

# FARMLAND USE IN ABBOTSFORD

AND THE POTENTIAL  
FOR FUTURE GROWTH



**BC Ministry of Agriculture,  
Food and Fisheries**  
August 2004



# Executive Summary

Agriculture is a foundation industry of Abbotsford and has supported long term growth in the community. At almost \$500 million in annual farm gate sales, Abbotsford now produces over twice the agriculture output of the next largest farming community<sup>1</sup> in the province. The agriculture infrastructure and spin-off benefits raise the annual economic impact for the community to over \$1 billion.

Another economic benefit of agriculture is steady real growth in the community. In Abbotsford, agriculture has grown at a (real<sup>2</sup>) rate of almost 5% per year over the last 10 years. This steady real growth on a fixed land base has led to Abbotsford being the most intensely farmed area in Canada.<sup>3</sup>

The Agricultural Land Reserve (ALR) was established as a reserve to meet the future land needs for agriculture. While agriculture has been growing, the ALR has been shrinking. Since 1973, the ALR in Abbotsford has lost 1.2% of its land base to exclusion and 4.8% is now alienated from farming due to temporary or permanent non-farm use. In that time real output tripled. Growth in output and a shrinking land base cannot continue forever. If production and growth are going to continue, it is important to better understand agriculture's need for farmable land.

The Ministry of Agriculture, Food and Fisheries (MAFF) examined this issue by conducting a land use inventory<sup>4</sup>, and combining the information with previous inventories and other land use information. The main purpose of the study was to gain a clearer understanding of how much land is currently in agricultural production in the ALR, how much ALR land is available for future agricultural production and are any specific commodities experiencing land base constraints to growth.

Currently only 8.3% of the available farmland (ALR) in Abbotsford is not farmed. This land can generally be characterized as small lots in the upland area with 53% forested<sup>5</sup>. There are just 25 parcels of unused farmland over 8 hectares acres<sup>6</sup> in Abbotsford with only six of them located in the Matsqui, Sumas, Airport areas. The average size of the unfarmed parcels is 2.0 ha while the average size of farmed parcels is 7.3 ha.

Small lots can effectively be used for some large output agriculture operations such as mushrooms, floriculture greenhouses, poultry and container nurseries. Small lots can also be used by start-up farmers, farmers testing new technologies or, through leases, provide land for existing farmers needing to expand. Despite these opportunities, small lots provide less farming choices than large lots. They specifically exclude dairy, hogs and vegetable greenhouses and limit expansion in poultry.

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<sup>1</sup> In 2001 Abbotsford farm gate receipts were \$485m. Township of Langley was next with \$210m.(Statistics Canada's Census of Agriculture)

<sup>2</sup> Adjusted for inflation. Real output reflects the actual output, not just the nominal farm gate sales.

<sup>3</sup> On average, Abbotsford produces \$18,800 in farm gate sales for every hectare of usable farmland.

<sup>4</sup> A land use inventory involves a drive by assessment of the farming activities on every lot in the ALR.

<sup>5</sup> Due to analytical constraints, this is a percentage of the original parcel area. In other words, water bodies and topographically challenged areas were included in the value.

<sup>6</sup> Lot sizes over 8 hectares have the broadest agriculture opportunities.

In addition to parcel size imposing some limits on the potential for future agriculture use, soil capabilities in the upland area are generally lower than those in the rest of the municipality. This is due to the finer soil textures and denser sub-soils and to the generally rolling terrain. In terms of soil capability, 83% of the unused farmland is class 1 to 3<sup>7</sup> while 97% of the farmed land is class 1 to 3.

As population grows, the demand for agriculture products locally<sup>8</sup> and for export<sup>9</sup> also grows. The discussion of land availability for agriculture focuses primarily on whether agriculture can grow on a smaller land base.<sup>10</sup> While there is no definitive number of hectares required, we do know that a number of factors will influence the land needs of agriculture. For the purpose of this report, these factors were placed in three categories:

- commodity specific land constraints,
- farm management requirements (nutrient management, bio-security); and
- diversity and interrelationships between commodities

Farmers in the dairy, berry and field nursery sectors, that require a large land base, have almost no unused land available for growth in the prime agriculture areas. The growth in agriculture has come more through intensifying land use than using new land. As the least intense user of land (forage), a new dairy farmer will find it very difficult to acquire land. Berry and nursery producers, that generate more revenue per hectare, can pay more for land than dairy producers. Similarly greenhouse operators can pay more for land than berry and nursery producers. Berry and field nursery producers are buying up existing dairy farms<sup>11</sup> and converting to these more intense land uses. This limits the ability of some commodity producers to access land.

In the prime farming<sup>12</sup> areas, the land based commodities have the following unused farmland available for growth:

Commodity	Lots	Hectares
Dairy – over 25 hectares	0	0
Raspberries – over 2 hectares	23	66
Blueberries – over 2 hectares	56	195

There is no unused farmland suitable for dairy production and there is only 66 hectares of unused farmland in the airport area for growth in raspberry production.

Confinement agriculture - poultry, hogs, mushroom, greenhouse and potted nursery – are not constrained by land availability at this time as there are 151<sup>13</sup> unused parcels in the uplands that can meet their needs.

<sup>7</sup> Classes 1-3 are considered the highest agriculture capability. Only 1% of the provincial land base is class 1 – 3.

<sup>8</sup> In B.C., the regulated marketing system requires that over 95% of our milk, eggs, chicken and turkey be produced in B.C. The need to produce these products increases in direct proportion to the population growth.

<sup>9</sup> The Fraser Valley has a competitive advantage in some specific commodities dairy, late blueberries, raspberries, some nursery crops.

<sup>10</sup> In Abbotsford, with current high land prices, it is not realistic to convert other zoned areas to farmland.

<sup>11</sup> A large dairy farm in Matsqui Prairie recently (summer 2004) sold for \$36,000/acre.

<sup>12</sup> See Methodology for definition.

Constraints to the confined livestock sector may come more from the lack of land to utilize the manure produced. When land use changes from forage to berries, it also reduces the land available for application of liquid manure. This interrelationship of commodities was also highlighted during the recent Avian Influenza outbreak. Berry farms and mushroom composters that utilize the manure from poultry barns were suddenly without a source of inputs to their operations.

Agriculture is a dynamic land use – it changes over time. In only one year (2003 to 2004) in Abbotsford, 446 parcels representing 11.5 % of the ALR recorded land use changes. One of the largest changes was from forage to horticulture production where 170 hectares in Abbotsford changed use.

The interrelationships between commodities, and the dynamic nature of agriculture makes it difficult to evaluate agriculture land on a site by site basis<sup>14</sup>. Confinement agriculture is the most productive sector on a square meter basis, yet can operate on poor quality soil. Some horticulture crops need very high quality soil, but may have much lower revenues/acre. The need for a sufficient land base for correct nutrient management, adequate bio-security and sufficient diversity suggests that loss of farmland will limit industry growth in the long term. While it may be difficult for non-farm people to look at a forage field and see a highly productive use of land, the land is part of the interrelationships and diversity that is the foundation of a strong and growing agriculture sector. While it is impossible to identify a specific number of hectares needed for future production, or a time when growth in production will stop, *Abbotsford is probably closer to that point than any other part of Canada.*

In summary, if agriculture in Abbotsford is to meet the rising local and export demand for farm products, it will have to continue to increase output. The land in the ALR that currently is not in production can meet the current growth needs of confinement agriculture operations, but is not well suited for soil based farms such as dairy, berries and some nursery crops. These commodities are already experiencing land base constraints to future growth. Florida and California provide much of our imported food products and they are experiencing similar increases in demand for food from a shrinking land base. These are important long term considerations when making irreversible land use decisions.

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<sup>13</sup> Parcels over 3 hectares.

<sup>14</sup> There are many cases where parcels that look unfarmable have been put into production.

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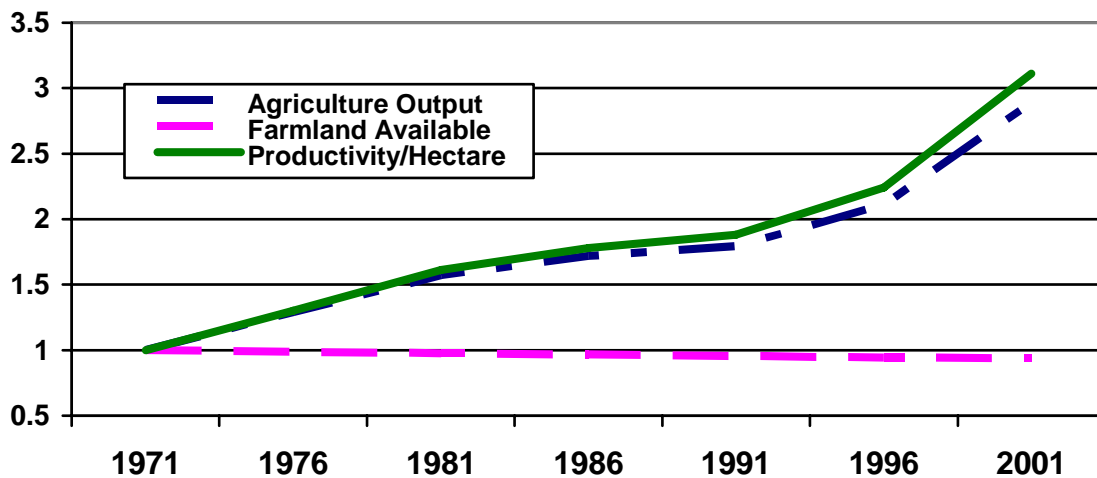
### 3. Introduction

The Agricultural Land Reserve (ALR) was established as a reserve to meet the future land needs for agriculture. While agriculture has been growing, the ALR has been shrinking. Since 1973 the ALR in Abbotsford has lost 0.5% of its land base to exclusion and 4.8% is now alienated from farming due to temporary or permanent non-farm use. Growth in output and a shrinking land base cannot continue forever. If production and growth is going to continue, it is important to better understand agriculture's need for land.

The Ministry of Agriculture, Food and Fisheries (MAFF) undertook a land use inventory<sup>15</sup>, and combined with examinations of previous inventories and other land use information, tried to address this issue. The main purpose of the study was to gain a clearer understanding of how much land is currently in agricultural production in the ALR, how much ALR land is available for future agricultural production and if any specific commodities were experiencing land base constraints to growth.

While agriculture has been growing in Abbotsford, the land available for farming (ALR<sup>16</sup>) has been shrinking. In Abbotsford the ALR has lost 0.5% of its land base through exclusion and 4.8% is now alienated from farming through non-farm use. Figure 1 shows the growth in agriculture output and productivity per hectare since the inception of the ALR.

**Figure 1. Agriculture Output and Productivity**  
(1971 – 2001) (values are relative to 1971 set as an index of 1)



<sup>15</sup> A land use inventory involves a drive by assessment of the farming activities on every lot in the ALR.

<sup>16</sup> The Agricultural Land Reserve was established in 1973. The land reserve designates the ALR for farming and prevents subdivision, exclusion or non-farm uses without permission from the Agricultural Land Commission



Increased output on a stable or shrinking land base cannot continue forever. In this report a number of questions are explored:

- How much farmland does Abbotsford need to support the continued growth in demand for agriculture products?
- What level of intensity can the industry and the resource sustain?
- What types of farming are already constrained by land availability?

The main intent of the study is to gain a clearer understanding of the amount of farmland available for future agriculture production.

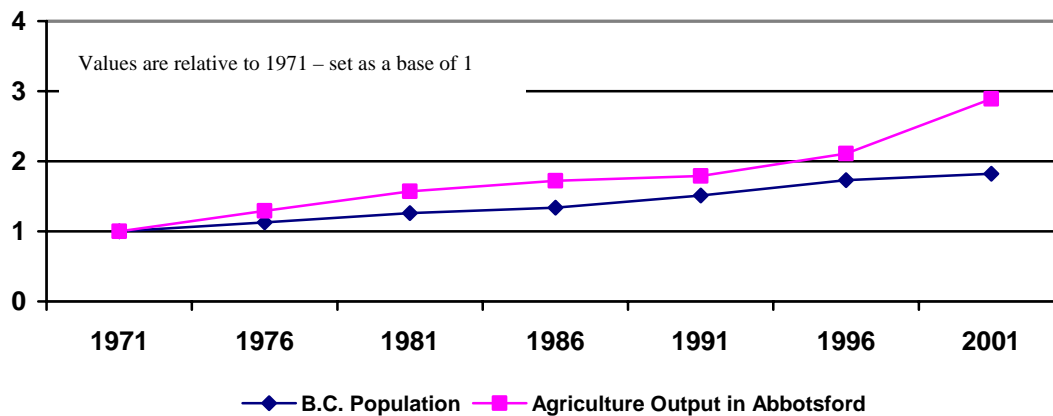
#### 4. Agriculture Growth in Abbotsford

Agriculture is a foundation industry of Abbotsford. It has supported the long term growth in the community. The agriculture infrastructure, and spin-off benefits from the \$500 million in farm gate sales, increases the economic benefit of farming to the Abbotsford community to over \$1 billion a year.

The factors that support a strong agriculture industry in the Fraser Valley are a moderate climate, long growing season, excellent soils and available water. Land costs aside, the Fraser Valley is the most efficient place in Canada for dairy, early potatoes, nursery production and greenhouse production. Research and early adoption of technology has helped make the Fraser Valley a leader in chicken production, greenhouse technology and dairy genetics.

Agriculture provides steady growth in the community. Agriculture in Abbotsford has grown at a (real<sup>17</sup>) rate of almost 5% per year over the last 10 years. As indicated by figure 2, the growth in agriculture production in Abbotsford has been greater than the population growth in B.C.

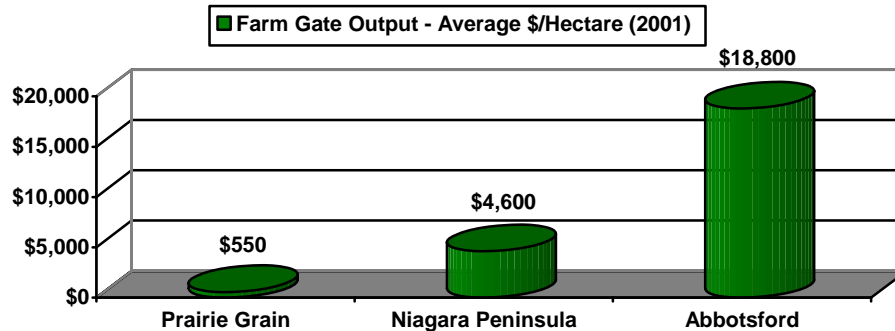
**Figure 2: Comparison of Agriculture Growth and Population Growth**



<sup>17</sup> Real means adjusted for inflation. Real growth reflects the increase in actual products produced.

Steady real growth, and triple the production in 30 years, on a fixed land base contribute to Abbotsford being the most intensely farmed area in Canada<sup>18</sup>.

**Figure 3: National Comparison of Farm Gate Output Per Hectare**



For discussion purposes, this report divides Abbotsford’s farming area into four distinct regions; Matsqui (Matsqui prairie), Sumas (Sumas Prairie), Airport (south Abbotsford around the airport) and the Uplands (Bradner/Mt Lehman uplands)

## 5. Farmland Use in the ALR in Abbotsford

The information for this report was obtained through a comprehensive land use inventory of the ALR in Abbotsford conducted by Ministry of Agriculture, Food and Fisheries staff. Every parcel in the ALR was observed in a drive by survey and the land use activity recorded. Aerial photography from 2003 and farmland classification by B.C. Assessment were also used to assist in determining the land use and level of farm activity.

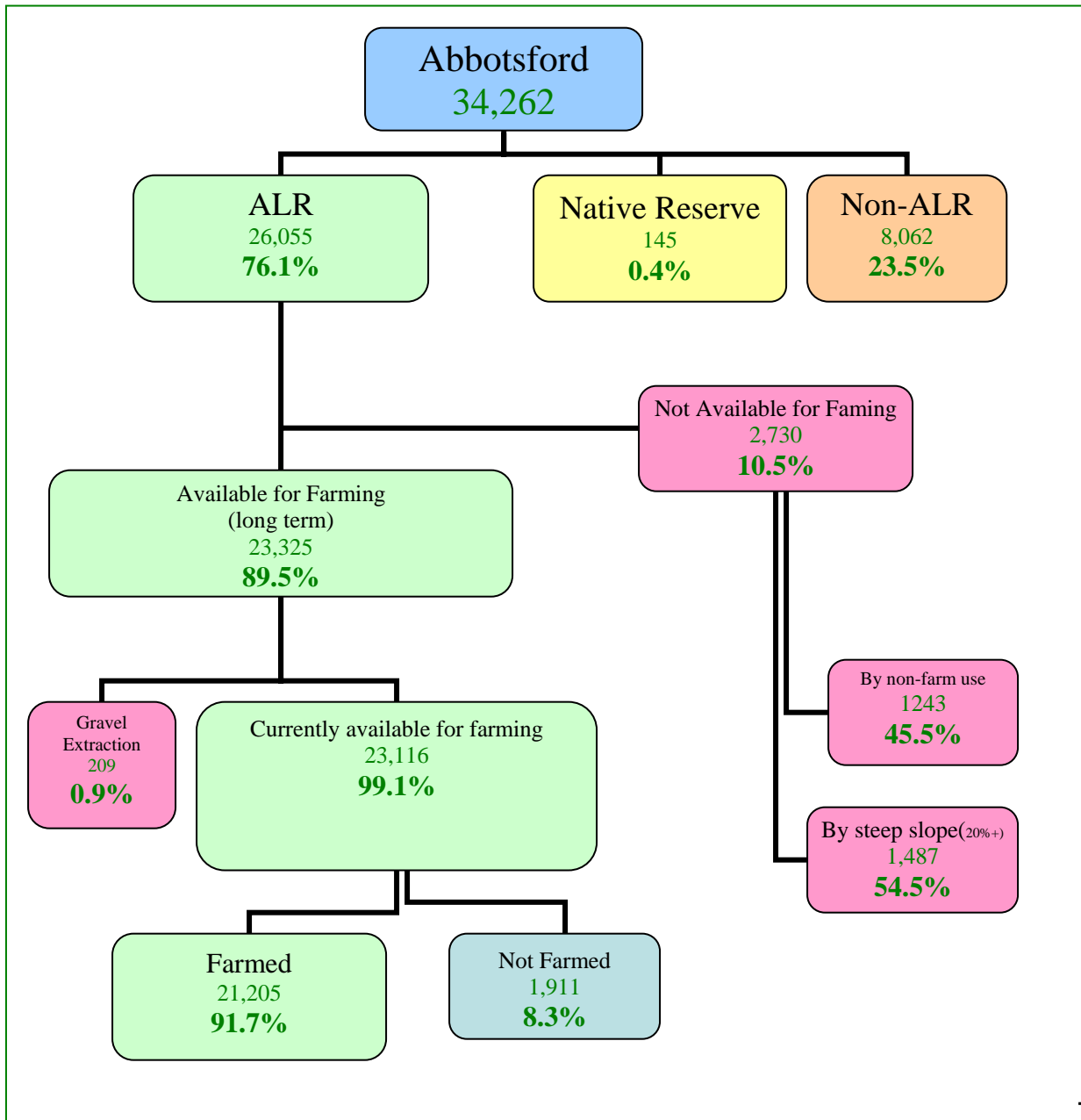
Land use was broadly grouped as ‘farmed’, ‘not farmed’ or ‘unavailable for farming’. Farmed land was land that was producing the minimum amount to be classified farm by B.C. Assessment. Land not producing enough for farmland classification but having some farming activity was considered hobby. Land was deemed unavailable if it was in a permanent non-farm<sup>19</sup> use, it was under 4,000 sq meters with a residence, had a slope greater than 20%, or was permanently covered by water. Because of the large amount of gravel extraction in Abbotsford, gravel extraction was given a separate designation. Gravel extraction areas were considered temporarily unavailable.

Figure 4 shows the breakdown of these land uses in Abbotsford.

<sup>18</sup> On average Abbotsford produces \$18,800 in sales for every hectare of usable farmland.

<sup>19</sup> Railway tracks, roads, parks, cemeteries, churches, etc.

**Figure 4. Use of Land in Abbotsford (in hectares)**



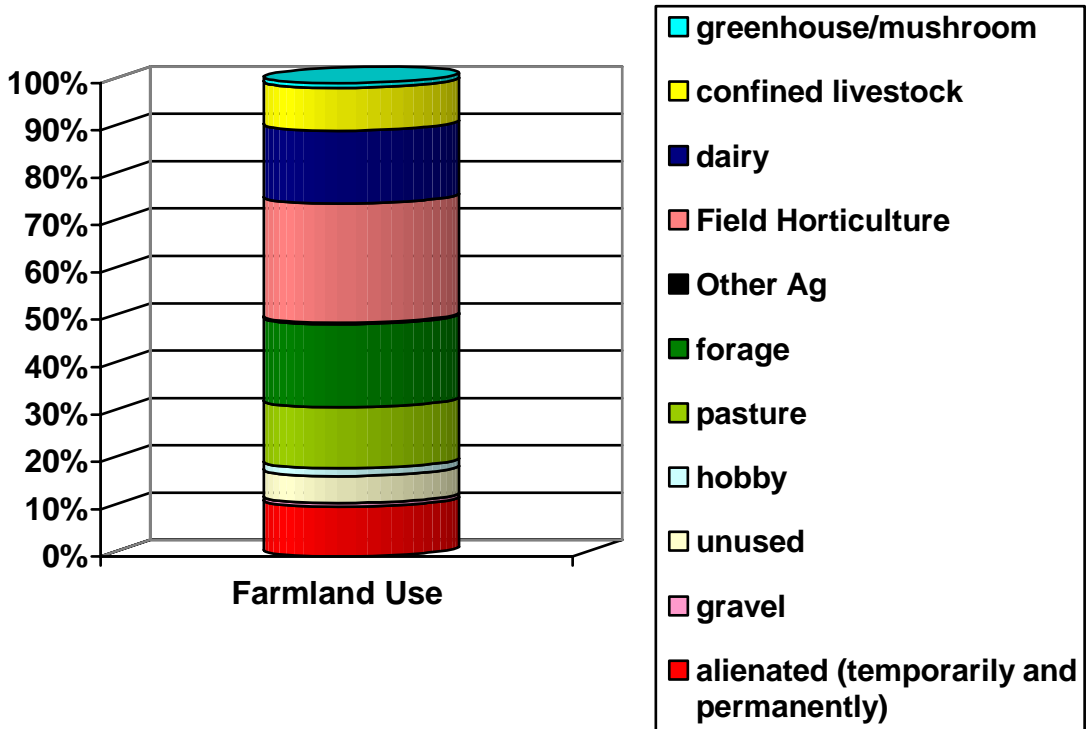
Currently 91.7% of the land available for farming is being actively farmed.

The Census of Agriculture indicates an additional 1664 hectares of land came into agriculture production in Abbotsford between 1996 and 2001. Over this 5 year period almost as much land came into production as is currently not being farmed in Abbotsford. This indicates that Abbotsford has a very limited base of non-farmed ALR land to accommodate future growth. Growth will also come through intensification of existing farmland and farm operations.

### 5.1 Specific Uses of Farmland

Farmland use has been grouped by the intensity of production based on revenues per hectare. The categories and proportion of the ALR land in each type of use is displayed below in Figure 5 with the bottom categories being the least intense use moving up to the most intense use.

Figure 5. Intensity of Farmland Use



The individual proportions are noted in Table 1 below. Definitions are in the methodology- Sec. 9.1 and 9.2.

**Table 1. Intensity of Farmland Use**

Greenhouse/Mushroom	1.03%
Confined Livestock	9.02%
Dairy	15.43%
Field Horticulture	25.20%
Other Agriculture	0.27%
Forage	17.54%
Pasture	12.91%
Hobby	1.59%
Unused Farmland	5.74%
Gravel Extraction	0.80%
Alienated	10.47%
Total	100.00%

A total of 10.5% of the ALR is not available for farming. Almost 5.7% of the ALR is unavailable for farming due to slope greater than 20% or the area being permanently covered by water<sup>20</sup>. An additional 4.8% is not available as a result of permanent or semi-permanent non-farm use, such as schools, churches, parks, ball fields, etc. As a result only 89.5% of the ALR area is available for farming.

Abbotsford has a high proportion of confinement agriculture – greenhouse, poultry, mushroom and potted nursery operations. This type of use, however, only accounts for 11.3% of the available farmland. The balance of the farmland is used for soil based farming activities<sup>21</sup>.

## **5.2 Characteristics of Unused Farmland**

Only 8.3% or 1911 hectares of the available farmland is currently available for future agriculture production. This land can be characterized as generally being small parcels, in the upland areas and partially forested (53%)<sup>22</sup>. Unused farmland is concentrated in the upland area -72.8%. Only 8.6% of the unused farmland is in the Airport area, 11% in Matsqui and 6% in Sumas.

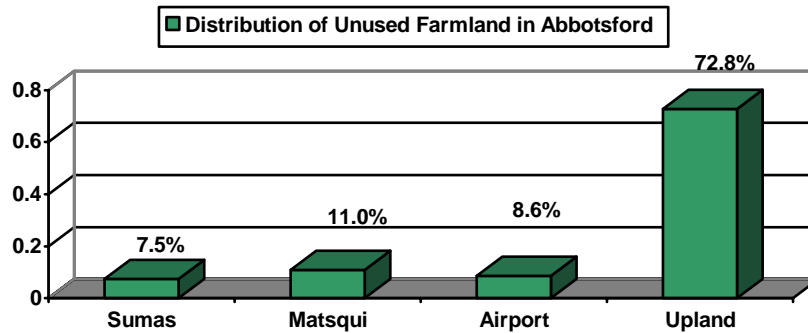
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<sup>20</sup> See maps for details.

<sup>21</sup> Soil based farming includes dairy, pastured livestock, field horticulture, and forage.

<sup>22</sup> Due to analytical constraints, this is a percentage of the original parcel area. Water bodies and topographically challenged areas were included in the value.

**Figure 6. Distribution of Unused Farmland**



**5.2.1. Unused farmland and lot size**

Farmland lots need to be 8 hectares or more to provide the widest range of farming options. Only 25 parcels of unused farmland over 8 hectares exist and of these only 6 are in the Sumas, Matsqui and Airport areas. In Sumas/Matsqui there are no parcels of unused farmland over 11 hectares.

Table 2 shows the distribution of used and unused by parcel size.

**Table 2. Parcel Size Comparison - Used vs. Unused Farmland**

	Unused by Ha	Unused by Lots	Farmed by Ha	Farmed by Lots
< 2 hectares	41%	72%	4%	20%
2 – 4 hectares	29%	20%	12%	27%
4 – 8 hectares	17%	6%	20%	24%
8 – 16 hectares	11%	2%	32%	20%
> 16 hectares	2%	0.2%	31%	9%
	100%	100%	100%	100%

Table 2 indicates the land in large parcels is being farmed and the land remaining for expansion is in smaller lots. 92% of the unused farmland lots are under 4 hectares while 53% of the farmed lots are over 4 hectares. The unused farmland, in parcels over 2 hectares, represents only 4.8% of the available farmland in Abbotsford.

### **5.2.2 Unused Farmland on the Urban Edge**

One fifth (20.8%) of the lots touching the urban boundary or Fraser Hwy are unused while only 6.3% of the lots in the remaining portion of the ALR are unused. A more in depth analysis is needed to determine why these parcels are less likely to be farmed.

### **5.3 Land Use Changes – Intensification**

Agriculture is a dynamic industry. From 1996 to 2004, 1335 parcels had a change in primary use. From 2003 to 2004, 448 parcels had a land use change. The land use changes from 1996 – 2004 involved 9671 hectares representing 37.1% of the ALR.

The most common land use change was from forage to horticulture production. In the one year from 2003 to 2004, 170 hectares in Abbotsford underwent this change. 170 hectares can support the forage production and fertilizer application needs for 425 cows - two large dairy farms.<sup>23</sup>



Dairy farm in Matsqui Prairie converted to blueberries

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<sup>23</sup> One cow needs 0.4 hectares for feed production and manure application.

## 6. Land Needs for Agriculture in Abbotsford

The dynamic nature of agriculture production and the variety and intensity of uses limits any attempt to identify specifically how many hectares agriculture needs for growth or when the agriculture sector will run out of land. This uncertainty is not unique to agriculture. Other land use zones have similar characteristics as do farming areas in other countries that B.C. relies on for food imports.

While we cannot identify a specific number of hectares needed by agriculture for future growth, we do know that there are a number of factors that will influence the future land needs of agriculture. They need to be considered when making land use decisions. For the purpose of this report, these factors were placed into three categories:

- commodity specific land constraints;
- farm management requirements (nutrient management, bio-security); and
- diversity and interrelationships between commodities

The land use inventory provides information that helps better understand these factors.

### **6.1 Commodity Specific Land Constraints**

#### **6.1.1 Constraints From Lot Size**

Given the large proportion of small lots in the unused farmland, the usefulness of these parcels in terms of future agriculture expansion deserves some comment. Small lots can effectively be used for some intensive agriculture operations such as mushrooms, floriculture greenhouses, poultry and container nurseries. Small lots are also suitable for start-up farmers, farmers testing new technologies or, through leases, established farmers wanting to expand. Despite these opportunities, small lots provide less farming choices than large lots. They specifically exclude dairy, hogs and vegetable greenhouses and limit expansion in poultry.

#### **6.1.2 Constraints From Land Values Driven by Intensification**

Because intensive farm operations can generate more revenue per hectare than less intensive farm operators, they are able to pay more for available farmland. The impact of intensification on land prices impacts the land availability for specific commodities. Farmers in the dairy, berries and field nursery/horticulture sectors that require a large land base have little unused land available for growth in the prime agriculture areas. As parcels become available, the market price becomes the price that the most intensive farming operation can support. With reference to Figure 5 page 10 listing different farming operations by intensity of production, berry and field horticulture producers can pay higher prices for land than producers using the land for forage production. Greenhouse operations can pay more than berry and field nursery/horticulture producers and so on. A case in point is the 170 hectares of forage production in Abbotsford that changed from forage production 2003 to field horticulture in 2004.



### 6.1.3 Constraints from Land Availability

The availability of unused farmland for growth in some commodities is presented below:

**Table 3. Availability of Unused Farmland by Commodity**

Commodity		Prime Area		Secondary Area	
		Area (ha)	Lots	Area (ha)	Lots
Dairy	Over 25 hectares	0	0	0	0
Poultry	Over 3 hectares	848.4	151	N/A	N/A
Raspberry	Under 2 hectares	97.3	125	582	521
	Over 2 hectares	66.3	23	1164.3	301
Blueberry	Under 2 hectares	178.8	219	500.4	427
	Over 2 hectares	194.8	56	1035.8	268
Nursery	Under 2 hectares	679.2	646	N/A	N/A
	Over 2 hectares	1230.6	324	N/A	N/A

There is no unused farmland available to start a dairy operation. Dairy operations wishing to start or expand will have to compete with other land uses for the land.

Raspberry production is particularly sensitive to soil and climatic conditions. The well drained soils in the Airport area, combined with the temperate climate in Abbotsford, make this area the most productive raspberry growing area in Canada. Raspberries can be grown in Sumas, Matsqui and Uplands areas but the lower productivity, due to less desirable soil conditions, makes these areas less efficient and less able to sustain the market fluctuations in the industry. The availability of land in the Airport area for future growth in raspberry production is summarized below:

**Table 4. Land Available for Raspberry Production in the Airport Area**

	Area (ha)	% of Airport
Land in Raspberry Production	2208.6	70.3%
Land in Other Berry Production	158.1	5.0%
Land in other agriculture production (<2 ha)	74	2.4%
Land in other agriculture production (>2 ha)	535.7	17.1%
Unused farmland (<2 ha)	97.3	3.1%
Unused farmland (>2 ha)	66.3	2.1%

The efficient size for a raspberry farm is a minimum of 12 hectares. No lots of unused farmland over 12 hectares exist in the Airport area. Farmers can expand through land purchase or lease. The small parcels in the airport area provide lease opportunities for raspberry farmers to expand. These parcels are often available at a lower cost than outright purchase but have a risk in not providing long term lease stability.

Currently raspberry production uses 70% (2208 hectares) of the farmland in the airport area. Only 66 hectares of unused farmland in lots over 2 hectares exist in the airport area for future growth. This represents only a 3% increase from the current raspberry land in production.

Blueberries can grow successfully under a broader range of soil conditions so there is more unused farmland available for growth in blueberry production.

Poultry and nursery farms can use a wide variety of lot sizes and soil conditions and therefore have the most land available for future growth.

## **6.2 Farm Management Based Land Constraints**

The Fraser Valley has the highest livestock density in Canada. Population growth, coupled with a regulated marketing system in the dairy and poultry sectors that encourages local production, will lead to increases in local production. This will result in even higher animal densities in the future.

The primary method of handling livestock manure is to use it as a fertilizer to support other crop production. Dairy manure is commonly used for forage production. Poultry manure is used on raspberries and forage as a fertilizer and in the production of mushroom compost.

Manure from the poultry meat industry is dry so can be transported some distance from the source. Liquid manure, particularly from dairy operations, cannot be efficiently transported more than several kilometers from the source.

The Ministry of Agriculture, Food and Fisheries is currently studying the land base needs required to safely utilize the manure produced by the livestock sector in the Fraser Valley. Preliminary estimates are that the industry may currently be at or near capacity.<sup>24</sup>

A dairy cow produces sufficient manure per year to fertilize 0.4 hectares of forage production. The intensification in agriculture production, particularly the shift from forage production that utilizes livestock manure to more intensive horticulture production that does not, will further reduce the land available to utilize manure from the livestock sector. The land use changes from 2003 to 2004, that saw 170 hectares of forage production move to horticulture production, reduced the capacity of the dairy industry by 425 cows or two dairy farms.

Without the land base to utilize the manure as a fertilizer, the livestock industry will have to find other, more expensive, methods to handle the manure produced on their farms.

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<sup>24</sup> Mr Rick Van Kleeck, Waste Management Engineer, Resource Management Branch, MAFF is leading this work.

### **6.3 Diversification**

Maximum agriculture output would come from having the highest output operations, a greenhouse, mushroom barn or poultry barn, on each lot. However, it would not necessarily result in a strong and stable industry or meet the needs of the consumer.

Diversification is important for a healthy industry as it supports interdependencies that are economically efficient. It reduces bio-security challenges and the impact of commodity specific market fluctuations. It also provides a diverse base of products and some degree of food security for the community.

The recent depopulation of the poultry industry highlighted the interdependencies within commodities and the potential bio-security challenges. The mushroom and berry industry use the waste from poultry farms as reasonable and reliable inputs to their production systems. Disruption in the poultry sector directly impacted both these sectors. Dairy farms sometimes grow field vegetables as a rotation crop and often sell extra forage production to the small scale livestock producers. The agriculture production sector is interrelated and interdependent, so weakening one sector weakens all sectors to some degree.

While the de-population of the poultry sector was a serious blow to the agriculture support industries, these businesses would have been much worse off without the continued business from the dairy, berry, nursery and other sectors. Diversification enables the broad industry to better handle crisis within a specific sector.

## **7. Non-Farm Use in the Agricultural Land Reserve**

The permitted uses within the ALR have changed and evolved with a changing agriculture industry. Unfortunately there are still many non-farm uses in the ALR. Some are non-conforming to local bylaws, while others have been permitted through application to the ALR.

In Abbotsford, 4.8% of the ALR is alienated from agriculture production through non-farm use. A further 831 parcels that are available for farm use are being used for non-farm uses.

The following is a summary of the non-farm uses in Abbotsford.

### **Table 5. Non-farm Use**

<b>Type of Non-farm Use</b>	<b>Lots</b>	<b>Area (ha)</b>
Non-Farm Uses on Land Not Available for Farming (alienated <sup>25</sup> )	436	746
Non-farm Uses on Land Currently Available for Farming	831	1421

**Table 6. Detailed Non-Farm Use**

Non-Farm Uses on Land Not Available for Farming

<b>Type of Non-farm Use</b>	<b>Lots</b>	<b>Area (ha)</b>
Parks	42	224.0
Residential use (under 4,000 sq m)	263	118.5
Government use	4	94.9
Military use	1	92.7
Utility/Transportation and Communications	36	66.6
Other Institutional use	25	58.5
Golf course	2	36.2
Recreational use	7	20.9
Industrial use	9	14.8
Church and Bible Schools	10	8.8
Commercial/Service Use	24	6.6
Schools, Universities, Colleges, and Technical Schools	4	2.3
Cemetaries	3	1.0
Cultural/Entertainment use	1	0.4
Community Service use	3	0.4
Storage	2	0.4

Non-farm Uses on Land Currently Available for Farming

<b>Type of Non-farm Use</b>	<b>Lots</b>	<b>Area (ha)</b>
Industrial use	21	24.6
Truck Storage	34	4.3
Recreational use	9	3.1
Utility/Transportation/Communications use	2	1.9
Commercial/Service use	63	1.4
Other Storage use	8	0.5

The following pictures are examples of non-farm use on ALR land that is available for farming.

<sup>25</sup> This area, unlike the one in figure 4, does not include water management areas not included in the digital stream layer, lands in transition or parcels not in use.



Farm building being used for commercial storage and land used for truck storage



Dairy barn used for large commercial operation



## 8. Other Observations from the Land Use Inventory

### **8.1 Farmland classification and farmland use**

The land use survey identified 204 parcels of farmland that were being actively farmed<sup>26</sup> but did not receive farmland classification and 65 parcels that were classified as farmland but where no active farming was observed. This suggests a common perception that small farms are taking advantage of the benefits associated with farmland classification may not apply in Abbotsford.

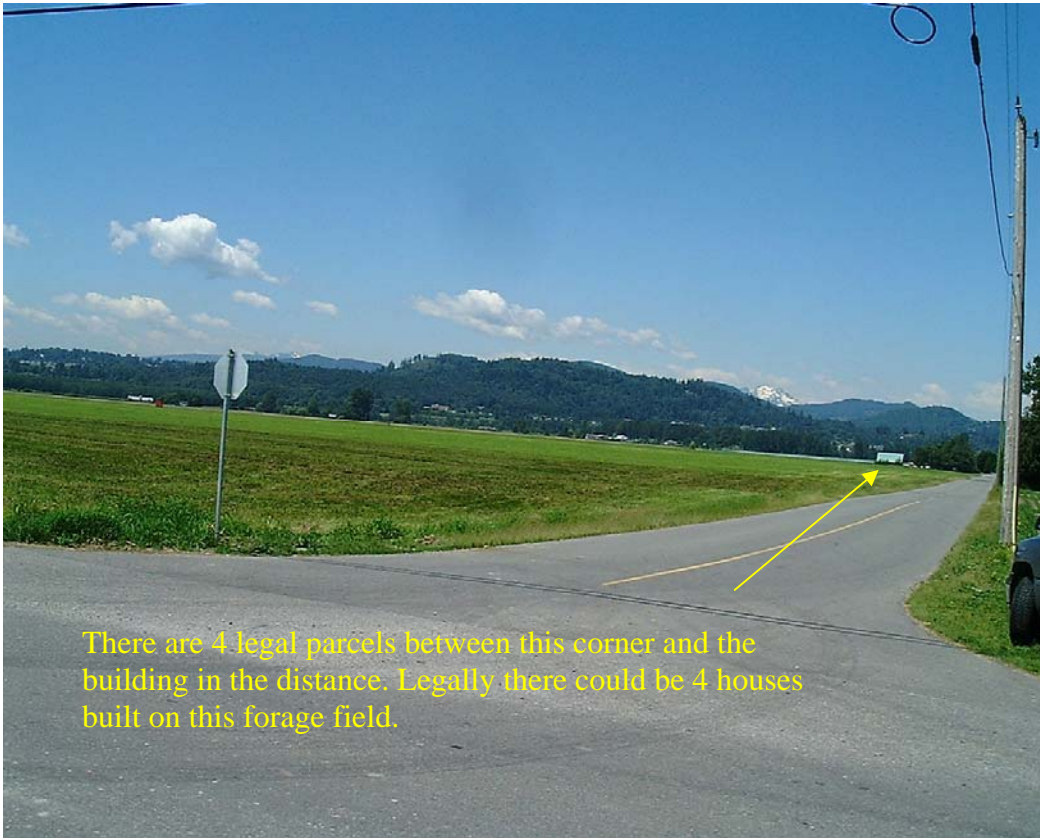
### **8.2 Impact of residential buildings on vacant farm parcels**

There are 604 parcels of farmland in Abbotsford that do not have a residence. Rural residences use approximately 0.3 hectares of land. Consequently if every parcel built a residence, 181 hectares of farmland would be taken out of production.

Below is an example of a large forage field that is already subdivided.

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<sup>26</sup> The agrologist observed sufficient production to meet the requirements for farmland classification



## 9. Methodology

Data was collected and recorded using procedures outlined in *AgFocus – A Guide to Agricultural Land Use Inventory*. Field observations were recorded using a purpose-built database in Microsoft Access. This database was later linked with BC Assessment data and used in ESRI ArcGIS for analysis. Data collected for dairy, swine and poultry farms were verified using producer lists.

The percentage cover for land uses was estimated for each parcel using 2003 airphotos (0.5m resolution and printed at a scale of 1:4000) with cadastral boundaries overlaid. The percentage covers for land-uses were estimates only. While good approximations of actual values, they are not precise. Farm classification was assigned based on observations of farming activity and supported by 2003 BC Assessment data. Watercourses including sensitive streams, creeks and ditches were identified from the air photos and digital watercourse layer displayed in ArcGIS.

The values used throughout this report were derived using ESRI ArcMap to extract numbers from the digital data sources representing Abbotsford. By combining all the digital data into one composite map, it was possible to extract statistics (query) for such things as the number of dairy farms, the area of land currently in forage production, or even how many parcels had areas with slopes greater than 20%. The digital data

combined to generate this composite map in ArcMap included: 2003 ALR boundary, 2003 cadastre (legal parcels), soil capability, elevation contours and creeks. The calculations for areas with slopes greater than 20% was accomplished using a Triangular Irregular Network (TIN) created from the elevation contour layer using ArcMap.

### **9.1 Land Use Definitions used in Survey**

**Agriculture:** an agricultural operation that is generating greater than \$2500 per year.

**Commercial/Service use:** e.g., Auto repair shop.

**Hobby use:** an agricultural operation that is generating less than \$2,500 per year; e.g. residential use with one or two horses.

**Industrial use:** e.g., lighting industry.

**Land in Transition:** undergoing a change in land use that cannot be determined.

**Nursery:** ornamentals and shrubs, cedar hedging, outdoor potted plants

**Storage Yard:** large amounts of equipment, automobiles, or other materials, are being stored outside.

**Unused farmland:** land not used for any of the above purposes.

### **9.2 Other Definitions**

**Parcels with Gravel Extraction:** parcels with mineral extraction as the primary land activity and did not have agriculture occurring.

**Land permanently alienated from production:** roads, railway tracks, cemetery.

**Land temporarily alienated from production:** residential lots smaller than 4,000m<sup>2</sup>, golf courses, parks, schools, churches, and other similar institutions, gas stations and other commercial structures

**Parcels not farmed (less than \$2,500 sales per year from agriculture):** parcels of bare land that could be converted to farmland, parcels greater than 4,000m<sup>2</sup> with only residential use, parcels greater than 4,000m<sup>2</sup> with limited industrial use, or parcels with hobby use.

**Parcels farmed (over \$2,500 sales per year from agriculture):** parcels with pastured livestock, forage operations, greenhouse/mushroom operations, field horticulture, confined livestock and other agricultural activities.

### **9.3 Abbotsford and the ALR**

For discussion purposes, the municipality was divided into four regions - Airport, Matsqui, Sumas and the Uplands. The area values for Abbotsford and the ALR used in this report were determined using the 2003 cadastre layer provided by the City of Abbotsford and included all legal parcels, but excluded major roads and highways. Therefore, these values differ from the official values given by the Agricultural Land Commission that include major roads and highways.

The area of Abbotsford within the ALR was determined by overlaying the 2003 ALR layer on the cadastre layer. The area outside of the ALR was found by subtracting the ALR area and Native Reserves from the entire Abbotsford jurisdictional area.



#### **9.4 Lands Not Available for Farming**

The land area not available for farming was comprised of two main types of land – land not available for farming because of current non-farm use and topographically challenged land. By summing together all parcels that were temporarily and permanently alienated from production, the area not available for farming by non-farm use was found. Many of these parcels were water management areas not included in the digital stream layer, lands in transition or parcels not in use. These parcels were later excluded in Table 5.

The total area of lands that were topographically challenged was determined by adding together the area of major watercourses (with a 1 m buffer) and areas with a slope greater than 20%. It should be noted that many watercourses were not included in the digital stream layer, and therefore were not included in the calculated value of topographically challenged land. Hence, the area of farmland made unavailable by watercourses was underestimated.

#### **9.5 Lands Available for Farming**

All remaining lands that were not topographically challenged, temporarily alienated, or permanently alienated were designated as lands available for farming in the long term. This category consisted of parcels with gravel extraction and lands currently available for farming. The latter group was comprised of parcels presently being farmed and not being farmed.

The average parcel sizes of lands currently available for farming were calculated after removing the area of land that was topographically challenged. All values given for a specific parcel size in the report were obtained using the same method.

The distribution of soil capability classes was determined by reassigning one soil class (the primary soil class) for each parcel. This procedure was reiterated for lands outside the ALR.

Due to analytical constraints, the percentages taken up by the various land covers (such as forests and truck storage) were of the original parcel areas. In other words, topographically challenged areas were included in the calculation.

#### **9.6 Primary Farmland Use**

Primary farmland use was grouped following the criteria listed below. Each parcel may have had other agricultural activities occurring alongside the primary agricultural activity.

**Confined livestock:** farms with indoor poultry, swine or fur as the primary agricultural activity.

**Dairy:** farms with dairy.

**Field horticulture:** farms growing field vegetables, field flowers, berries, Christmas trees, nuts, orchards, specialty crop production, turf, ornamentals and shrubs, cedar hedging, or wine grapes as the primary agricultural activity. It also includes farms that have simply had cultivated land.

**Forage:** farms with harvested forage corn, silage, hay or grass.

**Greenhouse/Mushroom:** farms with greenhouse operations, mushroom operations, or cold frames as the primary agricultural activity.

**Hobby farms:** farms with hobby use.

**Other agriculture:** farms with apiary, stable riding facilities, freshwater aquaculture, agri-commercial and agricultural research uses.

**Pastured livestock:** farms with beef cattle, dry heifers, horses, sheep, goats, deer, exotic animals, game birds, game, ratites, llamas, alpaca, poultry (backyard flocks), livestock of unknown type, or pasture that appeared to have been grazed as the primary agricultural activity.

**Unused farmland:** parcels with only commercial, service, or industrial use, lands in transition, and parcels with an original size greater than 4,000m<sup>2</sup> used only for residential purposes. Here, the definition of unused farmland is different than the one used in the survey.

### **9.7 Raspberry Production in the Airport Region**

In calculating the area of farmland in the Airport region, topographically challenged areas were excluded. Due to analytical constraints, a parcel was assumed to be growing only one type of berry (the one that covered the largest area of land). If berries were grown in a parcel, all areas available for farming were also considered to be part of the berry production. Therefore, the values reported are likely overestimates. Hobby farms were considered to be unused farmland in this analysis.

### **9.8 Forage Operations that are next to Dairy Farms**

Only parcels that were considered to be presently farmed were accounted for in this analysis. Hobby farms were ignored.

### **9.9 Land Not farmed that is adjacent to the ALR boundary or the Fraser Highway**

Using the 2003 ALR boundary and road layers, all parcels that were adjacent to the ALR boundary or the Fraser Highway were selected. The area of parcels that were not presently being farmed was then calculated.

### **9.10 Availability of Unused Farmland by Commodity**

Parcels not presently being farmed were selected if their attributes fulfilled the criteria listed in Table 3 and the following table. Hobby farms were considered to be unused farmland in this analysis.

**Table 7. Prime and Secondary Areas for Dairy, Poultry, Raspberry, Blueberry, and Nursery Productions**

Commodity	Prime Areas	Secondary Areas
Dairy	Matsqui Prairie and Sumas Prairie	Uplands and Airport
Poultry	All of ALR	N/A
Raspberry	Airport	Matsqui Prairie, Sumas Prairie, and Uplands
Blueberry	Airport and Matsqui Prairie	Sumas Prairie and Uplands
Nursery	All of ALR	N/A

### **9.11 Non-Farm Uses**

The area of each non-farm use was calculated using land cover percentages (of the original parcel area), except in parcels used only for residential purposes, and lands not available for farming (the entire parcel area that could be farmed was used instead). The non-farm uses were not necessarily primary land uses.

### **9.12 Land Use Change**

Changes in land use were determined by comparing data collected from this study with data gathered in 1996, 1997 and 2003. All of the area available for farming was included although the changes did not necessarily involve primary land uses. As there were notable differences in the data collection procedure used each year, the reported land use changes should not be interpreted as being completely accurate.

### **9.13 Maps**

In the maps showing the different commodities, only parcels that were considered to be presently farmed were shown. Hobby farms were ignored.