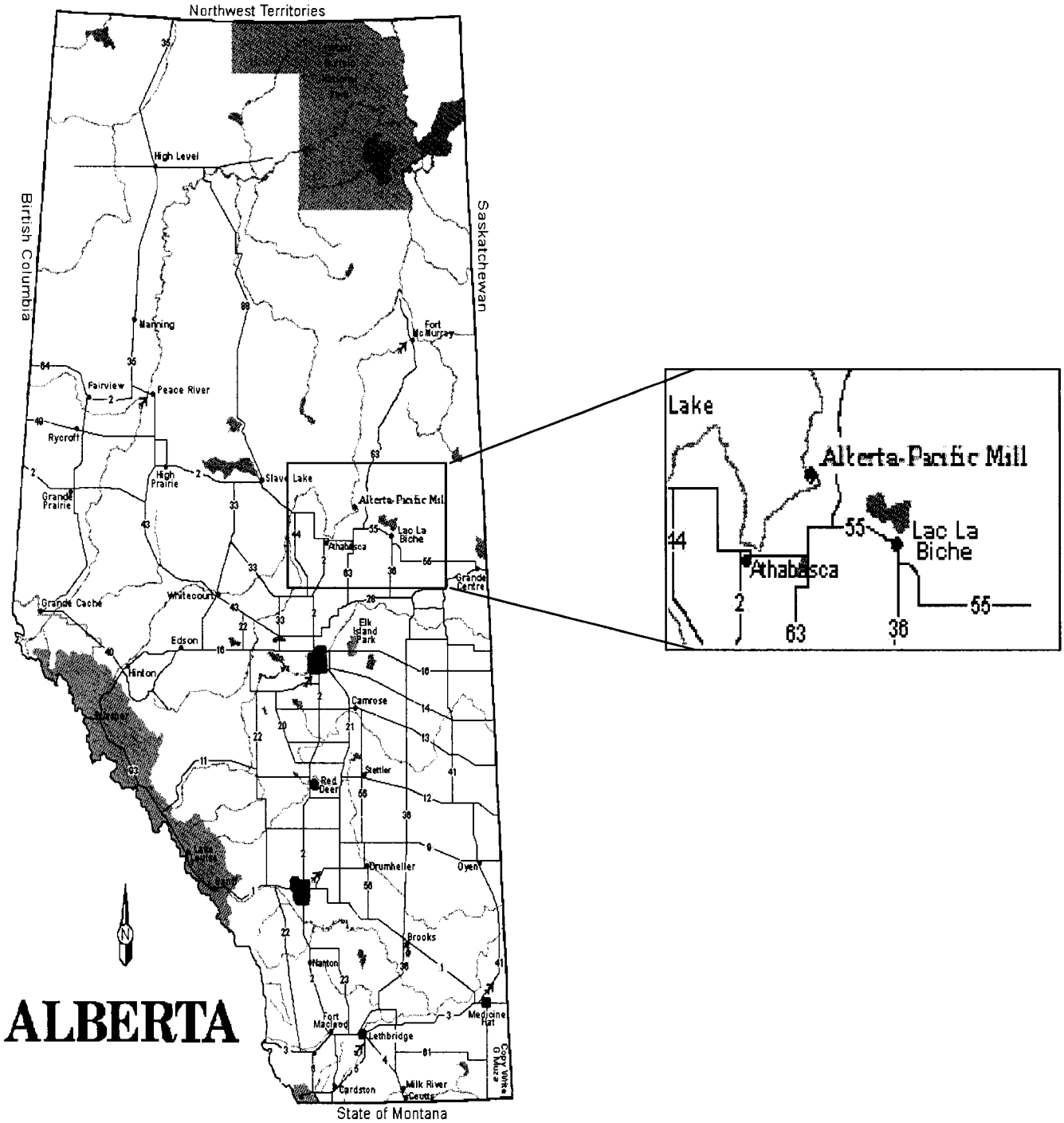

Figure 3.1 Map of Alberta with location of Al-Pac mill
(from http://www.watertonpark.com/maps/mapab.htm)

Valuation of Family Farming and Trees on Farmland: A Model of Support for a Tree Plantation Program

Based on the literature, I propose a theoretical model of support for a tree plantation program, specifically Al-Pac's Poplar Farm Program (Figure 3.2). Following the literature on family farming values and agricultural innovation adoption, and with the understanding that symbols and values can be powerful determinants of behaviour, I hypothesize high valuation of family farming will have a positive impact on resistance to trees on farmland and a negative effect on support for the program. This hypothesis follows Bennett and Kohl's (1963) findings that farmers with stronger connections to past generations were less likely to support new innovations. In addition, planting trees on farmland may be "perceived as erasing an important symbol of previous generations and of a person's family heritage" (Raedeke et al. 2002:73) because it is a move away from traditional land uses. Many communities' past and present generations laboured for years felling trees, chopping stumps, and picking roots in order to clear land for farming. The idea of planting trees on land meticulously cleared and kept clear by parents, grandparents, and great-grandparents could be seen as an affront to the sacrifices those generations made to provide for their families. For some farmers, the legacy left by past generations was farmland (Raedeke et al. 2003:73), and the legacy they are leaving their children and grandchildren is that same land. The land planted with trees may represent land that is no longer farmable, in the traditional sense, by future generations. As this change is associated with returning the land back to its original state before past and present generations worked to clear it, as well as reducing the amount of productive land

available for future generations of farmers, it is logical that farmers with strong valuation of family farming would be less likely to support a tree plantation program (Neumann et al. 2006 in press).

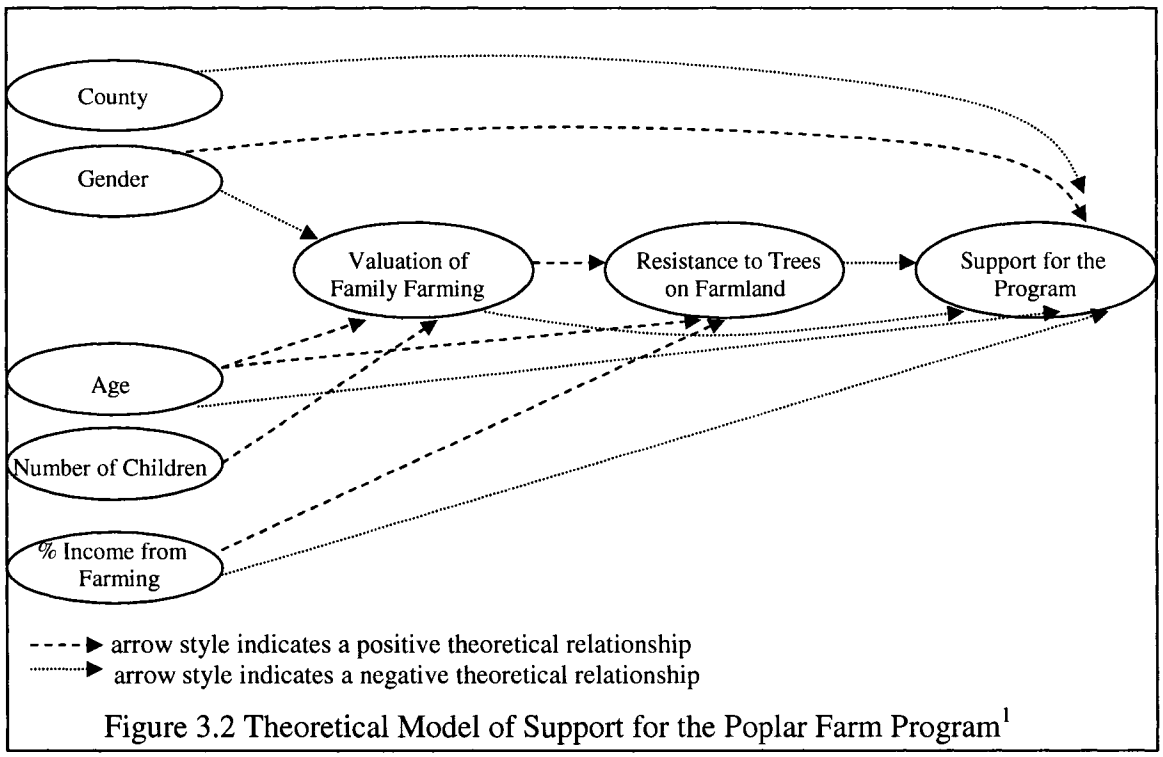

Figure 3.2 Theoretical Model of Support for the Poplar Farm Program[1]

Further, I suggest the planting of trees on farmland is a defining characteristic of Al-Pac's Poplar Farm Program, and resistance to planting trees on farmland, in general, will be a more influential determinant of support for the tree plantation program than location, age, gender, family, or financial considerations. I hypothesize resistance to trees on farmland will have a negative effect on support because of the stigma farmers associate with forestry (Raedeke et al. 2003) and the strong connections farmers have to cleared land.

[1] All of the relationships between variables not modeled here are hypothesized to have 'zero' effect. That is, there will be no significant relationship between those variables.

For the model to be accurately described, control variables must also be considered. *County* is included as a control variable because the locations of the participants may influence their responses. Westlock County is the southern county, located just north of Edmonton, the capital of the province of Alberta, and is less isolated than the northern county of Athabasca. Approximately 12 percent of the population in each county is actively engaged in farming. Over 95 percent of these farmers are operating a family farm, as defined by the Canadian government (a single, unincorporated farm) (Statistics Canada 2001a, 2001b, Agriculture and Agri-Food Canada 1999). Westlock is more productive for traditional crops and has fewer trees than Athabasca, and it is a 'bigger-business' farming community, with the total farm market value in the area estimated at $866 million spread out over 1,000 farm operators in 2001 (Statistics Canada 2001b). By comparison, Athabasca has an estimated total value of only $544 million in total farm market value, with approximately the same number of operators (Statistics Canada 2001a). Athabasca County is situated next to an expanse of public land managed for forestry, and the Al-Pac pulp mill operates within its limits. Given these differences, I hypothesize that residents of Westlock would be more supportive of the Poplar Farm Program. Athabasca residents have more experience with Al-Pac, and the establishment of the mill was controversial (Sherman 1997). This may lead to less support for the program.

It is also important to include *age* as a control variable in order to capture any generational differences. Presumably, older farmers will have stronger ties to past generations, and also be at the point of considering retirement and passing on the

farm. Both of these characteristics may lead to stronger feelings about the family farm. In addition, older people have been found to be more traditional in their opinions of farming, seeing a "moral responsibility to sustain land resources" (Walter 1997:48). This valuation of stewardship contrasts with the more managerial values embraced by younger generations (Walter 1997). Following this, it would be expected that older farmers would be more resistant to changing from traditional uses of land and less likely to support the Poplar Farm Program, especially if they have personally been involved in clearing the family land of trees in order to make it farmable.

Gender is the third control variable included in this model. Traditionally, farm women's perceptions were viewed as complementary and subordinate to their husbands (Moore 1989:75), and few studies have focused on gender differences. However, recent studies examining the role of gender in adoption of agricultural innovations, specifically those associated with sustainable practices, found women to have less involvement in selection of new practices (Meares 1997; Rogers and Vandeman 1993). In addition, Moore's (1989) study of farm families in Wisconsin found men expressed more interest in farm management and change than women. Moore (1989) also found women viewed farming as a component of family life consistently, whereas men were more likely to view farming as a business enterprise. These findings would suggest men would be more likely to view the Poplar Farm Program as an opportunity to supplement the farm business. In addition, women would likely have a stronger valuation of family farming.

It is expected that the *number of children* a farmer has will have a positive effect on the strength of family farming values. Presumably a farmer with children will have a stronger sense of family, and more inclination to viewing farming as a family matter. In addition, the concept of intergenerational transfer of the business and way of life would be more salient in a farmer considering his or her next generation.

Percent of income from farming is measured by asking farmers what percent of their total net household income came from farming. This is not a measure of the absolute size of the farm business (income), but rather a relative measure of how much of the money brought into the family comes directly from farming enterprises. This sets apart the full-time farmers from the part-time or hobby farmers. I hypothesize that farmers who rely more on farming for their income will be more resistant to planting trees on farmland and the Poplar Farm Program because they may see these practices as a threat to their business. In addition, farmers who rely more on off-farm work income may see trees as an investment on their land that requires minimal effort from them and allows them to continue pursuing other means of gaining income.

Data and Methods

This study analyzes data that were collected through a survey administered to private landowners in Alberta in February of 2005. An exhaustive cluster sample of plots, using county maps, was used to identify landowners within fifteen kilometres of the towns of Westlock and Athabasca. Phone numbers for landowners were

obtained from a national number registry (www.canada411.com), and landowners were phoned to request their participation, resulting in a total of 220 surveys being administered, 110 in each county. Questionnaires were dropped off at the landowners' homes, and picked up within three days by a team of senior undergraduate students. A total of 191 questionnaires were completed, 89 in Westlock, and 102 in Athabasca, resulting in response rates of 81% and 93%, respectively. These response rates are high, likely due to the intensive 'drop-off/pick-up' survey administration method used.

Community comparisons of participants' characteristics (age and gender) with results from Government of Canada 2001 Community Profiles (Statistics Canada 2001d) provided sufficient evidence of how representative the sample was overall (see Appendix D for details).[2]Participants providing complete information on all variables used in this analysis were included, consisting of 52% of the total number of returned questionnaires (n = 100).[3] Of the respondents included in the analysis, 30% were female and 70% were male, with an average age of 52. There is no significant difference between the counties for these variables. When asked about the amount of land they owned in the county, the average response was 627 acres, and again, there was no difference between counties. Of all the participants, 59% identified themselves as cattle farmers, and both counties had similar responses, but there was a significant difference in the number of farmers identifying themselves as grain farmers ($p < 0.001$). In Westlock, 85% of farmers were grain farmers, compared to only 68% in Athabasca. There was also a significant difference between the counties

[2] Using a t-test to test for difference, the age and gender distribution of both county samples were not statistically significant from those in the population ($p > 0.99$)

[3] For a comparison of the sample included in the model and the complete study sample see Appendix 1

for reported percentage of income from farming ($p < 0.01$). The average response in Athabasca was 41% compared to 60% in Westlock.

Table 3.1 lists all survey items included in this analysis along with their response categories. The mean for support for the Poplar Farm Program ("How do you feel about the Poplar Farm Program?") was slightly above average (range = 1 – 5, mean = 3.18), suggesting overall neutral to positive inclinations toward the program.[4] Qualitative analysis of the open-ended section of the questionnaire was employed in developing both the resistance to trees on farmland and the valuation of family farming measures. Reponses to the five open-ended sections ranged from single-word answers to numerous paragraphs. The majority of participants (92%) completed at least one of the sections, and the software program QSR NVivo (version 2) was used to code these responses with themes associated with the Poplar Farm Program. By analysing the qualitative and quantitative results in tandem, I was able to develop two measures that appeared to represent consistent concern categories in both sets of data.

[4] For a description of variables see Appendix 2

Table 3.1 Descriptive Statistics for Variables and Scales in the Model (n = 100)

Scale/Variable	Mean	Std. Dev.	Range
Support for the Poplar Farm Program*	**3.18**	**1.192**	**1 – 5**
Resistance to Trees on Farmland (alpha = 0.84)**	**3.01**	**0.958**	**1.25 – 5.00**
Land appearance	3.63	1.116	1 – 5
Land farmed traditionally	3.08	1.368	1 – 5
Cleared land to bush	3.34	1.603	1 – 5
Cleared land to native trees	3.75	1.373	1 – 5
Cleared land to hybrid trees	3.45	1.424	1 – 5
Cleared land to GM trees	3.02	1.392	1 – 5
Tree plantations on farmland	2.77	1.575	1 – 5
Good farming and food production	4.14	0.943	1 – 5
Valuation of Family Farming (alpha = 0.83)**	**3.57**	**0.896**	**1.14 – 4.86**
Responsibility to keep land in family	0.72	0.451	0 – 1
Importance of land inheritance	3.85	1.298	1 – 5
Land is a family heritage	3.85	1.140	1 – 5
Importance of family ownership of land	4.35	0.999	1 – 5
Importance of family farming land	3.35	1.473	1 – 5
Importance of next generation farming land	3.16	1.369	1 – 5
Poplar Farm Program threat to family farm	2.98	1.531	1 – 5
County	**0.53**	**0.502**	**0 – 1**
Gender (M=1, F=0)	**0.70**	**0.461**	**0 – 1**
Age[5]	**52.34**	**13.272**	**29 – 85**
Number of Children	**2.98**	**1.385**	**0 – 7**
Percent of Income from Farming	**50.00**	**39.850**	**0 – 100**

* For a description of variables see Appendix 2

** Cronbach's Alpha

In the open-ended responses trees were mentioned as either a preferred land use on farmland *or* a detriment to the landscape by 58% of the respondents, and when reliability analysis was employed, it was clear many of the quantitative items were also measuring this concept. Resistance to trees on farmland was measured using a scale composed of eight items from the questionnaire designed to measure responses to the planting of a variety of tree types on farmland as well as general feelings about changes to the appearance and function of farmland.

[5] Age was also investigated as a categorical variable to determine generational effects, specifically retirement effects. As the younger cohort of farmers (18 – 30 years) was underrepresented in this sample, generational effects were inconclusive. However, it appears retired farmers (> 65 years) have higher valuation of family farm, and increased resistance to trees on farmland as compared to middle-aged farmers (31 – 49 years) and older farmers (50 – 64 years), respectively.

Family farming was also a salient theme in the open-ended sections of the questionnaire. Over 70% of the respondents to the open-ended sections mentioned the program as either an asset to family farming in the form of an alternative, or a hindrance to family farming. Upon analysis of the items in the questionnaire it became clear this concept was also salient within the multiple-choice section. Valuation of family farming is measured using a scale made up seven items from the questionnaire designed to measure individual valuation of inheritance, continuity (intergenerational farming), family ownership, as well as overall salience of family farming as a value.

The data can be further described by examining correlation coefficients. The coefficients between the variables generally are consistent with my hypotheses (Table 3.2). Resistance to trees on farmland is more highly related to support for the Poplar Farm Program than is valuation of family farm, though both are significant and are negatively related. Valuation of family farming and resistance to trees on farmland are positively related, as are number of children and valuation of family farming. It should be noted that high correlations among variables do not necessarily mean that they are measuring the same concept. It is possible for two variables to be highly correlated (e.g. in the case of support for the Poplar Farm Program and resistance to trees on farmland, $r = -0.692$), even though they are measuring different concepts. As the open-ended section of the questionnaire and qualitative analysis were used to develop these indices, I am confident that though resistance to trees on farmland is highly inversely related to support for the Poplar Farm Program, these two variables are not measuring the same thing. Other perceptions of the program including

environmental concerns, mistrust of the company, and concerns about the program's impact on farming were in fact more salient in the open-ended sections than direct references to trees on farmland. It is clear from the qualitative analysis that support for the program is complex and multi-faceted. In order to ensure multicolinearity is not a concern in this case, regression equations were examined for adverse effects when these variables were added (i.e. extreme changes to βs or an increase in standard error).

Table 3.2 Correlations Between Variables Used in the Model

	Program Support	Resistance to Trees on Farmland	Family Farming	County	Age	Gender	# of Children	% Farm Income
Program Support	-							
Resistance to Trees on Farmland	-0.692**	-						
Family Farming	-0.303**	0.531**	-					
County	-0.127	0.141	0.048	-				
Age	-0.052	0.220*	0.135	0.094	-			
Gender	0.007	0.054	0.092	-0.004	0.083	-		
# of Children	-0.157	0.252*	0.314**	0.161	0.263*	0.022	-	
% Farm Income	-0.156	0.178	0.216*	-0.248*	0.037	0.165	0.125	-

* correlation coefficient significant at $p < 0.01$
** correlation coefficient significant at $p < 0.001$

Findings

A path model was used to examine the empirical validity of the expected relationships (Figure 3.2). The effects were examined using ordinary-least squares (OLS) regression analysis (SPSS for Windows, version 11.5). The model begins with the five exogenous, or control, variables (county, age, gender, number of children, and percentage of income from farming) and their influence on valuation of family farming which, in turn, affects resistance to trees on farmland, and, subsequently, support for the Poplar Farm Program (Table 3.3).

Table 3.3 Standardized Path Coefficients (β) and R^2 for Predicted Variables

	β Values for Predicted Variables		
Predictor Variables	Family Farming	Resistance to Trees on Farmland	Program Support
County	0.046	0.125	-0.051
Age	0.048	0.132	0.106
Gender	0.052	-0.018	0.041
# of Children	0.270*	0.036	-0.011
Farm Income	0.183	0.100	-0.066
Family Farming		0.476**	0.095
Resistance to Trees on Farmland			-0.747**
R^2	14%	33%	50%

* path coefficient significant at $p < 0.01$
** path coefficient significant at $p < 0.001$

The overall model fits the data well ($p < 0.001$). Each of the equations has one variable with a significant coefficient. Beginning with the control variables, the standardized coefficients show a positive effect of total number of children in the family on valuation of family farming ($\beta = 0.270$). Valuation of family farming, in turn, has a significant predicting effect on resistance to trees on farmland. As expected, this effect is positive ($\beta = 0.476$), suggesting higher valuation of family farming contributes to increased resistance to planting trees on farmland. For the final stage of the model support for the Poplar Farm Program is predicted, and the model I accounts for 50% of the variance. The significant predictor in this equation is resistance to trees on farmland, and, as hypothesized, it is a negative effect ($\beta = -0.747$). This suggests increased resistance to trees on farmland has a dampening effect on support for the Poplar Farm Program. Figure 3.3 models these direct effects.

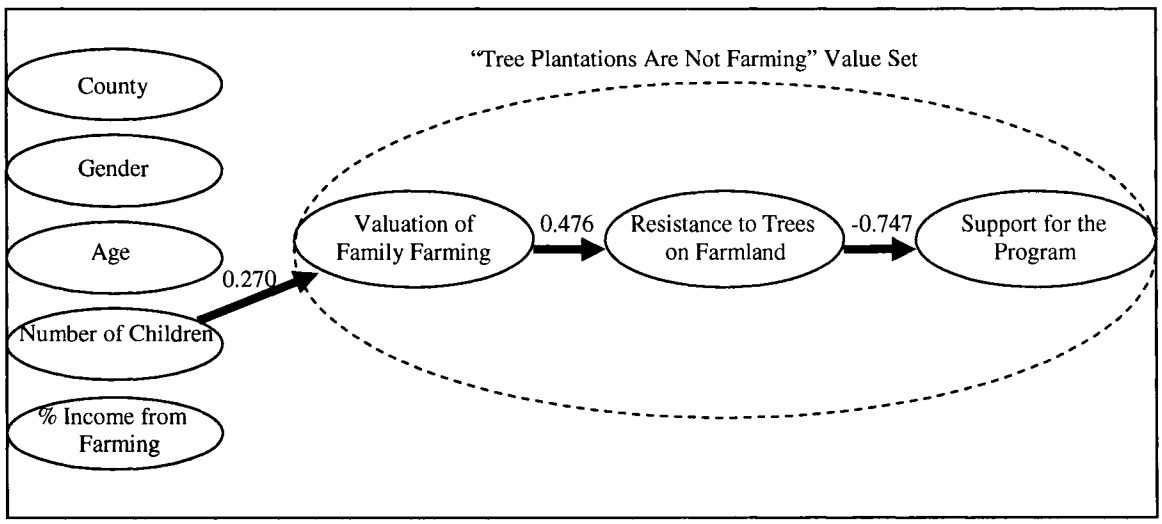

Figure 3.3 Model of Significant Direct Effect Path Coefficients (β-values)

Due to the high correlations between support for the Poplar Farm Program and the two intervening variables (valuation of family farming and resistance to trees on

farmland) (see Table 3.2), it is important to examine the results for signs of multicolinearity. I examined the changes in the equations as the highly correlated variables were added, and there did not appear to be any extreme alteration to the coefficients or the standard error estimates. However, the three highly correlated variables may be considered a value set ('tree plantations are not farming') as they are closely related (see Figure 3.3).

In order to test the strength of this model, a regression excluding the intervening variables (valuation of family farming and resistance to trees on farmland) was performed. When support for the Poplar Farm Program was predicted using the control variables only, the R^2 dropped to 7%, and the equation was not significant ($p = 0.253$). The model as presented in this scenario appears to be parsimonious.

Discussion so far has focused on the direct effects on each of the predicted variables. In addition to estimating the direct effects of the variables on each other, it is possible to calculate the indirect and total effects of each determinant on support for the Poplar Farm Program. Measures of indirect and total effects give additional details on the specific patterning of modeled relationships (Ryan et al. 2005). An indirect effect is the effect the variable has on the predicted variable *via* another variable, that is, the product of the direct effect of the determinant on the intervening variable by the direct effect of the intervening variable on the predicted variable (Lait and Wallace 2002:415). The total effect represents the sum of the direct and indirect effects of each determinant on the predicted variable. When only direct effects are taken into account, trees on farmland is the only variable appearing to have a

substantial effect on support for the Poplar Farm Program. However, when valuation of family farming and/or trees on farmland are considered as intervening or mediating variables, indirect effects are accounted for and total effects of the control variables are estimated (Table 3.4). The intervening variables can act on their own or jointly. When they are acting jointly, valuation of family farming would be an intervening variable for resistance to trees on farmland which in turn would be an intervening variable for support for the Poplar Farm Program. Significance tests are not available for indirect and total effects because the indirect and total effects are not estimated by the statistical package used (i.e. SPSS). However, for this analysis I consider βs of greater than 0.05 as substantively important.

Table 3.4 Direct, Indirect, and Total Effects (Standardized βs) of Variables on Support for the Poplar Farm Program

Variable	Direct	Indirect *via* Family Farming	Indirect *via* Resistance to Trees on Farmland	Indirect *via* Resistance to Trees on Farmland & Family Farming	Total
County	-0.051	0.004	-0.093	-0.002	-0.142
Age	0.106	0.004	-0.099	-0.002	0.009
Gender	0.041	0.004	0.013	0.000	0.058
Number of Children	-0.011	0.026	-0.027	-0.003	-0.015
% of Income from Farming	-0.066	0.017	-0.075	-0.007	-0.130
Valuation of Family Farming	0.095		-0.356		-0.261
Resistance to Trees on Farmland	-0.747				-0.747

County's effect on support for the Poplar Farm Program changes substantially when indirect effects are accounted for (total effect β = -0.051 + 0.046*0.095 +

0.125*-0.747 + 0.046*0.476*0.125*-0.747 = -0.142). The total effect of county on support for the program is close to triple the direct effect of county on support. This suggests valuation of family farming and resistance to trees on farmland are important intervening variables in this model. In addition, this finding supports my hypothesis which stated that residents of Westlock County (coded 0) would be more supportive of the program than residents of Athabasca County. Gender's effect on support increased slightly when total effects were calculated (total effect $\beta = 0.041 +$ 0.052*0.095 + -0.018 *-0.747 + 0.052*0.476*-0.018*-0.747 = 0.058). This supports my hypothesis which suggested men (coded 1) would be more supportive of the program. Percentage of income from farming also has a stronger effect on support when the total effect is calculated (total effect $\beta = -0.066 + 0.183*0.095 + 0.100*$ -0.747 + 0.183*0.476*0.100*-0.747 = -0.130). This is as I predicted. Part-time farmers support the program more than full-time farmers. Resistance to trees on farmland is an important intervening variable between valuation of the family farm and support for the Poplar Farm Program. Valuation's total effect is almost triple its direct effect (total effect $\beta = 0.095 + 0.476*-0.747 = -0.261$), and the signs are reversed. This suggests when valuation of family farming is considered a separate effect, farmers with higher valuation of the family farm are more in support of the program. However, when valuation of family farming's effect is mediated by resistance to trees, farmers with higher valuation of the family farm are less supportive of the program.

Summary and Interpretation of Findings

In this study I examined the effect of valuation of family farming on opinions of farmland conversion to non-traditional uses, specifically the establishment of tree plantations. This is an especially timely study as tree plantations are becoming more widespread in Canada and the United States, and establishment on previously cleared farmland is a commonly proposed technique (Adams et al. 2005; Zasada et al. 2004; Sedjo 2001). I began with a testable theoretical model of an internal value (valuation of family farming) and an external opinion (resistance to trees on farmland) that were hypothesized to influence support for the tree plantation program.

Number of children was the strongest predictor of valuation of family farming. Size of family had a positive effect on valuation, and this supports the idea that farmers with more children would likely have stronger reported feelings about the family farm. Feelings about family heritage and intergenerational transfer are likely to be more salient in farmers who have children of their own (Keating and Munro 1989). However, as the R^2 value of this equation was relatively low (14%), it is clear the structure behind valuation of family farming is complex and in need of more study. Place identity (Wester-Herber 2004), religion (Miller and Luloff 1981), and cultural background (Salamon 1985) are only a few of the social characteristics that may be determinants of valuation of family farming. Both quantitative and qualitative sociological analysis of this concept would contribute a great deal to the family farming literature, perhaps shedding light on the richness of land use controversies in agriculture areas.

Valuation of family farming is the strongest determinant of resistance to trees on farmland, suggesting it is a more important predictor than any of the control variables included in the model. It is clear an increased valuation of the family farm leads to increased resistance to trees on farmland. This is consistent with previous research showing strong intergenerational ties to the clearing and maintenance of farmland. Following Wester-Herber's (2004) continuity concept, farmers who see intergenerational transfer and intergenerational farming as important would likely see planting trees on previously farmed land as a break in that tradition.

I found the county of residence had some influence on support for the Poplar Farm Program. Specifically, residents of Westlock were more supportive of the program when all other variables were controlled for. This finding was as predicted, and suggests, perhaps, the political relationship and contentious history concerning the establishment of the Al-Pac mill in Athabasca County is affecting support in a detrimental way. The effect of gender on support, though small (total effect β = 0.058), is notable, and supports what was predicted based on literature. Several studies have shown men having a higher interest in alternative agriculture (Meares 1997; Rogers and Vandeman 1993; Moore 1989), and in this study men appear to be more supportive of the Poplar Farm Program. As expected, percent of income from farming had a negative effect on support, suggesting farmers with less of their income from farming are more supportive of the program. Perhaps these farmers see the program as an opportunity to gain some income from their land while maintaining their off-farm work. In addition, some of these farmers may be of retirement age, receiving the majority of their income from pensions and savings, and the Poplar

Farm Program is seen as a hands-off way to manage the land. Valuation of family farming was also a strong negative determinant of support for the Poplar Farm Program when total effects are taken into account. It is clear when valuation is mediated by resistance to trees on farmland, a farmer's beliefs in the family farm can have a strong dampening effect on his or her support.

Resistance to trees on farmland is the strongest determinant of support for the Poplar Farm Program, two to three times more influential than any of the other effects when total effects are considered. This substantiates the suggestion that farmers who are resistant to the general idea of having trees on farmland would be less likely to support the Poplar Farm Program. It is important to consider the strength of relationship here. Though many land use decision-making models are based solely on economic factors, it is clear from these results that a general aversion to trees on farmland based on concerns about changes in appearance, non-traditional use, and a non-food crop, is the strongest determinant of support for the program, above income. It is important to understand this concept, as policies from government and programs from industry often focus on rental fees and subsidies as the only incentives for land use change. By understanding the opinions underlying decreased support, decision-makers can make more informed choices about the appropriateness of such a program. Future studies should attempt to capture more of the opinions determining support for the program, such as collective notions of what constitutes farming and level of control over land use decisions.

Farming in North America has changed and continues to change in response to increased competition and global markets, but it appears at least one of the values

connected to this way of life remains the same. Family farms as economic entities are of decreasing importance to rural economies, and yet this study has shown family farming as a rural symbol and set of values still impacts farmers' opinions about programs and policies.

Another important finding in this study is the strength of the association between resistance to trees on farmland and support for a tree plantation program. It is clear resistance to the *type* of land use change is an important predictor of a program such as this, and as the number of farmers dwindles and farmland is increasingly converted to non-agricultural uses, it is important to understand the motivations behind farmland conversion to non-agricultural uses (Zollinger and Krannich 2002:442). This will allow for more sensitivity in the area of land use policy and may lead to compromises that reflect concern for values rather than economic benefits alone.

Increased knowledge about the interrelationships between farming values and practices is necessary in order to "develop public policy, educational programs, appropriate extension activities and substantive theory directed to creating viable small farm systems and enhancing the quality of life in rural communities" (Sontag and Bubolz 1985:49). These connections deserve further study given the clear associations found between internal personal frame of reference and individuals' attitudes. Future studies of farming practices and policies would be enhanced by research into the impact of farming values on opinions for and against farming options, especially those options that are not easily reversed, such as putting agricultural land back into trees.

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Appendix 1 – Comparison of Model Sample and Study Sample

	Model Sample (n = 100)			Study Sample (total n = 191)			
Scale/Variable	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range	n
Support for the Poplar Farm Program	3.18	1.192	1 – 5	3.20	1.139	1 – 5	189
Resistance to Trees on Farmland	3.01	0.958	1.25 – 5.00	3.08	0.970	1.25 – 5.00	159
Valuation of Family Farming	3.57	0.896	1.14 – 4.86	3.51	0.967	1.14 – 4.86	141
County	0.53	0.502	0 – 1	0.53	0.500	0 – 1	191
Gender	0.70	0.461	0 – 1	0.68	0.467	0 – 1	188
Age	52.34	13.272	29 – 85	55.55	13.838	26 – 89	184
Number of Children	2.98	1.385	0 – 7	2.79	1.502	0 – 9	181
Percent of Income from Farming	50.00	39.850	0 – 100	43.98	40.939	0 – 100	137

The model was ran with income (the variable with the smallest n) deleted. The patterns as described in this paper remained consistent.

Appendix 2 – Description of Variables

'Support for the Poplar Farm Program' "How do you feel about the Poplar Farm Program?": 1 = 'very negative' to 5 = 'very positive'

Resistance to Trees on Farmland Measure

'Land Appearance' "(My) land stays the same in appearance": 1 = 'not at all important' to 5 = 'extremely important'

'Land Farmed Traditionally' "(My) land is farmed in a traditional way": 1 = 'not at all important' to 5 = 'extremely important'

'Cleared Land to Bush' "When thinking about previously cleared farmland in your county, in YOUR opinion, how acceptable are the following uses? - let it go back to bush": 1 = 'completely unacceptable' to 5 = 'completely acceptable' (reverse coded)

'Cleared Land to Native Trees' "When thinking about previously cleared farmland in your county, in YOUR opinion, how acceptable are the following uses? – grow native trees for pulp and paper": 1 = 'completely unacceptable' to 5 = 'completely acceptable' (reverse coded)

'Cleared Hybrid Trees' "When thinking about previously cleared farmland in your county, in YOUR opinion, how acceptable are the following uses? – grow hybrid trees for pulp and paper": 1 = 'completely unacceptable' to 5 = 'completely acceptable' (reverse coded)

'Cleared Land to GM Trees' "When thinking about previously cleared farmland in your county, in YOUR opinion, how acceptable are the following uses? – grow genetically modified trees (GMOs) for pulp and paper": 1 = 'completely unacceptable' to 5 = 'completely acceptable' (reverse coded)

'Tree Plantations on Farmland' "When thinking about tree plantations, how concerned are you about growing trees on farmland?" 1 = 'not at all concerned' to 5 = 'very concerned'

'Good Farming and Food Production' "In YOUR opinion, how important are the following to good farming? – production of food": 1 = 'not at all important' to 5 = 'extremely important'

Valuation of Family Farming Measure

'Responsibility to Keep Land in Family' "Do you feel a responsibility to keep (your) land in the family?": 1 = 'yes'; 0 = 'no' (recoded to 4 and 2, respectively)

'Importance of Land Inheritance' "How important to you personally are the following characteristics of your land? – the land is inherited by your family": 1 = 'not at all important' to 5 = 'extremely important'

'Land is a Family Heritage' "How do you feel about your land? – my land is a family heritage": 1 = 'strongly disagree'; 2 = 'disagree'; 3 = 'neutral'; 4 = 'agree'; 5 = 'strongly agree'

'Importance of Family Ownership of Land' "How important to you personally are the following characteristics of your land? – the land is owned by your family": 1 = 'not at all important' to 5 = 'extremely important'

'Importance of Family Farming Land' "How important to you personally are the following characteristics of your land? – the land is farmed by your family": 1 = 'not at all important' to 5 = 'extremely important'

'Importance of Next Generation Farming Land' "How important to you personally are the following characteristics of your land? – the land is farmed by the next generation": 1 = 'not at all important' to 5 = 'extremely important'

'Poplar Farm Program Threat to the Family Farm' "When thinking about the Poplar Farm Program, how strongly do you disagree or agree with the following statements? – it is a threat to the family farm": 1 = 'strongly disagree'; 2 = 'disagree'; 3 = 'neutral'; 4 = 'agree'; 5 = 'strongly agree'

'County' County of residence: 1 = Athabasca; 0 = Westlock

'Gender' "Sex": 1 = male; 0 = female

'Age' "What year were you born?": open-ended; converted to age using 2005 (year survey administered) as reference

'Number of Children' "How many children do you have? – living at home – living away from home": open-ended responses added together

'Percent of Income From Farming' "Approximately what percentage of (your total net household income before taxes in 2003) is from farming?": open-ended

Chapter Four: Conclusions

The work presented in this thesis employed mixed-methods techniques to explore public perceptions of tree plantations on farmland. The objectives of this study were to 1) identify key concerns associated with the establishment of tree plantations on farmland and the Poplar Farm Program at Alberta-Pacific Forest Industries Inc.; 2) to examine the role traditional farming values play in predicting responses to trees on farmland and the Poplar Farm Program; and 3) to demonstrate the complexity of perceptions of land use change. All three objectives were achieved by employing both key informant interviews and a landowner survey. The combination of qualitative and quantitative techniques also demonstrated an effective method to examine perceptions of a program or an alternative land use change previously unexamined.

An important component of both democratic decision-making and socially responsible forest management is both the acknowledgement and incorporation of public values in land use development, particularly in areas were people have long-standing ties to the land. This research not only revealed perceptions of Al-Pac's Poplar Farm Program, but it also revealed information about the use of trees as an alternative crop in general. In addition, the structure behind support for or against the program was uncovered, including personal demographics and valuation of family farming. These findings can help managers in the industry and government decision-makers gain a richer understanding of the public's concern over land use change in an agriculture community, allowing for more sensitive decision-making, and possibly a reassessment of priorities and incentives for change. The summary of findings

examines the practical and theoretical findings that have become apparent as a result of this study. Suggestions for future research and final remarks will follow this summary.

Summary of Findings

This study supports research in place-identity that has shown the complexity of relations to land. The farmers in this study had incredibly strong connections to not only the land they personally farmed, but also the agricultural landscape in their community. This land represents production of food, and local generations, past, present, and future. Changes in use of farmland, be it through the planting of trees, conversion to acreage housing, or expansion of towns or cities, impacts local peoples in deep and complex ways. In this study I found strongly held values may be connected to resistance to land conversion. Specifically, tree plantations, a new, long-term, inedible crop associated with increased competition for land rentals, and changing power relationships in the community, appears to threaten the rural identity of local people. The value of family farming is strongly associated with resistance to trees on farmland, and through this resistance, is a strong predictor of decreased support for the Poplar Farm Program.

It is important to note the most important predictor of decreased support for the program identified in the survey is resistance to trees on farmland, over and above other concerns raised in the interview stage of this study such as mistrust of the company, competition for land, and management of the program. It is essential to consider the strength of this relationship. Though many land use decision-making

models are based solely on economic factors, the findings from this study clearly show a general aversion to trees on farmland based on concerns about changes in appearance, non-traditional use, and production of a non-food crop, is the strongest determinant of support for the program, above income.

The strongest predictor of this resistance to trees on farmland in the survey study was valuation of family farming. Increased valuation of the family farm was strongly associated with increased resistance to trees on farmland. These findings are consistent with the interview themes connected with concern about the Poplar Farm Program. Specifically, farmers spoke about the program as an insult to past generations who worked to clear the land and a threat to future generations of farmers because land is taken out of traditional production. These themes found in the qualitative analysis of the interviews are closely related to the valuation of family farming measure used in the survey path analysis model.

However, I unearthed two key concern themes in the interview study that did not resonate in the survey study. Both concern over competition for land rentals and a lack of trust in the company were mentioned by many interview participants. By contrast, in the survey study, resistance to trees on farmland and valuation of family farming explained over 50% of the variation in support for the Poplar Farm Program. This leaves little room for other predictors. There are two possible explanations for this discrepancy. Firstly, the survey instrument may be a coarser measure of perceptions than the interviews. Perhaps the semi-structured nature of interviews captured more of the nuances associated with perceptions of the Poplar Farm Program, whereas the survey was limited by the predominantly closed-response

format of the questionnaire. On the other hand, the interviews may represent the surface concerns, those most easily expressed, or perceived as most socially acceptable. Perhaps an inherent aversion to trees on farmland is the most significant predictor of decreased support for the program, but participants are unconscious of it or have difficulty expressing it verbally. This is an interesting finding, as it sheds light on the social acceptability of different types of rationality, and potentially affects how farmers frame their support or opposition to new land uses. The farmers' opposition to the Poplar Farm Program based on inherent emotions about clearing the land and keeping it cleared for future generations *is* a type of rationality, but it is not in step with today's prevailing objective-technical rationality. Farmers are men, generally, who are managing millions of dollars in land and capital, working with complex combinations of seed and chemical, and constantly battling to have their interests addressed by government and other decision-makers in a time when big business dominates and efficiency is paramount. These are not people who can afford to appear weak or irrational. Perhaps by framing their concerns about the Poplar Farm Program in economic ('it's not enough money'), technical ('those guys don't know what they're doing with the land'), or political ('I just don't trust Al-Pac') terms, these farmers are simply aligning themselves with the acceptable rationality of the day.

Future Areas for Research

This study has shed light on numerous areas in need of further research. Firstly, lessons from this study of perceptions of Al-Pac's hybrid poplar plantations

can be applied to tree plantations in general. As previously noted, this is the first study of social perceptions of tree plantations in North America. The interview study revealed the discrepancies between the public's perceptions of this land use and experts' (including forestry academics, industry and government decision-makers) perspectives. Specifically, I contrasted the expert emphasis on economic and environmental impacts with the saliency of social issues such as rural identity and trust in the public's consciousness. The majority of land use decision-making surrounding tree plantations is made based on experts' perspectives, with the assumption that they adequately represent concerns of local peoples. More research into public perceptions of planting trees on farmland in other contexts would also be beneficial. By working with the public, decisions can be made to pre-emptively address social concerns, with a focus on the *local* nature of many of these concerns.

Another important finding in this study is the strength of the association between resistance to trees on farmland and support for the Poplar Farm Program. It is clear resistance to the *type* of land use change is an important predictor of support for programs promoting the establishment of alternative farmland crops. As the number of farmers dwindles and farmland is increasingly converted to non-agricultural uses, it will be important for promoters of such a program to understand values farmers attach to different non-agricultural uses of land. This will allow for more sensitivity in the area of land use policy and may lead to compromises that reflect concern for values rather than economic benefits alone. As "the development of appropriate and effective agricultural policy presupposes an understanding of core beliefs and values" (Abaidoo and Dickinson 2002:114), new agricultural policies

would be enhanced by research into the impact of farming values on opinions for and against these options. One set of values that has been readily implemented into agricultural policy is environmental values. Since Beus and Dunlap's (1990) pivotal article on agricultural environmental paradigms, environmental beliefs of farmers, rural peoples, and even urban dwellers have been acknowledged as important in the development of government agricultural strategies (Abaidoo and Dickinson 2002). Proponents of environmental policies in agriculture claim regulations are necessary because these values are external to the market and are not captured by purely economic means (Hall et al. 2004). The same can be said for social values such as rural identity and family farming. These values are not adequately captured by markets alone, and may require political intervention to ensure they are supported.

However, I question the feasibility of developing an agricultural policy designed to directly protect the type of social values explored in this study. This study has shown that changes to the *landscape*, not just a farmer's own piece of land, can have an impact on rural identity. Granted, environmental policies, for example, are designed to protect common property (e.g. streams, groundwater) from harm, but could a policy be developed to protect common social property, rural identity and traditional farming values, from harm as well? Another finding not discussed here is the reluctance many of the farmers expressed towards the regulation of changes on private land. In this thesis I have reviewed the importance of land ownership, and the protection of the *rights* to that land appears to be equally important. I question whether farmers, even those vehemently opposed to the Poplar Farm Program, would support a government policy designed to regulate land use change on private land.

However, this study has shown that when local peoples are by-passed in the decision-making process, specifically the creation of a policy exception, conflicts may arise, leading to negative impacts on local values and identities. So, perhaps the best way to protect social values in this context would be to include community members in the decision-making process at all levels so local values are taken into account when policies, and policy exceptions, are generated.

In addition, as the federal government of Canada recently undertook a national afforestation initiative to investigate plantations (Forest 2020, see Smith et al. 2005), local concerns as presented here should be taken into account at the national level. Even with national scope, afforestation could be pursued on a smaller-scale locally in order to reduce social impacts. For example, the expansion of field and stream buffers, as opposed to large-scale tree plantations, would allow for sequestration benefits, and would not involve the complete conversion of cleared land to trees. This would minimize local impacts. In addition, local involvement in this program would also reduce any possible negative impacts, and may unearth creative ways to sequester carbon while protecting rural values.

This study may also be helpful to Al-Pac and other companies considering the development of a similar program. My research has shown that the strongest determinant of support for the program is feelings about planting trees on farmland. In addition, farmers in the area are highly concerned about the impact of the program on rural identity. One way these companies could improve how they, and the programs they operate, are received in the community is through sensitivity when actively recruiting farmers and fielding concerns. Though farmers' concerns about

the program may appear irrational, employees at the company could acknowledge that they themselves are working from a particular frame of reference, one that is largely based on fibre procurement and economic efficiency. Though the farmers may be framing their arguments in these terms, they have a great deal more at stake in this situation that is not easily verbalized.

In addition, some of the concerns associated with the planting of trees centred on the reclamation of the land once harvest was completed. Concerns about the loss of productive farmland would likely be assuaged by more detailed descriptions of Al-Pac's reclamation plans, especially if those plans included guarantees to return the land to the specifications of the landowner and to the state the land was in before planting. Al-Pac's program, and others like it, will also likely grow in popularity as younger generations take over the farms, and what is considered appropriate farming practices evolves. As more farmers seek profitable off-farm work, the Poplar Farm Program and others like it may be viewed as an opportunity to maintain the family 'legacy' without having to actively manage the land. In addition, as many respondents saw the planting of trees as an environmental benefit, increased saliency of the environment in the public's consciousness, specifically concerns about soil erosion, loss of wildlife habitat, and climate change, may encourage landowners to sign up for the program.

Finally, though there is a great deal of sociological research on the *small scale* farmer, little research has been conducted in the area of *family* farming values, specifically. The valuation of family farming is a complex concept in need of more study. It would be especially interesting to investigate the effects of it on other

current opinions and choices farmers are facing such as intensification of operations, rental of land, sale of land, and government subsidies. In addition, the structure behind this concept is likely much more complex than has been found in this study. Place identity (Wester-Herber 2004), religion (Miller and Luloff 1981), and cultural background (Salamon 1985) are only a few of the social characteristics that may be determinants of valuation of family farming. Both quantitative and qualitative sociological analysis of this concept would contribute a great deal to the family farming literature, perhaps shedding light on the richness of land use controversies in agriculture areas.

Concluding Remarks

Both agriculture and forestry industries are facing a time of transition. Tree plantations on previously cleared farmland is one of the proposals experts have made to improve the effectiveness of both industries, but this study has shown perceptions of local peoples are both mixed and complex.

Concerns, centring around rural identity, competition, trust, and overall resistance to planting trees on farmland, go far beyond financial incentives for land conversion. It is clear farming values are at stake. In order to truly participate in socially responsible forestry practices and democratic land management, industry and government experts should keep public concerns in mind. To legitimately include the public in the debate around tree plantations, decisions must be diffused through two-way discussions and authentic incorporation of concerns, leading to land use decisions that reflect democratic processes.

Though it may be that the traditional farm no longer exists as it once did, the values held by farmers appear to remain very traditional, and this suggests there are potential negative impacts on rural identity as a consequence of widespread land conversion. This brings into question the promotion of alternate land use as a way to 'save' the small farm. Though renting out land for tree plantations or other non-traditional uses may enable farmers to retain *ownership* of their land, this study has shown what it means to be a farmer goes beyond just owning the land. Farming is linked to rural identity, pride in production, and family.

As rural communities continue to change, it will be important to examine the effect of economic and community restructuring on traditional values and identities. Traditional conceptions of identity pointed to sameness and continuity as tenants of 'identity maturity'. However, these ideas were based on "a version of traditional culture in which relationships to symbols and institutions are relatively intact" (Schachter 2004:168), and it is clear from this investigation that this is not the case in modern rural communities. Rural identities may change over time to reflect the new realities residents face, and allow for new land use patterns to become legitimate.

On the other hand, the cultural significance of traditional rural work may increase as rural economies modernize (Hinrichs 1998) and rural peoples are challenged to differentiate themselves from the rest of society:

> Recourse to such an identity is important, because, even as the place of productive agriculture...declines in the regional economy, non-farm work becomes widespread, and farmers retire, the symbolic role and actual practices of rural resource producers remain compelling (Schachter 2004:522)

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Appendix A

Interview Study Methodology

Interview Study Methodology Timeline

Study Stage	Date of Completion
Design of interview study, create interview guidelines and timeline	Spring 2004
Acquire Human Ethics approval	June 2004
Acquire Al-Pac Public Affairs list of landowners participating in the Poplar Farm Program	July 2004
Contact first wave of potential participants; set interview meeting times and locations	June & July 2004
Conduct first interviews; contact second wave of potential participants; set interview meeting times and locations	July 2004
Conduct second wave of interviews; contact third wave of potential participants; set interview meeting times and locations	July & August 2004
Conduct third wave of interviews	August & September 2004
Hire professional transcriber; transcription of interview tapes	September & October 2004
Verification of transcriptions and conversion to QSR NVivo formatting	November 2004
Initial theme analysis using QSR NVivo; secondary theme analysis	November 2004
Collapse themes into broader categories	November 2004
Write "Public Perceptions of Hybrid Poplar Plantations: Trees as an Alternative Crop"	December 2004 & January 2005

Stage 1: Design of interview study, create interview guidelines and timeline

It was determined that in order to develop a successful survey instrument for a subject that had not been studied in this way to date, more information about the general perceptions held by people involved with and/or interested in the Poplar Farm Program was required. I decided to employ key informant interviews to gather this information. The summer of 2004 was set aside for the collection of perception themes, with the goal of completing all analysis by 2005 so the questionnaire could be developed and employed early that year.

Stage 2: Acquire Human Ethics approval

Faculty of Agriculture, Forestry, and Home Economics Human Ethics approval was pursued in early June and received later that month with some revisions required.

Stage 3: Acquire Al-Pac Public Affairs list of landowners participating in the Poplar Farm Program

Landowners who were currently participating in Al-Pac's Poplar Farm Program were considered important key informants as they would bring a unique perspective. Not only would these people be able to shed light on the main reasons for signing up, but they would also have insight into the management of the program and any unforeseen benefits or drawbacks of being involved. Al-Pac's Public Affairs department contacted each of the landowners signed up to ask their permission to give their information to me. I then received a list of the landowners who agreed to participant which included their phone numbers, location, and date they had signed up for the program. From this list of eighteen I randomly chose six landowners to initially contact.

Stage 4: Contact first wave of potential participants; set interview meeting times and locations

The first wave of potential participants was generated from the Al-Pac Public Affairs list (six contacted, four participated), a list of Al-Pac employees involved with the program (six contacted, five participated), local businesses (one owner contacted, one participated), municipal governments (two employees contacted, none participated), a local university (three professors contacted, two participated), local non-profit organizations (four members contacted, none participated). In total, twenty-three potential key informants were contacted for the first wave of interviews, and twelve agreed to be interviewed. Community members were first contacted by phone to explain how we obtained their name as well as to request an interview. Some of the reasons given for not participating were: not interested, too old, too busy, not actively farming, and concerned about motives behind the study (e.g. trying to sell the program on them). If consent was given, we set a time and location for the interview.

Stage 5: Conduct first interviews; contact second wave of potential participants; set interview meeting times and locations

I conducted all of the interviews, which took place in north-central Alberta, specifically in the communities of Athabasca and Lac La Biche, as well as at the Al-Pac mill site. The first wave of interviews were held at the Al-Pac mill site, in personal homes, at a local restaurant, and at Athabasca University. Interview lengths in the first wave were on average thirty minutes, with the longest not exceeding one hour. The interviews were semi-structured in nature, and began with demographic questions such as name, occupation, and personal connection to plantation forestry (e.g. neighbour to the fields, academic interest, etc.) (see Appendix B for the Interview Guide). Participants described their experiences with the Poplar Farm Program, and shared their views about the program in general. In addition, participants were asked to share their perception of the views held by other community members. At the end of the interview participants were asked if they could recommend anyone who would have an opinion of the Poplar Farm Program, specifically one differing from their own.

From these initial interviews a contact list of twenty-four local people was generated: sixteen local landowners (ten participated), two employees of local agriculture businesses (none participated), three members of non-profit organizations (one participated), one local government employee (one participated), one church minister (one participated), and one university professor (one participated). Community members were first contacted by phone to explain how we obtained their name as well as to request an interview. If consent was given, we set a time and location for the interview.

Stage 6: Conduct second wave of interviews; contact third wave of potential participants; set interview meeting times and locations

A total of fourteen people participated in the second wave of interviews. These interviews were held in personal homes, at the University of Alberta, in a government office, and over the phone. Interviews were conducted in exactly the same fashion as the first interviews, and the second wave ranged in length from fifteen minutes to over two hours.

The list of contacts generated from the second wave of interviews included eight local landowners (two participated), three members of government (one participated), and one landowner currently participating in the program (one participated). Once again, community members were first contacted by phone to explain how we obtained their name as well as to request an interview. If consent was given, we set a time and location for the interview.

Stage 7: Conduct third wave of interviews

The four interviews in the third wave were held in personal homes and at a government building. They were conducted in the same fashion as the previous interviews, and ranged in length from forty-five minutes to over two hours.

Stage 8: Hire professional transcriber; transcription of interview tapes

The interviews were professionally transcribed from audiotape (see Appendix C for Confidentiality Form). The transcriptions were in Microsoft Works format, resulting in 225 pages of text.

Stage 9: Verification of transcriptions and conversion to QSR NVivo formatting

I reviewed all of the transcriptions while listening to the tapes to ensure accuracy and to edit any errors. In addition to ensuring the text I would analyse was of top quality, this step also allowed me to gain a deeper understanding of the emotions expressed through inflections, volume, and speed of speech. By noting these non-lingual cues on the transcripts, more accurate coding was possible. The Microsoft Works-formatted transcripts were then converted to the *.text* form required to import them into the QSR NVivo program.

Stage 10: Initial theme analysis using QSR NVivo; secondary theme analysis

This stage is also referred to as open coding. I studied each transcript line by line looking for references to the Poplar Farm Program. Using the qualitative analysis software QSR NVivo all references were coded as a theme such as 'marginal

land', 'option for landowners', 'weeds', etc. This resulted in over 100 themes, or nodes. These themes were then re-examined to ensure they were a parsimonious representation of the text. This involved combining certain nodes, and developing new ones to better represent the text if there appeared to be sub-themes. For example, 'option for landowners' was further divided into five sub-themes: 'retiring from farming', 'without selling the land', 'better than renting to a farmer', 'diversification', and 'next generation not farming'. All of these themes can be contained under the 'option for landowners' umbrella, but they each express a slightly different perception of the program.

Stage 11: Collapse themes into broader categories

This stage is also referred to as axial coding. In order to make the final theme set easier to work with for this project and future possible projects, the themes were organized into six distinct categories: 'Positive-Personal', 'Negative-Personal', 'General-Personal', 'Positive-Other', 'Negative-Other', and 'General-Other'. In the interviews participants were asked to express their own ideas about the program, as well as their perception of how others were reacting. The –Personal categories capture all of the themes referring to personal opinions, and the –Other categories contain all themes referring to perceptions of other peoples' opinions. Positive-, Negative-, and General- simply refer to themes that centred on benefits of the program, concerns about the program, and neutral comments about the program, respectively.

Top 5 Positive-Personal Themes

Rating	Theme Name	# References to Theme	# Sub-Themes within Theme
1	Option for Landowners	57	5
2	Less Risk	49	3
3	Good for the Environment	17	4
4	Good for Marginal Land	11	0
5	Like Al-Pac	8	0
totals		142	12

Top 5 Positive-Other Themes

Rating	Theme Name	# References to Theme	# Sub-Themes within Theme
1	Option for Landowners	17	5
2	Less Risk	14	3
3	Good for the Environment	7	0
4	Source of Income	4	0
5	Investment Opportunity	3	0
totals		45	8

Top 5 Negative-Personal Themes

Rating	Theme Name	# References to Theme	# Sub-Themes within Theme
1	Mistrust the Company	71	9
2	Program Specifics	46	4
3	Bad for the Environment	19	2
4	Competition for Farmers	15	2
5	Hurts Farming	10	2
totals		161	19

Top 10 Negative-Other Themes

Rating	Theme Name	# References to Theme	# Sub-Themes within Theme
1	Program Specifics	15	4
2	Competition for Farmers	11	2
3	Hurts Farming	10	3
4	Picked Roots	6	0
5	Mistrust Company	5	4
totals		47	13

Top 5 General Themes

Rating	Theme Name	# References to Theme	# Sub-Themes within Theme
1	BSE Crisis	12	0
2	Al-Pac Benefits Community	7	0
3	Good to Mind Your Business	7	0
4	Farmers Go with the Flow	2	0
5	Hybrids = GMOs	2	0
totals		30	0

Stage 12: Write "Public Perceptions of Hybrid Poplar Plantations: Trees as an Alternative Crop"

As the paper was written in hopes of acceptance to a peer-reviewed journal, it was designed to present the themes from this analysis that would be not only interesting to readers, but also contribute the most to current land-use change literature. Thus, the top concern categories were used.

The vast majority of the themes developed from this research await further examination, and I hope future projects will take advantage of this extensive database of coding.

Appendix B

1. Interview Information Sheet
2. Interview Consent Form
3. Interview Guide

Information Sheet
"Perceptions of Hybrid Poplar Plantations"

Purpose:
I would like to talk to you about hybrid poplar plantings because you have been identified as a person who may have a personal and/or professional opinion about Al-Pac's poplar farm program. You opinion will contribute to a better understanding of poplar farming practices in Alberta.

Method:
The interview will be approximately forty-five minutes, will involve questions about planting hybrid poplar on private land, and will be tape recorded.

Confidentiality:
I will not give your name with comments to anyone outside of my research team (my supervisors, Dr. Naomi Krogman and Dr. Barb Thomas). No names will be used in the research report, but it is possible that selected quotes from what you say will be included. I am not interviewing many people for this study and having a small number of interviews makes people easier to identify in the report. Your comments may be identifiable. Privacy cannot be guaranteed.

The tape-recorded and typed copies of the interview will be stored in a locked drawer in Dr. Krogman's (one of my supervisors) office at the University of Alberta.

Benefits/Risks:
Participation in this interview will take some time, and does not offer any direct benefit to you. I hope your participation increases understanding of community perspectives of plantations and leads to local decision-making that reflects local concerns and needs.

Use of Information:
1) The taped interview may be typed out by myself in the future. If a professional transcriber is required to type out the interviews they will sign an oath of confidentiality.
2) The information collected during the interview will be for my use toward the completion of my Masters thesis about perceptions of hybrid poplar plantations.
3) Based on people's comments, I will develop a general survey about plantations that will be distributed to the local community in 2005.
4) I also may use the results of this research in future research, publications, and presentations. A copy of the thesis as well as an executive summary will be sent to Al-Pac. As with all publications, no names of participants will be included.

Informed Consent:
If you agree to participate in the interview, you will be asked to sign a consent form before the interview begins.

You can quit taking part in the interview at any time. You have one month from the date of the interview to withdraw your interview from the study.

Contact Information:
Questions about the study may be directed to:

Pamela Neumann
M.Sc. Candidate
Department of Rural Economy
5-15 General Services Building
University of Alberta
(780) 461-1641
pamelag@ualberta.ca

Dr. Barb Thomas
M.Sc. Supervisor
Department of Renewable Resources/Alberta-Pacific Forest Industries
7-51 General Services Building
University of Alberta
(780) 492-8016

Dr. Naomi Krogman
M.Sc. Supervisor
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Georgie Jarvis
Secretary to the Human Ethics Committee
Faculty of Agriculture, Forestry and Home Economics
2-14 Ag-For Building
University of Alberta
(780) 492-4931

Consent Form
"Perceptions of Hybrid Poplar Plantations"

Investigator:
Pamela Neumann, M.Sc. Candidate, Department of Rural Economy, Ph (780) 461-1641

Consent: Please circle your answers:

Do you understand that you have been asked to be in a research study?	**Yes**	**No**
Have you received and read a copy of the attached information sheet?	Yes	No
Do you understand the benefits and risks involved in taking part in this research study?	**Yes**	**No**
Have you had an opportunity to ask questions and discuss this study?	Yes	No
Do you understand that you can quit taking part in this study at any time?	**Yes**	**No**
Do you understand that you have one month from the date of the interview to withdraw your interview from the study?	Yes	No
Are you satisfied with how the information will be kept confidential?	**Yes**	**No**
Do you understand who will be able to see or hear what you said?	Yes	No
Do you agree to the information that you provide being used to inform current and future research, publications and presentations?	**Yes**	**No**
Do you agree to be audio taped during the interview?	Yes	No
Do you agree to be contacted in the future by the researcher should additional questions arise related to your interview?	**Yes**	**No**
Do you agree to be contacted in the future by the University of Alberta research team regarding continued research into poplar farming?	Yes	No

I agree to take part in this study.

_____	_____	_____
Participant Signature	Date	Witness
_____		_____
Printed Name		Printed Name

Open-Ended Question Interview Guide

1. How is it that you are interested in or involved with Al-Pac's poplar farm program?

2. What is your personal opinion about the planting of sections of private land with hybrid poplar trees?

(Probe: short- and long-term impacts; positive and negative impacts)

3. In your opinion, how do others in your community perceive Al-Pac's planting of hybrid poplar trees?

4. Can you recommend someone else I could interview who has an interest in Al-Pac's hybrid poplar plantings, specifically someone who has an opinion that differs from your own?

Appendix C

Confidentiality Form for Transcriber

Confidentiality Form for Transcriber

In agreeing to transcribe interviews for the research project *Perceptions of Hybrid Poplar Plantations,* it is my understanding that the interviews are confidential. I will not discuss the content of the interviews I transcribe with anyone other than the researchers of the project listed below. As well, I will not allow access to the audio tapes, written transcriptions or any other form of documentation of the interviews to anyone other that the researchers of the project.

Name of Transcriber (Please Print)	Signature of Transcriber
Date	Signature of Investigator

Pamela Neumann
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Appendix D

Survey Study Methodology

Survey Study Methodology Timeline

Study Stage	Date of Completion
Design of survey study, develop questionnaire, and create timeline	December 2004 & January 2005
Acquire Human Ethics Approval	January 2005
Contact potential participants for county and town survey pre-test	January 2005
Conduct county and town survey pre-test	February 2005
Revise survey methodology	February 2005
Contact potential participants for county surveys	February 2005
Conduct county and town surveys	February 2005
Convert paper questionnaires to SPSS and .text format	April 2005
Initial theme analysis of open-ended questions using QSR NVivo	May 2005
Collapse themes into broader categories; secondary theme analysis	May 2005
Analyse multiple-choice questions using SPSS	June 2005
Create indices from multiple-choice questions using SPSS	June-July 2005
Create multiple regressions using indices and single item indicators	July-September 2005
Write "Family Farming and Tree Plantations on Farmland"	September & October 2005

Stage 1: Design survey study, develop questionnaire, and create timeline

The study was developed with three major goals. Firstly, I wanted to obtain a sample that reflected an accurate representation of rural landowners living in the region in which the Poplar Farm Program was operating. To this end, I decided to choose two counties in this region that were very different from one another in order to include a wide spectrum of landowners. I chose Westlock and Athabasca because they are very different in both their locations (Westlock is much closer to Edmonton, a major centre, and Athabasca is beside Crown land under forestry management) and their relationships with Al-Pac (the mill is located in Athabasca county). In addition, the type of farming and the quality of farmland differs a great deal between these two counties.

Secondly, I wanted to also survey town residents in order to compare responses to key questions with county residents. Due to time and budget constraints only one town could be surveyed so Athabasca was chosen.

Finally, social surveys are notorious for their low response rates, and I felt a high response rate was important to ensure the sample wasn't biased in any way. This was especially a concern due to the specialized nature of the research question.

In order to achieve this I decided upon the 'drop-off/pick-up method' for the county surveys. The town survey would be conducted face-to-face.

The questionnaires were developed to be comprehensive (see Appendix F and G). Of concern was the length of the county questionnaire (twenty-six pages) and possible difficulties answering the town questionnaire questions verbally so I decided it was important to employ a pre-test in a different county and town in order to flesh out any methodological and collection issues early on.

Because of the labour intensive nature of this survey study, assistance was needed to complete it. Undergraduate students were decided upon as potential assistants, which led to the decision that reading week/spring break (the last week in February) was the only time the questionnaires could be distributed and picked up. It was determined that the pretest should occur approximately one month before hand to leave time to revise the surveys if necessary.

Stage 2: Acquire Human Ethics approval

Faculty of Agriculture, Forestry, and Home Economics Human Ethics approval was pursued in mid January and received later that month.

Stage 3: Contact potential participants for county and town survey pre-test

Barrhead, a town and county similar in location and demographics to the counties of interest, was chosen to be surveyed on a very limited basis for the pre-test. For the county survey potential participants were chosen from a county map. I estimated approximately 800 homes are located within the fifteen-kilometer area of Barrhead. Figuring in a 50% refusal rate, by choosing every fortieth home on the map, I would end up with a systematic sample of approximately 10 homes. Last names from the county map were used to obtain phone numbers. Using the website www.canada411.com I was able to generate a list of possible phone numbers for each landowner. Each of these numbers was called until the landowner was reached. The study was explained to potential participants, and, if permission was given, driving directions to their home were taken and a date set to drop off the questionnaire. This was a very difficult process, and over forty landowners were contacted, with only seven participants in the final sample.

Stage 4: Conduct county and town survey pre-test

Over the span of four days the county questionnaires were personally dropped off at the homes of the participants and then picked up two days later once they were completed. Upon completion I conducted a very brief informal interview with each respondent to find out their impressions of the questionnaires and any concerns they had with them. The response rate for the county was 100%.

During this time I also randomly chose homes throughout the town to pre-test the town survey. If there was no response or a refusal, I moved next door and continued this until a survey was completed. Five surveys were completed, with two refusals resulting in a response rate of 71%.

Stage 5: Revise survey methodology

Through the pre-test poorly worded questions and errors in 'skips' were discovered. Also, because of the difficulty in signing participants up for the county

survey, I decided to change my sampling strategy from a systematic cluster sample to an exhaustive cluster sample (every landowner within 15 kilometers of the town will be contacted until the desired sample size is achieved). Based on the amount of time required to drop off and pick up the surveys a participant list of 110 for each county was chosen as an attainable goal.

Stage 6: Contact potential participants for county surveys

Both Westlock and Athabasca county maps and www.canada411.com were used to develop a list of potential participants. All landowners within a 15 kilometer radius of the towns were contacted. As with the pretest the study was explained to potential participants, and, if permission was given, driving directions to their home were taken and a date set to drop off the questionnaire. In Westlock County a total of approximately 638 people were called in order to achieve a list of 110 participants. In the County of Athabasca a total of 548 people were called in order to achieve a list of 110 participants.

Stage 7: Conduct county and town surveys

Five complete days were set aside to drop off and pick up the county surveys and complete the town surveys door-to-door. Six undergraduate students divided into teams of two, one professor (Dr. Naomi Krogman), and myself were involved. The undergraduate student teams and I each received a list of landowners that had agreed to participate. The county questionnaires were professionally printed and distinguished between each other by different coloured covers. An information sheet was included to explain the study and that all responses were anonymous (see Appendix E). In addition, a removable contact sheet was attached to each county questionnaire (see Appendix F). If participants wanted to receive a summary of the findings once the study was completed, they were asked to separate the sheet from the completed questionnaire and return it to the study assistant. The first three days were spent dropping off the surveys. Meanwhile, Dr. Krogman went to every fifth home in the town of Athabasca verbally administering the town questionnaire. Because of the number of people not at home, every home was visited until a survey was completed, followed by a visit to the next fifth home.

The last two days involved picking up the completed questionnaires from the landowners and further administration of the town surveys. For these days the undergraduate students and I administered the town surveys after county pick-ups were completed. In the end, all of the subdivisions in the town of Athabasca were surveyed, resulting in a total of 68 completed questionnaires. The response rate for the town survey (taking into account refusals) was approximately 65%.

By the end of day five the vast majority of county questionnaires had been completed and picked up. Some landowners were not home or had stated they required more time. I noted their names and followed up one week later to encourage them to mail the questionnaires. In the end 89 out of 110 Westlock questionnaires were completed and returned, a response rate of 81%. In Athabasca 102 of the 110 questionnaires were completed and returned, for a response rate of 93%. The reason for the discrepancy in the county response rates is unknown, however, one of the Westlock undergraduate teams was less organized than the Athabasca teams, possibly

resulting in errors in pick ups. Also, Westlock landowners may have been less interested in the subject matter than Athabasca participants. Al-Pac has a palpable presence in Athabasca County and the plantations themselves are currently concentrated in Athabasca with only one in Westlock at the time the survey was administered. These musings aside, the county response rates are high owing likely to the intensive method used to administer them, and the town survey response rate is very good.

Stage 8: Convert paper questionnaires to SPSS and *.text* format

Once all of the surveys were received (approximately two weeks after the initial surveys were dropped off) I began converting the multiple-choice questions to a SPSS database to be used in quantitative analysis and the open-ended questions to *.text* format to be used in qualitative analysis. Each questionnaire was numbered in order to keep track of the information, and the county of origin was noted in the database.

I typed the open-ended responses in *.text* format. Reponses ranged from single-word answers to numerous paragraphs. The majority of participants (92%) completed at least one section of the open-ended responses.

Stage 9: Initial theme analysis of open-ended questions using QSR NVivo

This stage is also referred to as open coding. I studied each participants responses line by line and coded all phrases referring to farming, land use, the Poplar Farm Program, or Al-Pac in general. Using the qualitative analysis software QSR NVivo all references were coded as a theme such as 'Neg-Gen-Competition', 'Concerned-Neigh-Foreign Ownership', 'Neg-Per-Can't Eat Trees', etc. The prefix (e.g. Neg-Gen-) refers to the question the statement was made in. There were five sections for open-ended responses in the county questionnaires:

1) A follow-up to the multiple-choice question "Would you ever consider signing up land you owned for the Poplar Farm Program?" – "Why or why not?" (coded with prefix **Neg-Per-** or **Pos-Per-** depending on a negative or positive response, respectively)

2) A follow-up to the multiple-choice question "If one of your neighbours signed up for the Poplar Farm Program would you be concerned?" – "Why or why not?" (coded with prefix **Concerned-Neigh-** or **Unconcerned-Neigh-** depending on response)

3) "What do you believe is the greatest BENEFIT of the Poplar Farm Program?" (coded with prefix **Pos-Gen-**)

4) "What is your greatest CONCERN about the Poplar Farm Program?" (coded with prefix **Neg-Gen-**)

5) The last page of the questionnaire was a space for any additional comments (coded with **Neg-Gen-** or **Pos-Gen-** depending on a negative or positive response, respectively)

This coding resulted in over 200 themes, or nodes.

Stage 10: Collapse themes into broader categories; secondary theme analysis

This stage is also referred to as axial coding. In order to make the final theme set easier to work with for this project and future projects, the themes were organized as either positive or negative regardless of question origin. Positive and negative were created as categories, and the themes were placed under them. These themes were then re-examined to ensure they were a parsimonious representation of the text. This involved combining certain nodes, and developing new ones to better represent the text if there appeared to be sub-themes. For example, 'Neg-Affect Neighbours' was further divided into two sub-themes: 'Affect Neighbours General' and 'Weeds'. Both of these themes can be contained under the 'Neg-Affect Neighbours' umbrella, but they each express a slightly different perception of the program. In addition, contained within each of these sub-themes are the initial codes linked to individual questions. For example, within 'Neg-Affect Neighbours/Weeds' is 'Neg-Gen-Weeds', 'Neg-Per-Weeds', and 'Concerned-Neigh-Weeds'. This hierarchical coding allows for multiple levels of analysis. In the paper "Family Farming and Tree Plantations on Farmland" I have considered comments as simply positive or negative, however further studies could look at the NIMBY (not in my backyard) effect, for example, by only looking at the 'neighbour' questions.

Top 10 Positive Categories

Rating	Category Name	# References to Category	# Themes within Category
1	Good for the Environment	154	19
2	Farm Alternative	72	11
3	Preferred Land Use	52	6
4	Landowner's Choice to Plant	49	0
5	Good for the Economy	15	3
6	Source of Wood	13	4
7	Like Al-Pac	10	0
8	No Adverse Effect	6	2
9	The Long Lease	6	0
10	Improve Farming in the Area	3	3
totals		380	48

Top 10 Negative Categories

Rating	Category Name	# References to Category	# Themes within Category
1	Bad for the Environment	97	17
2	Hurts Farming	56	6
3	Don't Trust the Company	55	10
4	Lots of Land in Trees	51	4
5	Personal Reasons	44	10
6	Don't Like the Contract	36	3
7	Poor Reclamation	33	2
8	It Will Affect Neighbours	25	2
9	Competition for Farmers	21	2
10	Harvest Noise/Damage	15	0
totals		433	56

Stage 11: Analyse multiple-choice questions using SPSS

Quantitative analysis began with an examination of the demographic questions, specifically gender and age to determine how representative the sample was. Using Statistics Canada information (available at www.statscan.ca), gender and age category frequencies for the two counties and the town were compared to actual gender and age distribution in the populations.

Comparison of Actual Gender and Age Parameters to Sample Statistics for People Twenty Years Old and Over

Town of Athabasca				County of Athabasca				County of Westlock			
Population		**Sample**		**Population**		**Sample**		**Population**		**Sample**	
Gender		Gender		Gender		Gender		Gender		Gender	
male	46.2%	male	36.4%	male	52.2%	male	68.8%	male	52.8%	male	65.9%
female	53.8%	female	63.6%	female	47.8%	female	31.3%	female	47.2%	female	34.1%
Age		Age		Age		Age		Age		Age	
20-24	9.5%	20-24	1.5%	20-24	6.3%	20-24	0.0%	20-24	6.9%	20-24	0.0%
25-44	40.0%	25-44	51.5%	25-44	40.4%	25-44	21.9%	25-44	36.6%	25-44	28.4%
45-54	16.9%	45-54	18.2%	45-54	21.2%	45-54	20.8%	45-54	22.0%	45-54	23.9%
55-64	9.3%	55-64	13.6%	55-64	16.2%	55-64	26.0%	55-64	17.2%	55-64	20.4%
65-74	9.0%	65-74	4.6%	65-74	10.7%	65-74	20.9%	65-74	11.6%	65-74	20.5%
75-84	9.6%	75-84	10.6%	75-84	4.6%	75-84	6.2%	75-84	5.2%	75-84	6.8%
85+	5.2%	85+	0.0%	85+	0.8%	85+	4.1%	85+	0.7%	85+	0.0%

(Population percentages adapted from 2001 Community Profiles www.statscan.ca)

Though there were some discrepancies between the populations and samples, the samples appeared to represent the population, in general. Age and gender frequency trends were consistent.

The next step was to study all of the questions for distribution and number of responses. All of the questions were answered by at least 90% of the respondents in all locations except for the question "What was your total net household income before taxes in 2003 (approximately)?" on the county questionnaires which was only

answered by 55% and 60% of the participants in Westlock and Athabasca, respectively.

As there was a great deal of information contained in the questionnaires, at this stage it was important to determine specific research questions to investigate. Firstly, I analyzed the responses to the question "How do you feel about the Poplar Farm Program?". Responses ranged from 1 (very negative) to 5 (very positive) with 3 as neutral. The town had an average response of 3.63 (standard deviation = 1.006). Westlock and Athabasca counties had average responses of 3.21 (sd = 1.143) and 3.12 (sd = 1.213), respectively. Other than the town, responses were quite neutral with some variation. I decided to explore responses to this question in the counties, specifically examining other variables that may indicate reasons for these responses.

Stage 12: Create indices from multiple-choice questions using SPSS

I initially used the responses to the open-ended questions as a guide to which themes I would explore in quantitative analysis. For example, considering the top negative and positive categories centred on concern for the environment, I designed an environmental stewardship index from three items from a multi-part question: ""In YOUR opinion, how important are the following to good farming?" 1) "minimizing soil erosion", 2) "taking care of land (stewardship)", and 3) "protecting streams (e.g. maintaining treed buffers)". This index had a Cronbach's Alpha value of 0.6198 (see table).

The details of the other indices created are found in the following table.

Details for County Survey Indices

Index	Qualitative Category(ies)	Qualitative Theme(s)	Multiple-Choice Items	Cronbach's Alpha
valuation of environmental stewardship	Bad/Good for the Environment	all	B7 vii, ix, xii	0.6198
valuation of family farming	Farm Alternative/ Hurts Farming/ Personal Reasons	retain family ownership, retirement, hurts family farms, children will farm, inheritance	A8, A9 i, ii, v, vii, A10 i, C5 vii	0.8144
resistance trees on farmland	Preferred Land Use/ Lots of Land in Trees	all	A9 iii, iv, B7 x, B10 ii, iii, v, viii, B11 ii	0.8178
resistance to hybrid trees	Preferred Land Use/ Lots of Land in Trees	all	B8 vii, B9 iv, B10 v, B11iv	0.6517
support for private property	Landowner's Choice to Plant	all	B2, B3, B7 vi, viii, C5 iv	0.5915
support for government regulation	Landowner's Choice to Plant	all	B2, B3, B6 i, ii, iii, iv, v, vi, vii, viii	0.7889
place identity	-	-	A10 ii, iii, iv, v, vii, viii	0.9100

Due to the many comments about mistrusting the company, mostly because it was foreign-owned, I decided to explore the idea of foreign ownership in the multiple-choice questions. A reliable index wasn't possible, but I decided to take two questions, "Foreign-owned companies SHOULD be allowed to rent farm land in Alberta" and "It (the Poplar Farm Program) is a land grab by a foreign company", into account when considering regressions predicting support for the Poplar Farm Program.

Stage 13: Create multiple regressions using indices and single item indicators

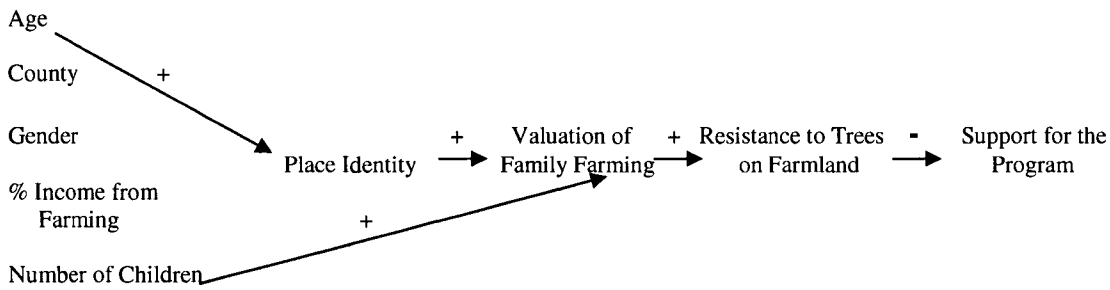
In order to determine which indices and single item indicators (demographics) might be useful in designing a model to predict support for the Poplar Farm Program, it was important to examine the correlations between these variables. Variables with significant ($p < 0.05$) correlations with "How do you feel about the Poplar Farm Program?" are shown in the following table.

Variables Correlated with Support for the Poplar Farm Program

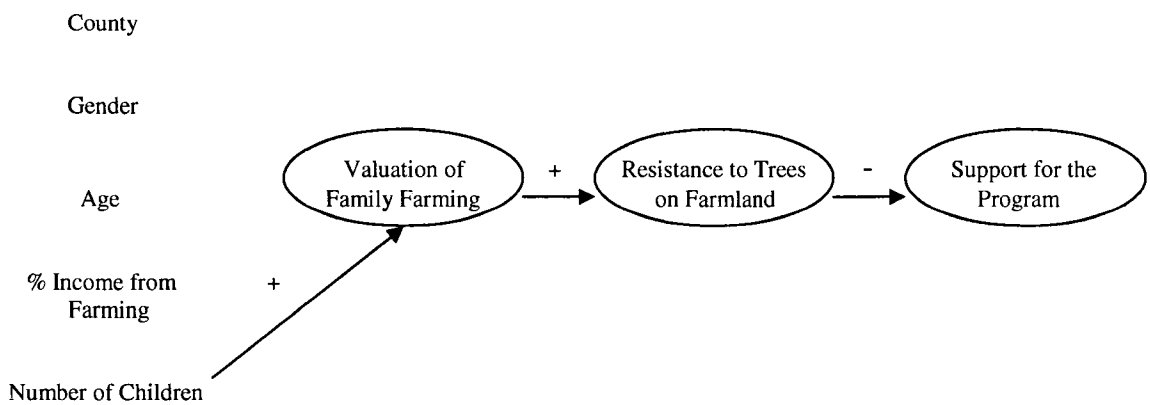
Variable	Correlation
resistance to trees on farmland	-0.373
valuation of family farming	-0.172
% income from farming	-0.179
foreign companies should rent	0.287
PFP land grab by foreign company	-0.422
resistance to hybrids	-0.521
place identity	-0.222

The next step was to run some preliminary regressions with the above variables. Taking into account demographics (county, age, gender, # children, % income from farming), 'resistance to trees on farmland' was found to explain the most variation in the support for the Poplar Farm Program variable ($r^2 = 0.500$). 'Resistance to hybrids' had an r^2 of 0.409, and all other r^2s were below 0.250.

Assuming 'resistance to trees on farmland' was a direct predictor of support for the Poplar Farm Program, I hypothesized the following model:



After running numerous regressions, the most parsimonious model of support for the Poplar Farm Program was determined to be the following model:



Stage 14: Write "Family Farming and Tree Plantations on Farmland"

This paper included details of the qualitative analysis, the final regression model, as well as a review of relevant literature and a call for future research.

The vast majority of the qualitative themes developed from this research and survey items await further examination, and I hope future projects will take advantage of these extensive databases.

Appendix E

Survey Cover Letter

Dear (name of participant),

Thank you for agreeing to participate in this study. Your household was chosen from a random sample of landowners in the Athabasca region, and therefore is very important to our study. You have been invited to participate in a survey being conducted by Pamela Neumann, a graduate student, as well as Dr. Naomi Krogman and Dr. Barb Thomas, professors at the University of Alberta. The purpose of this survey is to ask local residents about their opinions regarding the use of farmland and a project called the Poplar Farm Program. By answering the following questions you are contributing to this research and providing information that may be of use to decision-makers in your community.

This project is funded by Alberta-Pacific Forest Industries, Inc. (Al-Pac), the government of Canada (the Social Sciences and Humanities Research Council), and the University of Alberta. The information collected on this questionnaire will be used for Pamela Neumann's Masters thesis about perceptions of hybrid poplar plantations. We also may use the results of this research in future research, publications, and presentations. All information that you provide in this survey questionnaire is strictly anonymous, and steps have been taken to ensure that individual respondents cannot be identified.

It is best if only one adult member of your household answers the majority of these questions. Please feel free to ask other household members for assistance if required. In the case of demographic questions (for example: age, gender) the person who answered the majority of questions on the questionnaire should answer these questions. If you would like to be mailed a final report from this project, please fill out the name and address sheet at the end of the survey, and when we come to pick up the survey, we will tear off that sheet, place it in a separate envelope, and send out the final report to you by December, 2005.

Thank you for your help! If you have any questions or comments, feel free to contact us at the addresses or phone numbers below.

Sincerely,

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Appendix F

County Questionnaire

ATHABASCA COMMUNITY SURVEY:

Agricultural Land-use & The Poplar Farm Program

Photo courtesy of Barb Thomas, 2005

FEBRUARY 2005

Instructions

Please answer each question by checking (✓) the box next to the answer, circling the correct answer, or by writing you answer in the blank space provided.

This questionnaire may contain questions that do not apply to you. In order to reduce the time required to fill out this questionnaire, some answers are followed by instructions **[Go To Question X]** which will skip you past questions you don't need to answer. In addition, if you feel uncomfortable answering any of the questions, please feel free to leave them blank.

Upon completing this questionnaire please give it to the research assistant who will be returning to pick it up within the week.

Part A. Your Land

The following questions have to with the land you live and/or work on. We are interested in details about your land, as well as how you feel about your land.

A1. What type of farming happens on your land (if any)? (check (✓) all that apply)

Cattle ☐1
Grain ☐2
Hay ☐3
Other ☐4 (please describe)_____

A2a. Do you or your spouse own any land in this county?

Yes ☐1**[Go To Question A3a.]**
No ☐2

A2b. Which of the following groups own the land you live on? (check (✓) all that apply)

immediate family ☐1 **[Go To Question B1.]**
extended family ☐2 **[Go To Question B1.]**
other ☐3 **[Go To Question B1.]**

A3a. How much land in this county do you and/or your spouse currently own?

_____ acres

OR

_____ hectares

A3b. How much of that land is cleared?

_____ acres

OR

_____ hectares

A3c. How much of that land is in bush (trees)?

_____ acres

OR

_____ hectares

A4. How long has that land been owned by you or your spouse's family?

_____ years

A5. In 2004, how much of that land did you rent out, if any?

_____ acres

OR

_____ hectares

A6. In 2004, how much land did you rent from others for your use, if any?

_____ acres

OR

_____ hectares

A7. Do you intend for your land to be inherited by other members of your family?

Yes	☐1
No	☐2
Uncertain	☐3

A8. Do you feel a responsibility to keep the land in your family?

Yes	☐1
No	☐2

FOR THE NEXT TWO (2) QUESTIONS PLEASE CIRCLE ONE ANSWER PER LINE

A9. How important to you <u>personally</u> are the following characteristics of your land?

	Not At All Important				Extremely Important	Not Applicable
the land is owned by your family	1	2	3	4	5	0
the land is farmed by your family	1	2	3	4	5	0
the land stays the same in appearance	1	2	3	4	5	0
the land is farmed in a traditional way	1	2	3	4	5	0
the land is inherited by your family	1	2	3	4	5	0
the land is used for _____ (cattle, grain)	1	2	3	4	5	0
the land is farmed by the next generation	1	2	3	4	5	0

A10. How do you feel about your land? For each statement indicate how strongly you <u>disagree</u> or <u>agree</u>.

	Strongly Disagree		Neutral		Strongly Agree
My land is a family heritage	1	2	3	4	5
My land is worth more to me than its market value	1	2	3	4	5
My land is an important part of who I am	1	2	3	4	5
I feel happiest when I am on my land	1	2	3	4	5
My land is my favorite place to be	1	2	3	4	5
My land reflects the type of person I am	1	2	3	4	5
I really miss my land when I am away	1	2	3	4	5

Part B. Land-Use in Your County

The following questions have to do with the county you reside in. We are interested in your opinions about how land in managed in this county, the appropriateness of different land-uses, and different aspects of farming.

B1. How many years have you lived in this county?

_____ years

Please circle your responses to the following four (4) statements.

B2. "Landowners should be able to do what they want on their private land."

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

B3. "The government (municipal, county, or provincial) has a role in agricultural land-use decisions."

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

B4. Currently foreign-owned companies are allowed to rent private land in Alberta, with some restrictions. Circle your response to the following statement:

"Foreign-owned companies SHOULD be allowed to rent farm land in Alberta."

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

B5. Currently, foreign-owned companies are NOT allowed to own private land in Alberta. Circle your response to the following statement:

"Foreign-owned companies SHOULD be allowed to buy farm land in Alberta."

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

FOR THE NEXT TWO (2) QUESTIONS PLEASE CIRCLE ONE ANSWER PER LINE

B6. How much government regulation (e.g. provincial, county) should there be of these farming activities?

	No Regulation				Lots of Regulation
protection against fire	1	2	3	4	5
sale of land	1	2	3	4	5
use of chemicals	1	2	3	4	5
growing of genetically modified crops (GMOs)	1	2	3	4	5
crop choice	1	2	3	4	5
renting of land	1	2	3	4	5
weed control	1	2	3	4	5
taking care of land (stewardship)	1	2	3	4	5

B7. In YOUR opinion, how important are the following to good farming?

	Not At All Important				Extremely Important
self-reliance	1	2	3	4	5
weed control	1	2	3	4	5
quality production (crops or livestock)	1	2	3	4	5
high yields	1	2	3	4	5
good business sense	1	2	3	4	5
ownership of land	1	2	3	4	5
minimizing soil erosion	1	2	3	4	5
protection of private property rights	1	2	3	4	5
taking care of the land (stewardship)	1	2	3	4	5
production of food	1	2	3	4	5
protecting streams (e.g. maintaining treed buffers)	1	2	3	4	5
an ability to survive the highs and the lows in farming	1	2	3	4	5

B8. In YOUR opinion, which of the following would you classify as a type of farming?
(check (✓) <u>one response</u> for each line)

	A Type of Farming	<u>Not</u> a Type of Farming	Uncertain
growing native trees for pulp and paper	☐	☐	☐
growing hemp for fibre	☐	☐	☐
growing genetically modified trees (GMOs) for pulp and paper	☐	☐	☐
raising exotic animals (e.g. alpacas)	☐	☐	☐
growing non-native trees for pulp and paper	☐	☐	☐
growing genetically modified crops (GMOs)	☐	☐	☐
growing hybrid trees for pulp and paper	☐	☐	☐

FOR THE NEXT TWO (2) QUESTIONS PLEASE CIRCLE ONE ANSWER PER LINE

B9. People have different ideas about what nature is and what it isn't. In YOUR opinion, are the following landscapes a part of nature?

	Not a Part of Nature				Completely a Part of Nature
a pasture	1	2	3	4	5
a field of barley	1	2	3	4	5
a forest after fire	1	2	3	4	5
a field planted with hybrid poplar trees	1	2	3	4	5
a field with windrows (i.e. trees beside field)	1	2	3	4	5
a field of canola	1	2	3	4	5
a field left fallow	1	2	3	4	5
a campground	1	2	3	4	5
a forest of tall spruce trees	1	2	3	4	5
a lakeside cabin community	1	2	3	4	5
a field of a genetically modified (GMO) crop	1	2	3	4	5
a city park	1	2	3	4	5
a field of spruce trees grown in rows	1	2	3	4	5

B10. When thinking about <u>previously cleared farmland</u> in your county, in YOUR opinion, how acceptable are the following land-uses? (circle <u>one response</u> for each line)

	Completely Unacceptable				Completely Acceptable
run cattle on it	1	2	3	4	5
let it go back to bush	1	2	3	4	5
grow native trees for pulp & paper	1	2	3	4	5
grow a cereal crop	1	2	3	4	5
grow hybrid trees for pulp & paper	1	2	3	4	5
convert it to acreages	1	2	3	4	5
grow hay	1	2	3	4	5
grow genetically modified trees (GMOs) for pulp & paper	1	2	3	4	5
set up a hog operation	1	2	3	4	5
expand the town (if one is close by)	1	2	3	4	5

B11. In Alberta, rather than cut trees in the natural forest, some people recommend tree plantations where trees are grown on cleared land, specifically to be cut down in the future. Tree plantations vary around the world, with different types of trees and different types of maintenance.

When thinking about tree plantations, how concerned are you about the following:
(circle one response for each line, 1 = not at all concerned, 5 = very concerned)

	Not At All Concerned				Very Concerned	Uncertain
growing non-native trees	1	2	3	4	5	0
growing trees on farmland	1	2	3	4	5	0
weeds on the plantations	1	2	3	4	5	0
growing hybrid trees	1	2	3	4	5	0
the need to irrigate the plantations	1	2	3	4	5	0
plantation trees competing with natural trees	1	2	3	4	5	0
growing genetically modified trees (GMOs)	1	2	3	4	5	0
plantations = monoculture	1	2	3	4	5	0
introduction of tree disease	1	2	3	4	5	0
plantations = poor wildlife habitat	1	2	3	4	5	0

Part C. The Poplar Farm Program

Al-Pac (Alberta-Pacific Forest Industries Inc.) is a Japanese-owned forestry company in north-central Alberta (see Figure 1.). The company has begun planting tree plantations on what they define as marginal private farmland (i.e. with lower quality soils) within a 200-kilometre radius of the Al-Pac mill (encompassing the counties of Westlock, Barrhead, Lakeland, Athabasca, Smoky Lake, St. Paul, Woodlands, and Thorhild). They are calling this the 'Poplar Farm Program'. The Poplar Farm Program involves the planting of hybrid poplar trees on farmland rented from local landowners. The company hopes to plant a total of 25,000 hectares of hybrid poplar plantations over the next two decades.

The Details

The landowner who signs up for the Poplar Farm Program is given an annual rent price similar to the 'going rate' at the time of signing that will be adjusted for inflation over the lease period. There is the possibility of renegotiation if average rental rates change over time (this is not in the contract). The landowner is given the option to sign a contract with Al-Pac to manage the plantations on their land, which would involve weeding, discing, and/or some chemical applications. The trees are owned by Al-Pac and around the end of the lease period Al-Pac will cut down the trees and use them for pulp. At that time the landowner would have the option of either renewing the contract or have Al-Pac return the land to its original state. If the landowner chooses to sell the land before the lease term is up, the lease continues with the new owner.

Government Legislation

The government of Alberta has said that no foreign-owned company can lease private land for more than twenty years and that foreign leases are to be non-renewable. Through government approval (a provincial order-in-council) Al-Pac is leasing agricultural land from local farmers, for thirty-year periods with the possibility of renewal. The land Al-Pac leases is restricted by soil class (the company cannot plant plantations of more than 80 acres in size on the most valuable agricultural areas).

The Trees

Hybrid poplars are trees produced by the crossbreeding of different poplar species. Hybrids can be produced through crossbreeding in greenhouses. This procedure is designed to produce fast-growing and hardier hybrids for planting. These are the type of trees Al-Pac is planting with the Poplar Farm Program. In the past they have been used for windbreaks around fields.

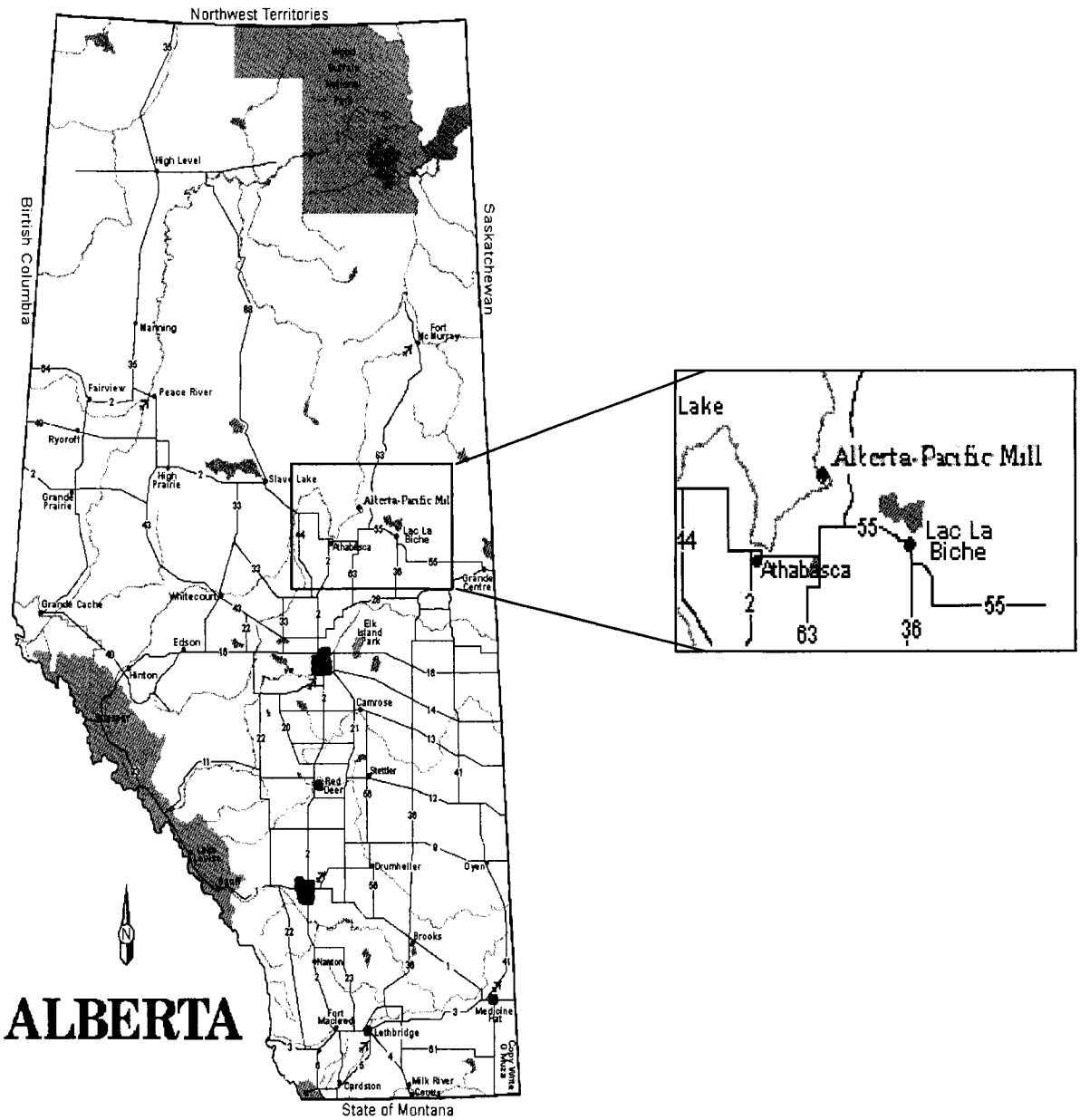

Figure 1. Map of Alberta with location of Alberta-Pacific Industries mill (from http://www.watertonpark.com/maps/mapab.htm)

C1a. Had you heard of the Poplar Farm Program before reading this questionnaire?

Yes ☐1
No ☐2 **[Go To Question C2a.]**

C1b. Where did you hear about the Poplar Farm Program? (check (✓) all that apply)

newspaper ☐1

television ☐2

trade show ☐3

word-of-mouth ☐4

posters ☐5

information meeting ☐6

the Internet ☐7

other (please describe) _____

C2a. Do you know anyone who works at Al-Pac?

Yes ☐1
No ☐2**[Go To Question C3.]**

C2b. Is that person a close friend or a relative?

Yes ☐1
No ☐2

C2c. Do you feel comfortable voicing your opinions about Al-Pac with that person?

Yes	☐1
No	☐2
Uncertain	☐3

C2d. If you had a serious concern about Al-Pac do you think it would affect your relationship with that person?

Yes	☐1
No	☐2
Uncertain	☐3

C3. How do you feel about the Poplar Farm Program?

Very Negative		Neutral		Very Positive
1	2	3	4	5

C4a. This survey is NOT being used to recruit landowners for the Poplar Farm Program. All responses are anonymous. Rather, we are interested to see what opinions are held by people who would or would not consider signing up.

Would you ever consider signing up land you owned for the Poplar Farm Program?

Yes	☐1
No	☐2
Uncertain	☐3

C4b. Why or why not?

_____

_____

_____

_____

FOR THE NEXT QUESTION PLEASE CIRCLE ONE ANSWER PER LINE

C5. When thinking about the Poplar Farm Program, how strongly do you disagree or agree with the following statements?

	Strongly Disagree		Neutral		Strongly Agree	Don't Know
It is a good option for landowners	1	2	3	4	5	0
Tree plantations are a type of farming	1	2	3	4	5	0
It is a land-grab by a foreign company	1	2	3	4	5	0
Landowners should be able to rent to whomever they want	1	2	3	4	5	0
Tree plantations on farmland is wrong	1	2	3	4	5	0
It is a good use for land considered 'marginal'	1	2	3	4	5	0
It is a threat to the family farm	1	2	3	4	5	0
Al-Pac has an unfair advantage over a farmer when bidding on rental land	1	2	3	4	5	0

C6a. If one of your neighbours signed up for the Poplar Farm Program would you be concerned?

Yes	☐1
No	☐2
Uncertain	☐3

C6b. Why or why not?

_____

_____

_____

_____

C7. Which of the following reasons given by landowners signing up for the Poplar Farm Program are <u>good reasons</u> in YOUR opinion? (check (✓) all that apply)

Chance to retire from farming	☐1
Al-Pac is a more reliable renter than another farmer	☐2
Can't afford to farm now because of BSE (mad cow disease)	☐3
The steady, long-term lease	☐4
Recent loss of interest in farming	☐5
More trees are a benefit	☐6
Land was bought without intentions of farming	☐7

C8. In YOUR opinion, which type of land is it okay to plant hybrid poplars on?
Who should be able to plant them?
(check (✓) all that apply)

Example #1: if you think a foreign company SHOULD be able to plant hybrid poplars on land they have rented and SHOULD be able to plant hybrid poplars on public land, but SHOULD NOT be able to buy land for planting, your answer for LINE #1 would look like this:

		WHERE CAN THEY PLANT?		
		on private land they own	on private land they rented	on public (Crown) land
WHO CAN PLANT?	a foreign company		✓	✓
	a Canadian company			
	a local person			
	a non-local person			

You would then give your answer for the rest of the lines.

Example #2: if you think hybrid poplar should never be planted leave all the boxes blank.

Your answer:

		WHERE CAN THEY PLANT?		
		on private land they own	on private land they rented	on public (Crown) land
WHO CAN PLANT?	a foreign company		✓	✓
	a Canadian company			
	a local person			
	a non-local person			

C9. What do you believe is the greatest BENEFIT of the Poplar Farm Program?

_____

_____

_____

_____

C10. What is your greatest CONCERN about the Poplar Farm Program?

_____

_____

_____

_____

Part D. Your Information

Remember: the person who answered the majority of questions on the questionnaire should answer these questions.

D1. What year were you born?

19_____

D2. Sex:

Female ☐1
Male ☐2

D3. What is your marital status?

Single ☐1
Living with partner ☐2
Married ☐3
Divorced/Separated ☐4
Widowed ☐5

D4. How many children do you have?

_____ children living at home

_____ children living away from home

[If both 'zero' go to question D6a.]

D5. Will any of your children (or do they currently) have the same occupation as yourself?

Yes	☐1
No	☐2
Uncertain	☐3

D6a. What is your occupation?
(check (✓) all that apply)

farmer	☐1
homemaker	☐2 **[Go to question D7a.]**
retired	☐3 **[Go to question D7a.]**
other (please specify)	☐4_____**[Go to question D7.]**

D6b. How many generations has your family been farming?

_____ generations

D7a. How many years of schooling have you had?

_____ years

D7b. What is the highest degree or diploma you have achieved, if any?

_____

D8a. What was your total net household income before taxes in 2003 (approximately)?

_____ dollars

D8b. Approximately what percentage of this income is from farming?

_____ %

We realize that these questions may not have allowed you to share everything on your mind about agricultural land-use in your county, or about the Poplar Farm Program. If you would like to make any additional comments, please do so:

Thank you VERY much for your help!

If you would like a copy of the research report once it is finished, please fill out this form.

Name:

_____

Mailing Address:

_____

_____

_____

Telephone: _____

<u>Please tear off this last page.</u>
It will be collected separately.

Please DO NOT put your name on the questionnaire. Please put your completed questionnaire in the envelope and seal the envelope. This way, all responses will be kept anonymous.

Appendix G

Town Questionnaire

1. In YOUR opinion, which of the following would you classify as a type of farming?

	A Type of Farming	Not a Type of Farming	Uncertain
growing native trees for pulp and paper	☐	☐	☐
growing hemp for fiber	☐	☐	☐
growing genetically modified trees (GMOs) for pulp and paper	☐	☐	☐
raising exotic animals (e.g. alpacas)	☐	☐	☐
growing non-native trees for pulp and paper	☐	☐	☐
growing genetically modified crops (GMOs)	☐	☐	☐
growing hybrid trees for pulp and paper	☐	☐	☐

2. "Landowners should be able to do what they want on their private land."

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

3. How much government regulation (e.g. provincial, county) should there be of these farming activities?

	No Regulation		Some Regulation		Lots of Regulation
protection against fire	**1**	**2**	**3**	**4**	**5**
sale of land	1	2	3	4	5
use of chemicals	**1**	**2**	**3**	**4**	**5**
growing of genetically modified (GMO) seed	1	2	3	4	5
crop choice	**1**	**2**	**3**	**4**	**5**
renting of land	1	2	3	4	5
weed control	**1**	**2**	**3**	**4**	**5**
taking care of land (stewardship)	1	2	3	4	5

4. **Currently foreign-owned companies are allowed to rent private land in Alberta, with some restrictions. Circle your response to the following statement: "Foreign-owned companies SHOULD be allowed to <u>rent</u> farm land in Alberta."**

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

5. **Currently, foreign-owned companies are NOT allowed to own private land in Alberta. Circle your response to the following statement: "Foreign-owned companies SHOULD be allowed to <u>buy</u> farm land in Alberta."**

Strongly Disagree		Neutral		Strongly Agree
1	2	3	4	5

6. **People have different ideas about what nature is and what it isn't. In YOUR opinion, are the following landscapes a part of nature?**

	Not a Part of Nature		Somewhat a Part of Nature		Completely a Part of Nature
a pasture	1	2	3	4	5
a field of barley	1	2	3	4	5
a forest after fire	1	2	3	4	5
a field planted with hybrid poplar trees	1	2	3	4	5
a field with windrows	1	2	3	4	5
a field of canola	1	2	3	4	5
a forest of tall spruce trees	1	2	3	4	5
a field left fallow	1	2	3	4	5
a campground	1	2	3	4	5
a lakeside cabin community	1	2	3	4	5
a field of genetically modified crop (GMOs)	1	2	3	4	5
a city park	1	2	3	4	5
a field of spruce trees grown in rows	1	2	3	4	5

7. In Alberta, rather than cut trees in the natural forest, some people recommend tree plantations where trees are grown on cleared land, specifically to be cut down in the future. Tree plantations vary around the world, with different types of trees and different types of maintenance.
When thinking about tree plantations, how concerned are you about the following:

	Not At All Concerned		Somewhat Concerned		Very Concerned	Uncertain
growing non-native trees	1	2	3	4	5	0
growing trees on farmland	1	2	3	4	5	0
weeds on plantations	1	2	3	4	5	0
growing hybrid trees	1	2	3	4	5	0
the need to irrigate the plantations	1	2	3	4	5	0
plantation trees competing with natural trees	1	2	3	4	5	0
growing genetically modified trees (GMOs)	1	2	3	4	5	0
plantations = monoculture	1	2	3	4	5	0
introduction of tree disease	1	2	3	4	5	0
plantations = poor wildlife habitat	1	2	3	4	5	0

Al-Pac has begun planting tree plantations on marginal private farmland within a 200-kilometre radius of the Al-Pac mill. They are calling this the 'Poplar Farm Program'. The Poplar Farm Program involves the planting of hybrid poplar trees on farmland rented from local landowners. Hybrid poplars are a cross of two species of poplar, and are created in a greenhouse.

8. We are interested in people's opinions of hybrid poplars (the trees Al-Pac is planting). In your opinion, answer true or false or don't know to the following statements:

	TRUE	FALSE	DON'T KNOW
hybrid poplars are new to our area	1	2	0
hybrid poplars are non-native	1	2	0
hybrid poplars can crossbreed with poplars in the natural forest	1	2	0
hybrid poplars can generally out compete poplars in the natural forest	1	2	0
hybrid poplars are genetically modified (GMOs)	1	2	0
hybrid poplars are made using biotechnology	1	2	0

9a. Had you heard of the Poplar Farm Program before reading this questionnaire?

Yes ☐1
No ☐2 **[Go To Question 10.]**

9b. Where did you hear about the Poplar Farm Program? (check (✓) all that apply)

newspaper ☐1
television ☐2
trade show ☐3
word-of-mouth ☐4
posters ☐5
information meeting ☐6
the Internet ☐7
other (please describe) _____

10. How do you feel about the Poplar Farm Program?

Very Negative		Neutral		Very Positive
1	2	3	4	5

11. In your opinion, is it okay to plant hybrid poplar plantations on private land?

Yes ☐1
No ☐2
Don't know ☐3

12. In your opinion, is it okay to plant hybrid poplar plantations on public (Crown) land?

Yes ☐1
No ☐2
Don't know ☐3

13. What year were you born?

19_____

14. What is your occupation?

_____

15. Sex:

Female ☐1
Male ☐2