



Sustainable Poultry Farming Group
----- Newsletter -----

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..... At a glance --- What's inside

1. **NEW Manure Storage Funding from Investment Agriculture** - - an incentive program to be aware of!
2. **Dry Manure Storage – a Vision for the Future**
3. **SPFG Conducts Coordinated Research Projects on Chutter and Nicola Ranches** – remember the success we achieved at Chutter Ranch during the 1996 season – here’s a research project to build on that success!
4. **SPFG Coordinates Research into Reducing Ammonia Atmospheric Levels within Turkey Barns**
5. **Report Summary – Just Released “Management of Agricultural Wastes in the Lower Fraser Valley”**
6. **New SPFG Publications – Don’t Miss Out!**

<i>Poultry Producer</i>	<i>Trucking Company</i>	<i>Crop Producer</i>
Manure hauling service that is: Inexpensive, available on timely basis, reliable, easy for producer to access	Connections need to be timely – as little waiting on farm as possible	Poultry manure product needs to be clean – no stones or foreign material
	Hauls available on demand – especially for interior markets	Manure dry as possible to maximize volume delivered
	Connection needs to be just one phone call away	Manure delivered must be cost-effective as fertilizer

Manure Storage Funding

1/ Manure Storage Funding comes Through from B.C. Investment Agriculture Foundation

The SPFG has been involved in discussions regarding funding incentives for manure storage. SPFG director and turkey producer Harry Froese and the group coordinator attended a meeting in which manure storage needs for poultry and livestock producers were discussed.

After lengthy discussion, Investment Agriculture decided on a formula. The SPFG coordinator has been told that a total of \$550,000 over two years is to be made available.

At the time of writing this newsletter, the following program information is correct:

- funding will be available strictly for manure storage to the level of 20% of construction cost to a maximum of \$10,000.
- Applications will be available March 15, 1998 from Marketing Board offices, SPFG office, and the B.C. Ministry of Agriculture, Fisheries, and Food.
- Actual funding will be available sometime during April/May 1998

2/ Dry Manure Storage – a vision for the future

Producers all want a high quality product to leave their barns. But what about high quality manure? Our message is simple, reasonable, and possible – produce a dry poultry manure product and keep it that way. In the barn, modern equipment and good management will go a long way to ensure that happens. However, this effort may be to no avail if a pile is left to the elements when manure is pushed outside the barn. The market will always favour dry manure that is free of contaminants (foreign materials). Even seemingly innocuous materials such as stones can be an issue for crop producers who have stone-free fields or have invested in high quality spreading equipment.

Manure Management in the Future

A great deal of discussion and research these days is focussed on the issue of non-point source pollution. This is the type of cumulative pollution which occurs when farms use less than optimal waste or fertilizer management. Increased regulation in the future will likely involve more systematic ways to deal with this environmental problem. A possible systems approach

discussed at the regulatory level involves nutrient tracking - i.e. from the source (feed) to the end product (manure) after shipping of the birds.

As poultry production intensifies in the future and environmental standards are tightened, there will be increased responsibility placed on both industry and producers to ensure that such production does not lead to environmental degradation. Producers therefore require access to timely information which leads to management decisions now which will result in positive spinoffs in the future.

The Groundwater Protection Program (GPP) of the Sustainable Poultry Farming Group is proving to be successful at cost-effectively solving manure production and distribution issues. Although it has not yet reached its full potential, results to date look very promising.

The GPP works by applying the advantages of bulk handling to manure hauling and distribution. This keeps transport and handling costs to a minimum. As the lead office, the SPFG plays the “matchmaker”, by matching the needs of all parties in order to make the system operate as smoothly and effectively as possible. Table 1 details the needs and/or expectations of each party involved in the GPP. As the program develops, adjustments become necessary in order to improve the system and better meet the needs of the parties involved.

One impediment to the optimal operation of the GPP manure hauling program is matching the timing requirements of poultry producers and truckers. Typically, the SPFG receives a phone call from a poultry producer anywhere from 1 day to 4 weeks in advance, the average being about 4 - 5 days. Ideally, 7 - 10 days notice will be given.

While trucks are sometimes available on a 1 day notice for Delta deliveries, interior markets require considerably more time to arrange.

Loading schedules must be set up well in advance for distant markets.

Table 1 Needs of Each Party Involved in the GPP

After 2 years of experience, we know that the best way to meet the scheduling needs of both parties is through the use of a small covered manure storage facility, designed to hold and keep dry just 1 – 2 cycles of manure. The design of this storage is discussed below in section “Manure Storage for the Future”.

Manure Storage for the Future

Future manure management issues are likely to go far beyond just protecting surface and ground water from manure stockpile leachates. As the poultry industry intensifies, manure production and local land spreading will be required to achieve an environmentally sound balance. Poultry farms in the future will benefit from having structures in place to help them comply with more stringent standards.

A covered manure holding area located close to the end of the barn is an excellent and versatile way to provide short-term storage for manure destined for distant markets. When located close to the end of the barn, manure can be quickly cleared and pushed into the area in one operation, avoiding the extra cost of double-handling. When the conveyor is positioned next to the holding area, an effective and efficient system results. This method offers increased flexibility to the poultry producer in arranging for manure handling, and also for the trucking company, especially those looking for a back-haul load to the interior. Producers with a dry product will benefit from increased opportunities for manure marketing. Holding areas should be sized for 1 – 2 cycles manure output from the barn(s) under consideration.

For further information regarding siting and construction considerations, consult the “Environmental Guidelines for Poultry Producers in British Columbia” produced by, and available from the B.C.M.A.F.F.

3/ SPFG Coordinates Research into Reducing Ammonia in Turkey Barns

The SPFG recently coordinated a study at the Agassiz Research Centre which was aimed at determining the effectiveness of alum (aluminum sulphate) in reducing ammonia emissions from turkey barns. High ammonia (NH₃) emissions are recognized as a threat both to the health of the birds and to the air we breathe. The health effects on birds include an increased susceptibility to respiratory infection and increased air sacculitis. The air

quality concerns stem from the fact that ammonia emissions combine with acidic nitrates and sulphates from vehicles, producing fine particulate that can damage the lungs.

Turkey production is particularly at risk for problems associated with ammonia due to the length of the growth cycle. Emissions can be managed by altering feeding strategies, by using clays that adsorb ammonia, or by adding chemicals like alum to reduce the pH of the litter. In this study, the objective was twofold: 1) to measure ammonia levels and emissions from turkey production on litter with or without alum, and 2) to assess the impact of reduced ammonia levels on bird performance, health and carcass quality.

The study was conducted with support from Sustainable Poultry Farming Group, B.C. Turkey Marketing Board, General Chemical, the Fraser Pollution Abatement Office of Environment Canada, as well as Agriculture and Agri-Food Canada.

The experiment consisted of four individually ventilated rooms, each housing fifty birds. Two rooms were used as controls, while two rooms were treated with alum. The alum was applied at a rate of 1 kg m² and raked into the litter when the birds were six weeks old, with additional applications at eleven, fifteen and seventeen weeks. Ammonia concentrations were measured at 1 m height in the centre of the rooms and at the exhaust fans.

Results of this study showed a dramatic reduction in litter pH, and a 60% reduction in ammonia emissions. The alum did not affect bird performance, but did reduce the incidence of ammonia blisters on turkey feet as well as the incidence of bumblefoot. One flaw in this experiment was the fact that ammonia levels were not permitted to rise to levels believed to be typical in production barns. This means that the study does not give a true reflection of the differences attainable, and therefore does not make alum application appear to be economically viable. Given more typical ammonia levels, the results would have been more dramatic and would make alum addition more attractive. General Chemical has shown an interest in pursuing this market for its product.

4/ SPFG Conducts Coordinated Research Project on Chutter and Nicola Ranches

In the last newsletter, the SPFG reported on the positive results obtained from the grass fertilization demonstration project on Chutter Ranch in Merritt. In March 1997, the SPFG teamed up with Drs. Bernie Zebarth (Summerland) and Klaas Broersma (Kamloops) of Agri-Food and Agriculture Canada to conduct further investigations into the fertilizer value of poultry litter for grass and corn silage production, as well as the longer term implications for soil quality improvement.

This project is unique in that it has been set up to look at both the short and long term aspects of poultry litter application. A total of three sites were involved in the research during the 1997 field season, with the expectation that the short term sites will be repeated in 1998. The long term site is intended to be studied for a period of up to ten years.

Depending on the site, treatments include the following :

- Poultry litter spring applied at two rates - 100 and 200 kg total nitrogen per hectare, or about 12 and 25 cubic yards per hectare of poultry litter.
- Litter fall applied at 200 kg total nitrogen per hectare.
- Chemical or inorganic fertilizer nitrogen at 50 to 75 kg nitrogen per hectare (with added phosphorus, potassium, and micronutrients).
- Locally available cattle manure combined with inorganic nitrogen fertilizer (long term site).

The ultimate goal of this research will be to ascertain the value of poultry litter as compared with other fertility sources, both in the short and long term. Previous SPFG project work demonstrated significant value for poultry litter in the short term as a fertilizer replacement, however full crop yield data was difficult to obtain under ranch production conditions. This research project begins where the previous demonstration project left off, and will better refine short term results, as well as initiate the process of long term definition of the value of poultry litter in the fertilization regime for B.C. interior ranches.

5/ Report Summary - Management of Agricultural Wastes in the Lower Fraser Valley

A joint federal/provincial government report has just been released which examines the environmental impacts of agricultural waste management practices in the Fraser Valley. This study was conducted through a steering committee comprised of members from the B.C. Ministry of Environment, Lands and Parks, B.C. Ministry of Agriculture, Fisheries and Food, Environment Canada, and Fisheries and Oceans.

In this project, the three following questions were posed:

- ◆ what is the current state of agricultural waste management in the Lower Fraser Valley;
- ◆ what are the practical options for improving nutrient management, and
- ◆ how might the various practical options be implemented?

The study identified the following priority issues which need to be addressed : nitrate contamination of groundwater; oxygen depletion, eutrophication, and high ammonia levels in surface water; ammonia emissions to the atmosphere; and excessive levels of potassium applied to soil.

The study covered twenty Agricultural Waste Management Zones (AWMZ), covering the Fraser Valley from Richmond to Agassiz . In each of the AWMZ, Statistics Canada data was utilized to estimate livestock and poultry numbers, inorganic fertilizer use, and crop production acreage and type.

The report findings indicated two major factors causing environmental problems:

1. the application of manure and inorganic fertilizer nutrients within an AWMZ in excess of crop requirements.
2. problems associated with on-farm nutrient and other management practices.

