

Groundwater Protection Program

1998/99 Annual Report

The Groundwater Protection Program (GPP) was initiated in the fall of 1995 with the construction of an on-farm conveyor system, built to reduce the high costs associated with transporting manure long distances. This first year was dedicated to testing the workings of the conveyor and the feasibility of a program to ship manure directly from poultry farms to distant markets.

After initial success in the first year, the focus for the second and third years was the expansion of the Groundwater Protection Program. Building on the success achieved by the end of year 1, a significant expansion was possible (see Table 1). This expansion occurred in the following ways:

- increase in the number of poultry and crop producers involved in shipping and purchasing manure
- increase in the volume of manure shipped
- increase in the capacity of the hauling system
- increase in the flexibility and efficiency of the loading system through some minor equipment alterations

In the first two years, manure hauling arrangements were made with little advance notice and were generally seasonal, with the majority of manure hauling occurring in the late fall and winter periods. With the advent of the GPP Membership Program option in the fall of 1997, seasonal effects have been reduced.

Table 1 Increase in Distant Market Manure Shipments from Year 1 (1995/96) to Year 4 (1998/99)

<i>Year of Operation</i>	<i>Shipment Volume</i>	<i>Shipment Period</i>	<i>Increase (adjusted)*</i>
Year 1 (1995/96)	6,200 yd ³	8 months	NA
Year 2 (1996/97)	18,200 yd ³	12 months	+ 96 %*
Year 3 (1997/98)	24,930 yd ³	12 months	+ 37 %
Year 4 (1998/99)	23,675 yd ³	12 months	- 5 %

* Increase adjusted to reflect the increased Shipment Period from Year 1 to Year 2

GPP Membership Program

The Sustainable Poultry Farming Group began a membership program for the GPP early in 1998 with the following objectives:

- Increase manure hauling activity in the spring and summer to reduce the strain on the system from trying to haul large volumes of manure during the fall and winter period
- Reduce hauling cost to poultry producers who make a commitment to the GPP
- Provide manure supply stability to the hauling system.

Since inception, ten farms have committed their annual manure production for shipment to distant markets, an increase of four farms since last year. A further extension of this program, has been offered to poultry producers. The extension offers poultry producers free use of the SPFG conveyor for manure hauled year around out of their covered manure storage facility. To date, one producer has taken advantage of this option, but it appears interest is increasing substantially.

Manure Hauling Activity for Year 4 - Period of April 1, 1998 - March 31, 1999

This year, a total of 97 poultry farm hauling events were coordinated, with 81 of these events involving shipments of manure to distant markets. Similar to last year, the average shipment was 293 cubic yards, with shipments ranging in size from 40 to 800 cubic yards.

Manure Shipping Arrangements to Various Markets

Arrangements for manure hauling connections occur in many ways. While the manure is always sourced from individual poultry farms, the method of shipping and delivery location can vary substantially. Table 2 provides a summary of the marketing arrangements for SPFG coordinated and farmer handled manure hauling events.

Table 2 - Connections for Poultry Manure Shipments

Shipping Arrangements	Distant Markets	Alternate Markets	Local Markets – Sumas Prairie	Total
	----- Cubic yards -----			
SPFG Coordinated	23,675	*	900	24,575
Farmer Handled (with conveyor Rental)	700	3,840	1,130	5,670
Total	24,375	3,840	2,030	30,245

Note: Volume for SPFG Coordinated Connections to Alternate Markets is combined with Distant Markets volume

From Table 2, a total of 30,245 cubic yards of poultry manure shipments were expedited through use of SPFG services. This amounts to an increase of about 2,000 cubic yards (28,145 in 1997/98) over the amount handled last year. SPFG services also include connecting poultry producers with local manure markets, particularly in cases where the manure is too heavy (wet) to transport cost-effectively to distant markets. In many cases, poultry manure was shipped off the Abbotsford Aquifer to the Sumas Prairie, or to alternate markets such as the topsoil industry.

Manure moved by means of SPFG conveyor rentals totaled 5,670 cubic yards, with 4,540 of this amount hauled to distant or alternate markets (mainly involved in the production of topsoil).

In Figure 1, 1996/97 to 1998/99 GPP shipments are identified and compared cumulatively. While overall shipment volumes to distant markets are down slightly in 1998/99, a trend toward shipping manure on a more regular and less seasonal basis can be seen. This trend is important for the GPP, both from a financial perspective as well as for efficiency. Financially, manure marketed in the spring tends to command a higher price, while from an efficiency perspective, coordination and availability of trucking services are optimized with shipments spread throughout the year.

Sources of Manure Shipped During 1998/99

Table 3 1998/99 Manure Shipments to Distant and All Markets from Fraser Valley Areas

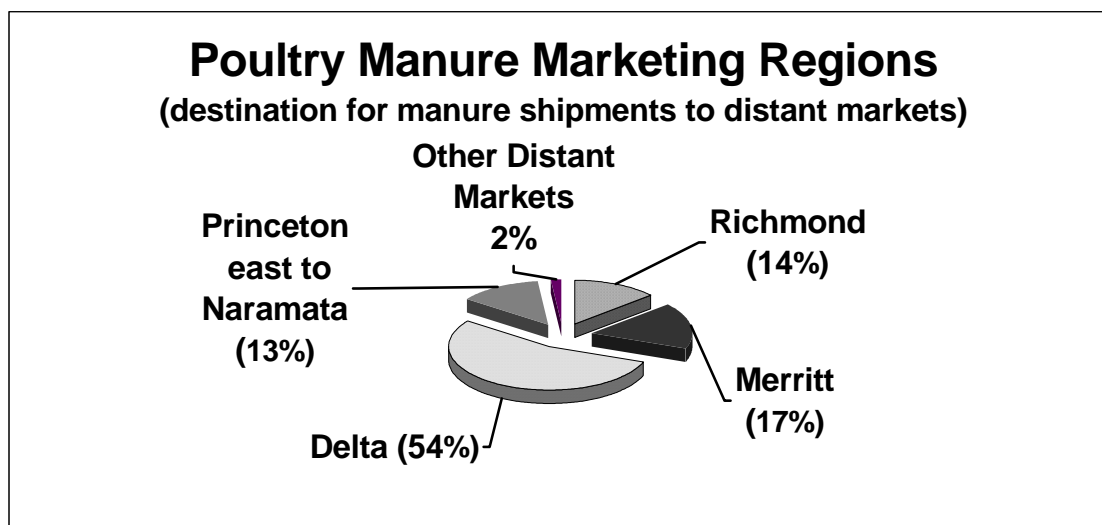
Source Area	Distant Markets	All Markets
	- - - Cubic yards - - -	
Abbotsford Aquifer	7,020	8,380
Central Fraser Valley	14,055	14,375
Upper Fraser Valley	1,800	2,850
Lower Mainland	800	4,640
Total	23,675	30,245

As identified in Table 3, most of the poultry farms which ship manure from the Fraser Valley are either on the Abbotsford Aquifer or nearby within the Central Fraser Valley. Because of this proximity to the Abbotsford Aquifer, shipments originating in the Central Fraser Valley are considered as reducing the total amount of poultry manure spread on the aquifer area

Destination of Manure Shipments

Figure 2 shows the destination market area for GPP shipments of poultry manure during 97/98. Lower Mainland destinations are Delta and Richmond while Interior shipments include Merritt, Cawston, Naramata, and Ashcroft. Shipments for the Other Category went to Sechelt and Pitt Meadows. This year, more manure was hauled to the organic production industry. This increase in shipment is due primarily to SPFG sales efforts with the organic industry over the last two years, as well as an increase in the size of the industry.

Figure 2



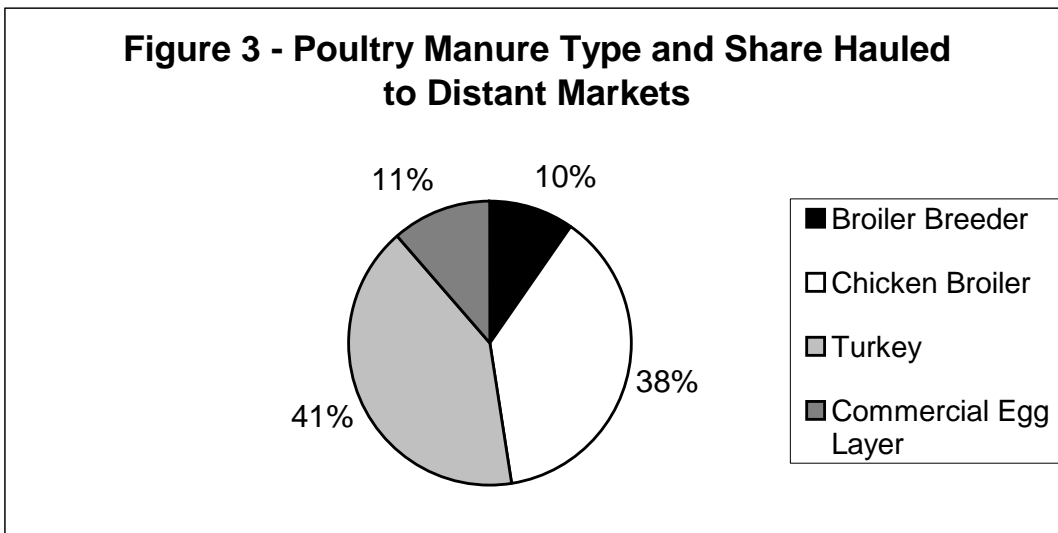
Generally, seasonal trends favour greater volumes of manure shipped to interior markets during late summer to early fall. This is due largely to interior weather and road situations causing

difficult hauling conditions. This year, however, no accessibility problems were evident, and manure was for the most part supplied to markets as needed. As in previous years, late fall to mid-winter shipments increased to Delta and Richmond. The Delta and Richmond markets continue to play an important role in the coordination and optimization of product flow to each market area.

Types of Poultry Manure Shipped

From Figure 3, Turkey manure comprised the largest proportion (41%) of manure shipped to distant markets in 1998/99, followed by Chicken Broiler manure at 38%. Similar amounts were hauled for Broiler Breeder (layer) and Commercial Egg Layer manure types. As in previous years, both layer manure types, while lower in terms of volumes shipped, actually command a higher delivered price in some markets, which in turn provides significant income to the GPP. In comparison to previous years, broiler manure shipments (23 % in 1997/98) as a proportion of all shipments have increased, while turkey manure shipments (59 % in 1997/98) have decreased.

The most important factor in determining the amount of nitrogen shipped is the proportion of chicken broiler manure in the total. Since chicken broiler manure has the highest level of total nitrogen per volume (about 30% higher),



greater amounts of nitrogen removal can be attained if broiler manure shipments are increased relative to the total amount of manure shipped. Thus, the proportional increase in broiler manure (from 32 % in 1997/98 to 38 % in 1998/99) results in an overall net increase in nitrogen removal.

Summary for 1998/99

Since Year 1, manure hauling to distant markets has expanded sizably, both in terms of the number and size of markets, and the number of poultry producers and/or farms involved. While the total amount of manure shipped to distant markets did not increase in 1998/99, the overall amount of manure handled and the number of hauling events coordinated increased by about 2,000 cubic yards and 16 events. Turkey manure remains the greatest proportion shipped, while chicken broiler manure is only slightly less for 1998/99. An increase in broiler manure as a proportion of manure shipments was noted which resulted in a greater amount of nitrogen shipped to distant markets

The GPP membership program has created a greater security for manure supply. An increase in membership by four poultry farms has made servicing distant markets easier and more flexible by being able to supply markets all year.

Manure markets have increased more in size than in number. Delta remains the largest individual market area. A new trucking connection has been made for hauls to Delta and Richmond. Along with previous trucking connections, this should expand our ability to match poultry farms to distant markets. A third conveyor was put into service in January 1999 which was crucial for the month of February. Without the third conveyor, manure hauling opportunities would have been lost due either to breakdowns or increased demand.