

AUDIT OF THE
LIVESTOCK, POULTRY
AND FUR FACILITIES
OF THE NOVA SCOTIA
AGRICULTURE
COLLEGE

BY
ROGER BUCKLAND AND PHILIP LAVOIE

JUNE 2004

Audit of the Livestock, Poultry and Fur Facilities of the Nova Scotia Agricultural College
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We arrived on Campus at 1:30 pm on April 14 and left at 3:45 on April 16. The audit was at the request of Bruce Gray, V.P. Academic.

We were asked to do the audit for the following reasons.

1. To make recommendations as to the role of these facilities (the complex) in the context of the teaching and research mission of the institution.
2. To recommend on a number of the concerns raised by the CCAC assessment committee visit of June 17-18, 2003. These included, among others, the ability of the NSAC to be able to adequately care for and house its current livestock, fur and poultry populations, the peer review process in place for its research projects, evaluation of the pedagogical value of live animal use in courses, the implementation of the concept of Reduction, Refinement and Replacement and the development of standard operating procedures.
3. To assess and make recommendation as to the appropriate level of resources for each unit within the complex.

Summary

The review team first wishes to thank everyone for their cooperation. It was greatly appreciated.

A total of 61 recommendations have been made. It is hoped that these will bring focus to the complex and assist the NSAC in setting the course for the complex that will endure for the next quarter century.

Broadly summarized these recommendations are that the processes for project approval comply with the requirements of CCAC, that the focus of the complex be on dairy, poultry and mink, that the system of feed delivery be restructured and that a budgeting process be put into place that will ensure adequate resources are available.

Finally it is recommended that all future endeavors be fully evaluated with respect to their need for teaching and research, their capital and operating costs and their expected frequency of use.

Note: Recommendations and statements of agreement are summarized at the end of each section.

SECTION 1 –Role and Administration of Complex

Role of the complex

In the first instance the complex serves the laboratory needs for teaching and research as required for the livestock, fur and poultry activities of the Department of Plant and Animal Sciences, secondly it serves the broader needs of the NSAC and thirdly it may serve the needs of the communities beyond the gates of the NSAC. Thus the NSAC must provide core support from both the operational and the capital improvement/maintenance perspectives. However with respect to this complex the NSAC is fortunate in that, unlike many other teaching and research laboratories or facilities, it has a steady income flow to in part aid in supporting its activities. This must in no way detract from the fact that the primary function of the complex is to provide a teaching and research laboratory. Even though it's primary function is not to serve as an income stream, it must not operate in a financially irresponsible fashion. As a parallel one might draw a comparison with the relationship between teaching and research hospitals and a Faculty of Medicine.

- 1. It is recommended that the role of the livestock, fur and poultry complex of the NSAC be to serve as a Teaching and Research Laboratory for the teaching and research programs of the NSAC.**
- 2. It is recommended that the NSAC provide core support from both the operational and capital improvement/maintenance perspectives to the complex.**
- 3. It is recommended that the complex no longer be referred to as “The Farm” but rather as “The Livestock, Poultry and Fur Teaching and Research Complex of the NSAC” or some variation thereof.**
- 4. It is recommended that signs be erected as soon as possible with the new name of the complex so as to convey its function to all.**

Administration of the complex

The administration of the complex should stay in the Department of Plant and Animal Sciences. This recommendation is made since it is viewed as the best structure to further strengthen the relationships between the faculty who use it for teaching and research and the complex and its staff. The Crops/Ruminant and Monogastric Coordinators should remain in place. This is recommended for two reasons. The first is that any change would simply result in a reshuffling of activities and would not result in improved efficiency but simply mean that someone else would have to take over their duties and their ability and willingness to fill the breach as required. Secondly the two incumbents were viewed by the review team as doing an excellent job. In fact the review team were impressed with the quality of the staff overall within the complex. However it is recommended that the two coordinators report not to the Department Head, as they do now, but to another academic in the department (Academic Animal Complex Director) who would be given the overall responsibility for the animal complex. This recommendation is made so as to be sure that there are no conflicting pressures between

the Department Head doing everything he can to meet the needs and wishes of his faculty and what the complex is reasonably able to deliver.

- 1. It is recommended that the administration of the complex stay in the Department of Plant and Animal Sciences.**
- 2. It is recommended that the Crops/Ruminant and Monogastric Coordinators remain in place.**
- 3. It is recommended that the two coordinators report not to the Department Head, as they do now, but to another academic in the department (Academic Animal Complex Director) who would be given the overall responsibility for the animal complex.**

SECTION 2 – Procedures for Approval of Animal Use, Peer Review and Protocols

Approval of Animal Use for Research and Teaching

A number of deficiencies were identified in the approval process for the use of animals for teaching and research. These must be corrected, but without the process becoming too cumbersome.

Issues identified included the following:

1. The role of the local Animal Care Committee (ACC),
2. The peer review of research projects funded by agencies that do not have a peer review process,
3. The evaluation of the pedagogical merit of using animals in various courses,
4. The methods of evaluating whether there are sufficient resources to support a particular teaching/research project,
5. The almost total lack of empowerment of the coordinators responsible for the daily care and use of the animals to indicate whether the required resources are or are not available for a particular project and to then be able to do something about it,
6. The lack of a transparent system as to who decides who, and in what order, is able to carry out their teaching and research projects, particularly with respect to “non-funded” research projects since their authorization automatically implies the allocation of existing resources.

It is recommended that there be a monogastric and ruminant advisory committee and that each be chaired by the Academic Animal Complex Director. In attendance shall be both coordinators and those faculty involved in teaching and research in the respective area. The Department Head will be an *ex officio* member. Each committee will meet once in late summer to finalize what will be done during the fall and winter semesters, to review the grants that will be submitted and possible projects for the following spring and summer. The second meeting will take place in the early spring (after the results are known from most grant applications) to plan the spring and summer activities in detail and to look forward to the fall. Each new teaching and research project, whether first introduced in either the spring or fall meeting, shall be presented on the “Request for Farm Resources” form. This form may need to be modified to better serve both research

and teaching projects but since it is preliminary it should be kept as brief as possible. These two meetings will provide an opportunity for the coordinators to say if there will be adequate resources available for a project before the grant is submitted or teaching laboratory introduced. The respective coordinator will take minutes and circulate them to all present and relevant members of faculty. It is recommended that these committees be responsible for the allocation of facilities, animals and labor to teaching and research projects in a transparent fashion.

It is recommended that after the details of the teaching laboratory or research project have been finalized the Detailed Use Plan form be filled out and signed by the researcher/teacher (graduate student if involved) and the respective coordinator. Their signatures indicate they agree the resources are available and how the resources will be provided.

Animal Use forms must be completed for all teaching and research projects and signed by the faculty member and the appropriate coordinator.

For the approval of research projects the Animal Care Committee (ACC) must ensure that peer review of scientific merit of the project is done before approval of the Animal Use form is given. In the case of granting agencies such as NSERC, the review is done during the approval process. For sponsors/donors with no formal review process, the ACC must ensure that the review is done by soliciting two reviews of the objectives, hypotheses, methods and contributions of the project by knowledgeable scientists who do not collaborate with the investigator. As a minimum, one referee must be external to the ACC. The reviews must be documented and must contain sufficient information to support the reviewers, conclusion(s). Between the two poles, it is the ACC's responsibility to decide how rigorous the review should be, and can ask for further peer review (as described above) if they feel that the initial review was inadequate for any reason. The ACC must not shy away from this very important responsibility and should not assume that "someone else" looked at the science.

In the case of contracts, no animal can be ordered and no work can begin without the approval of the ACC. Usually protocols (Animal Use forms) are not approved without evidence of sound peer review but an exception may be where a protocol is provisionally approved pending confirmation of valid peer review. Thus it is acceptable to sign a contract before ACC approval, with the understanding that the project may not be approved.

The CCAC requires institutions to have a section in their animal use protocol form that lists all personnel who will be handling animals, along with their training and qualifications with regard to animal handling. In addition we are recommending that the signature of the coordinator be required as stated above.

For the approval of the pedagogical merit of the use of animals in teaching laboratories we recommend that the Department Head be asked to recommend on the pedagogical merit of the proposed animal use before the teaching Animal Use form goes to the appropriate species committee, that the appropriate species committee then be asked to recommend on this issue and that the final decision rest with the ACC who can ask for a further opinion if they wish. In this case the names and signatures of the faculty member, Department Head, the coordinator and the chair of the ACC will indicate that the above process has been followed and approved at each step.

It is recommended that the signature of the Coordinator on the Request for Farm Resources form and the Animal Use form confirms that sufficient resources are available to carry out the project and at a level that will ensure the well being of the animals. If, in the view of the coordinator, adequate resources are not available then the coordinator should not sign the forms but enter into discussion with the faculty member to resolve the issue. If they cannot resolve the issue they should take it to the Academic Animal Complex Director for resolution.

With the attachments are copies of the Animal Use Forms as used by McGill for teaching and research projects.

- 1. It is recommended that there be a monogastric and ruminant advisory committee, that the Academic Animal Complex Director chairs each, that the Department head be an *ex officio* member and that the coordinators be members of both.**
- 2. It is recommended that the Ruminant and Monogastric committees be responsible for the allocation of facilities, animals and labor to teaching and research projects in a transparent fashion.**
- 3. It is recommended that after the details of the teaching laboratory or research project have been finalized the Detailed Use Plan form be completed and signed by the researcher/teacher (graduate student if involved) and the respective coordinator whose signatures indicate they agree the resources are available.**
- 4. Animal Use forms must be completed for all teaching and research projects, signed by the faculty member and the appropriate coordinator and forwarded to the ACC for approval before a project can begin.**
- 5. The CCAC requires institutions to have a section in their animal use form that lists all personnel who will be handling animals, along with their training and qualifications with regard to animal handling. In addition we are recommending that the signature of the coordinator be required.**
- 6. It is recommended that the Department Head be required to recommend on the pedagogical merit of the proposed animal use before the teaching animal use form goes to the appropriate committee (ruminant or monogastric), that the appropriate committee then be asked to recommend on this issue and that the final decision rest with the ACC who can ask for a further opinion if they wish.**
- 7. It is recommended that the signature of the Coordinator on the Request for Farm Resources form and the Animal Use form indicates that sufficient resources are available to carryout the project and at a level that will ensure the well being of the animals.**

SECTION 3 – Animal Populations and Labor Efficiency

Introduction

We are concerned that this is the second major audit of the complex in 4 years. We understand that the last was part of an internal budget cut in 2000 that resulted in the loss of some species and the cutting of some staff positions. This lack of a long-term commitment and vision can lead to a great deal of instability. This complex is vital to the teaching and research activity of the NSAC and is very important to its image beyond its gates. Thus we recommend, based on the recommendations included in this audit, that a vision and plan for the long-term sustainability of the complex be put into place.

One of the objectives of the recommendations in this report is to assist in providing a vision that will lead to the stability of this valuable complex for the next quarter century. What we will be recommending below is based on “the basic herd concept”. That is these recommendations describe the size and function of the basic herds of livestock, fur animals and poultry that should form the core activities of the complex. It is recognized that these recommendations should also reflect the academic directions of the teaching and research activities of the department. Reasons are given for all recommendations. Even with “the basic herd concept” it is recognized that from time to time there may be a need for a short-term adjustment in the population of some species (or introduction of a new species) to meet a specific need. When this is proposed the procedures previously outlined with respect to steps for project approval must be adhered to rigorously to ensure that the required resources are in place and that the ACC is completely satisfied with respect to all aspects of animal welfare and use. It is recommended that the termination date of such a project be clearly defined in the animal use form and in all other forms and minutes recognizing approval of the project. It is recommended that the environmental impact on both land and water resources of such projects be considered.

- 1. It is recommended, based on the recommendations included in this audit, that a vision and plan for the long term sustainability of the complex be put into place.**
- 2. It is recommended that the termination date of projects not part of “the basic herd concept” be clearly defined in the animal use form and in all other forms and minutes recognizing approval of the project.**
- 3. It is recommended that the environmental impact on both land and water resources of all projects outside the basic herd be evaluated.**

Poultry Unit

It is clear that NSAC have chosen to make poultry a priority with its support of the CFI grant and the required fund raising for a new facility. We support this. Also in our view this is appropriate as poultry is one of the major animal commodity groups in Nova Scotia and Atlantic Canada.

This unit and its associated faculty are to be commended for their cooperation with industry and their diligence in obtaining a CFI grant. In addition the NSAC must recognize that the Atlantic Poultry Research Institute is providing a full time employee. We recommend that this is an example that other units should explore.

During our visit the final funding for the new poultry facility was confirmed though the building plans had not yet been finalized. In the new facilities we assume that broilers and turkeys will be used for teaching and research similar to the current situation but we do not know the exact numbers. Plans are for the layer numbers to double from 1400 to 2800. With the type of cages planned this increase in layer numbers should not have a significant impact on the labor required to manage the basic flock. It will increase the income since we assume the Nova Scotia Egg Board will provide the additional quota required.

Dian Patterson and Fraser Nicholson (including use of all animals for the technical program) provided written details of the bird use for teaching in this unit. Poultry is one of the top two animal activities in Nova Scotia and Atlantic Canada with respect to farm gate receipts. Thus we recommend that the students receive greater exposure to working with birds. For example in course AS87 we recommend that serious consideration be given to replacing the "Market Lamb Project" with one entitled "Market Broiler Project". This would entail the same management/economic principles from birth (hatching) to market and such parameters as feed conversion, body weight, mortality, feed costs, body weight per sq. ft. of floor space etc could be used for evaluating the student's performance. Attached is a sample of such a laboratory as used for technical and degree students at McGill University. The students can carry out the routine management of the chicks daily during non-class hours. Similarly a laboratory can be developed with laying chickens where students measure feed consumption, feed efficiency, egg production, egg weight etc during a set time of the laying period to familiarize themselves with these parameters.

We have recommended increased use of the poultry unit for teaching. This increased teaching when combined with the size, layout, increased bird numbers etc associated with the new unit may require further labor if the staff are to do their job effectively. This should be evaluated as part of the design process for the new facility and when the recommended shift in teaching has taken place. Currently additional labor will continue to be required for peak periods and it is recommended that this be provided by the feed mixing unit employee.

Based upon a post visit telephone discussion Dr. Rathgeber confirmed that the new facility will have about 2800 layers and 24 pens that will hold about 50 broilers each, turkey pens, rooms for the heritage birds and additional bird space. We understand, based on these discussions, that a separate registered slaughter facility and a separate registered hatchery are both being considered. This is the situation at the University of Alberta. At McGill University neither the hatchery nor the slaughter facility is registered

which means that neither the chicks nor the meat from these units can be sold but this arrangement provides flexibility with respect to their use for teaching and research. These are two very different alternatives and the decision as to which one is chosen is a very serious one and one that will have far reaching implications. It is recommended that among others the following points be considered and evaluated very seriously before a decision is made:

1. The teaching and research objectives of the unit,
2. The limits that registration puts on the use of these facilities in relation to teaching and research needs,
3. The opportunities that registration of these units will provide for teaching and research needs,
4. The anticipated frequency of use (it may be different if they are registered or not) for the various teaching and research activities,
5. The relative capital cost,
6. The long term operating costs of each option,
7. The registered/non registered facilities that are available for collaboration elsewhere in the private and/or public sector.

It is recommended that all feed for the basic flock be purchased commercially and that only research rations be mixed on site.

- 1. We support the development of the new poultry unit.**
- 2. It is recommended that students receive greater exposure to working with poultry as part of their course program. For example in course AS87 we recommend that serious consideration be given to replacing the “Market Lamb Project” with one entitled “Market Broiler Project”.**
- 3. It is recommended that the current labor force be maintained and that labor required for peak periods be provided by the feed mixing unit employee.**
- 4. It is recommended that, among others, the following points be considered and evaluated very seriously before a decision is made on the question of having a registered slaughter and/or hatchery facility:**
 - **The teaching and research objectives of the unit,**
 - **The limits that registration puts on the use of these facilities in relation to teaching and research needs,**
 - **The opportunities that registration of these units will provide for teaching and research needs,**
 - **The anticipated frequency of use (it may be different if they are registered or not) for the various teaching and research activities,**
 - **The relative capital cost,**
 - **The long term operating costs of each option and**
 - **The registered/non registered facilities that are available elsewhere in the private and public sector.**
- 5. It is recommended that all feed for the basic flock be purchased commercially and that only research rations be mixed on site.**

Fur Unit

Dr. Kirsti Rouvien-Watt provided us with the Report on Research and Teaching Activities for 2002-2003 of the Nova Scotia Fur Institute which was very helpful.

It is clear that the NSAC has chosen to make mink a priority based on its support of the CFI grant and the required fund raising for the new mink facility. We support this. Also in our view this is appropriate as mink are a significant commodity in Nova Scotia and in other parts of Atlantic Canada. In addition it is a niche which is not being addressed elsewhere in Canada. Having a new facility that will take the female mink breeding population from 100 breeding females to a basic herd of 400 breeding females plus the required males and resulting offspring will result in a much larger number of uniform animals being available for teaching and research. In keeping with mink as a priority and with the increased numbers available we recommend that more teaching modules be developed using mink. These could include management and economics of the growing young through to pelting as outlined under the "Market Broiler Project" but adjusted to the growth cycle of mink and semester dates. The opportunity for more research with this much larger homogeneous population is obvious and we recommend it be capitalized on.

It is recommended that the Pine Marten breeding population be disposed of. It is recognized that this is a unique breeding population but its relevance to animal agriculture is limited. However because it is a unique breeding population it is recommended that every effort be made, as quickly as possible, to find it an appropriate home. We understand that through DNA fingerprinting its genetic relationship to other Marten populations is being determined. This should help with its relocation and the Nova Scotia Department of Natural Resources should be contacted. If they are not able to take them then similar Departments in other provinces in Atlantic Canada should be contacted and again if no success then other possibilities across Canada and finally in the US should be explored. The NSAC accepted this breeding population and with it a responsibility and it must do its utmost to honor that commitment in finding an appropriate new home for the colony.

The NSAC has clearly made a decision to focus on mink for teaching and research and thus it is recommended that the fox population be disposed of as soon as all research commitments have been completed. It is further recommended that this population be disposed of in as timely a fashion as possible so that as many of the animals, both young and adults, can be made available to the fox industry of Atlantic Canada as breeding stock. We make this second recommendation because this population has both a high reproductive rate and good quality pelts.

Based on the new facilities and the information contained in the 2002-2003 report of the Nova Scotia Fur Institute it is our view that this unit is in a unique position to generate a world reputation in the area of mink research and we recommend that this be encouraged.

It is recommended that the NSAC provide two full time people for the basic herd management of the expanding mink population and the teaching that will be associated with it (the mink population will grow as the pine marten and fox are depopulated). Currently additional labor will continue to be required for peak periods, particularly pelting with this larger herd, and it is recommended that this be provided by

the feed mixing unit employee. In addition to support the research activity which is both ongoing and which will increase we recommend that the model of the poultry unit or some variation of it be pursued to provide a research technician.

It is recommended that all feed for the basic herd be purchased commercially and that only research rations be mixed on site.

- 1. We support the development of the new mink facility and the setting of mink as a priority.**
- 2. It is recommended that more teaching modules be developed using mink.**
- 3. It is recommended that the opportunity for more research with this much larger homogeneous mink population be capitalized on.**
- 4. It is recommended that two full time people be available for the basic herd management of mink population and the teaching which will be associated with it and that labor required for peak periods be provided by the feed mixing unit employee.**
- 5. It is recommended that the basic herd of the fur unit consist of 400 breeding female mink, the required males and the offspring to market age.**
- 6. It is recommended that the Pine Marten breeding population be disposed of and that every effort is made to find it an appropriate home.**
- 7. It is recommended that the fox population be disposed of as soon as all research commitments have been completed and that this population be disposed of in as timely a fashion as possible so that as many of the animals, both young and adults, can be made available to the fox industry of Atlantic Canada as breeding stock.**
- 8. The mink unit is in a unique position to generate a world reputation and we recommend that this be encouraged.**
- 9. It is recommended that the model of the poultry unit or some variation of it be pursued to provide a research technician.**
- 10. It is recommended that all feed for the basic herd be purchased commercially and that only research rations be mixed on site.**

Dairy Unit

With relatively new dairy facilities and a commitment to faculty positions in this area it is clear that the NSAC has chosen to make dairy a priority. We support this and note that with respect to farm gate receipts dairy and poultry are the most important forms of animal production.

We recommend that within the “basic herd concept” that the dairy herd in future is kept at 40 milking cows and that the number of dry cows and heifers be appropriate for a herd of this size. Currently the number of both dry cows and heifers exceeds this and should be reduced. This reduction in herd size will result in savings of 15 to 20% in the amount of silage required compared to 2003 – 2004 requirements and a savings of 10% (20 tons) in the amount of concentrate required. Also this past winter there were so many animals that the manure storage facility could not handle all the manure and contract arrangements had to be made to have some removed from the storage facility and trucked off the NSAC Campus.

Since dairy is one of the three priority areas for animals at the NSAC and given its economic importance it is recommended that greater use can be made of the dairy herd for teaching.

We recommend that the labor force in the dairy unit be increased from 2 to approximately 3.5 full time equivalents. A rule of thumb that we have observed elsewhere is one full time employee for every 10 to 13 cows in lactation. To bring the number of employees up to 3.0 it is recommended that the vacant dairy technician position be filled and assigned to dairy. It is also recommended that this person’s shift include the weekend. This will result in other labor savings amounting to \$10,000 to \$15,000 per year through a reduced need for casual help and less “call ins” on weekends. This arrangement also means that 7 days a week at least one shift per day will be filled with a regular employee. This is in keeping with the concerns of CCAC that there is adequate qualified labor. The other .5 of the employee recommended for the dairy would come from reducing the size of the sheep flock and the amount of teaching associated with it. For peak periods it is recommended that the extra labor be provided by the feed mixing unit employee. We also recommend that the faculty involved in dairy look to the industry as the poultry sector have to obtain technical help for research. Such a step would not alter the labor needs for managing the basic herd and teaching.

We noted that one employee has used a pedometer on at least one occasion to check how much she walked to do her job and she found she walked about 15 km per day. The layout of the building cannot be changed but having to walk such long distances does not enhance labor efficiency.

- 1. We support dairy being a priority.**
- 2. We recommend that within the “basic herd concept” that the dairy herd in future is kept to 40 milking cows and that the number of dry cows and heifers be appropriate for a herd of this size.**
- 3. We recommend that a greater use be made of the dairy herd for teaching.**
- 4. We recommend that the labor force in the dairy unit be increased to approximately 3.5 full time employees and that labor required for peak periods be provided by the feed mixing unit employee.**

- 5. We recommend that the faculty involved in dairy enter into dialogue with the dairy industry to obtain technical help for research.**

Sheep Unit

At the time of our visit there were approximately 350 sheep, including lambs, on the ground. Sheep production is not as economically an important activity with respect to farm gate receipts in Atlantic Canada as is milk, poultry or fur. We recognize the unique role that the sheep flock has played in the various teaching programs but we are concerned that there may currently be an over emphasis on using sheep in the teaching program in relation to their economic importance and thus where the job opportunities are for graduates.

We recommend that the Texel and Karakul breeds be disposed of with the priority being that the animals be made available as breeding stock. Secondly we recommend that the Rideau Arcott flock be substantially reduced so that the entire remaining flock including ewes, rams, replacements and lambs can be located in the south end of the west (first) wing of the ruminant complex. To accommodate this, the south end should be isolated from the rest of the ruminant complex and operated as a separate building with its separate entrance/exit. This operational procedure should be taken to the N.S. Milk Board for approval. We recommend that as a priority the excess animals be made available to the industry as breeding stock. We also recommend that to accommodate this consolidation of the sheep flock that the NSAC relocate the methane units to the north end of this wing. We recommend that this reduced flock be used only for teaching, that there only be one lambing per year and that consideration be given to selling the lambs as soon as their need for teaching is finished. The teaching would focus on such things which are difficult to schedule in other species such as birth, post natal care, weaning, giving of mineral and vitamin injections and that the management/economics laboratories use primarily poultry and mink as discussed.

With respect to labor we recommend that the position currently assigned to the sheep join the dairy/sheep staff and that the management of the greatly reduced sheep flock be a component of general tasks of the entire staff in the ruminant sector. This reduction in the size and the use (for teaching) of the sheep flock would result in a saving of a ½ full time employee who for ½ his time would be transferred to the dairy. Also since all the sheep will be in the south end of the first wing the ruminant facility will have 4 full time equivalents assigned to it.

This reduction in the size of the sheep flock will reduce the demands on the field staff by reducing the amount of hay required by 75%. It would also result in a 75% reduction (approximately 45 tons) in the amount of concentrate feed required by the sheep. There would also be considerably less manure to handle. It is recommended that the Crops/Ruminant coordinator explore the possibility of designating more responsibility to the manager of the field unit to allow her more time for the dairy.

- 1. It is recommended that the Texel and Karakul breeds be disposed of with the priority being that the animals be made available as breeding stock.**
- 2. It is recommended that the Rideau Arcott flock be substantially reduced in number so that the entire remaining flock including ewes, rams,**

- replacements and lambs can be located in the south end of the west (first) wing of the ruminant complex.
3. It is recommended that the south end of the first wing be operated as a separate building and that this arrangement be taken to the N.S. Milk Board for approval
 4. It is recommended that the excess Rideau Arcott animals be made available to the industry as breeding stock.
 5. It is recommended that to accommodate this consolidation of the sheep flock that the NSAC relocate the methane units to the north end of this wing.
 6. It is recommend that this reduced sheep flock be used only for teaching, that there only be one lambing per year and that consideration be given to selling the lambs as soon as their need for teaching is finished.
 7. It is recommended that the employee currently assigned to the sheep join the dairy/sheep staff and that the management of the reduced sheep flock be a component of general tasks of the entire staff in the ruminant sector.
 8. It is recommended that the Crops/Ruminant coordinator explore the possibility of designating more responsibility to the manager of the field unit.

Feed Mixing Unit

Currently the feed mixing unit of the NSAC mixes nearly all the grain based feeds for all the livestock and poultry. The first recommendation is that the capability to mix research rations be maintained. Secondly it is recommended that all none research rations be purchased as commercial rations “off the shelf”. This will entail a budget transfer from the feed mixing unit budget, which is approximately \$187,000, to the poultry unit budget and to the dairy unit budget. This budget transfer reflects not only a dollar transfer to the appropriate budget but it also transfers the responsibility for decisions regarding the use of the feed to the user which is where it should be since it is not a “free” production input. The total costs to purchase these feeds commercially, based on existing populations will be about \$122,000 (357 tones at \$340 per ton). However it must be remembered that the 357 tons currently includes some research rations so some of this money would be available to help purchase ingredients for the required research rations when they replace commercial rations but it would not cover the full substitution costs. It is difficult to estimate but perhaps \$10,000 will be needed annually to help cover the substitution costs and to maintain the feed mixing equipment in an operational state so it can be used as required. It should be noted that there is the question of how much of the cost of the ingredients for research rations should be born by the research project and how much by the central budget. This could affect what the figure of \$10,000 really is, but probably only marginally so.

With the recommended animal populations there will be a reduction in the amount of feed required which when combined with purchasing of non research rations as commercial ration will result in both a dollar saving and a saving in the amount of time

required for feed mixing by the feed mixing unit employee. In the dairy unit by reducing the number of dry cows and heifers a saving of 20 tons has been projected. By substantially reducing the sheep flock a saving of 45 tons is projected for a total of 65 tons or \$22,000. This gives a revised projected annual feed cost of \$100,000 plus \$10,000 for research rations for a total of \$110,000. With a current budget of \$187,000 this leaves a balance of \$77,000 which after allowing for salary and benefits of the technician means that a saving of \$25,000 should be able to be realized.

With these change there will not be a need for a full time employee for the feed mixing unit but there is an absolute need to maintain the feed mixing unit in a “ready to go condition” for mixing research rations as required. We recommend that the feed mixing unit employee be responsible for maintaining the feed mixing unit, the fur unit feed mixing equipment and the pelleter when it is installed in a “ready to go condition” In addition we recommend that this employee be available to supervise and/or mix and/or assist in the mixing as required of all experimental rations. It is estimated that 75% of the feed mixing employee’s time will be available for other tasks. It is recommended that this employee be the first choice to serve as a replacement staff when one is required for peak periods, holiday replacement or sick leave replacement. This should result in savings in casual labor costs for all units including the ruminant and monogastric administration.

The pelleter that the NSAC has obtained from AAFC is a very valuable research asset and we recommend it be installed.

An issue which was brought to our attention by the coordinators following our visit is the question of HACCP regulations with respect to feed mixing and the requirements in relation to the sale of produce. This could add to the workload of the employee responsible for the feed mixing unit. However since it is recommended that all non research rations be purchased as commercial rations this will eliminate what could have been a considerably greater increase in workload. We have consulted with Linda Morrison, National Manager, Livestock Feed Program for the Canadian Food Inspection Agency (CFIA) and have been told that since teaching and research institutions do not sell their feed they will fall under the On Farm Mixing regulations, when they come forward. Under the Canadian Federation of Agriculture the Canadian On Farm Feed Safety (COFFS) working group has been formed to develop “On-Farm Manufacturing of Medicated Feeds: Good Production Practices (GPPs)”. A copy dated February 27, 2004 is with the attachments. The COFFS has worked closely with the CFIA and AAFC in developing these GPPs.

Ms Morrison has also told us, assuming the regulatory process is completed in 2005, that the following would be the dates for compliance with the regulations: January 1, 2006 for all commercial feed mills; January 1, 2007 for all on farm mixing where concentrated medicated ingredients are used; and January 1, 2008 for all on farm mixing using a premix with the medication included. Mr. Steve Leetch of Chicken Farmers of Canada has told us that no dates have been set as to when poultry processing plants will require that birds to be processed be fed only rations from mixing facilities that comply with the regulations as outlined above. However, clearly any facilities at NSAC for mixing research rations must be designed and operated so that they will meet the appropriate regulations when they come into force so that produce can be sold but even more importantly so that students learn and understand the correct procedures.

- 1. It is recommended that the capability to mix research rations be maintained.**
- 2. It is recommended that all none research rations be purchased as commercial rations “off the shelf”.**
- 3. It is recommended that the feed mixing unit employee be responsible to maintain the feed mixing unit, the fur unit feed mixing equipment and the pelleter in “ready to go condition”.**
- 4. It is recommended that this employee be available to supervise and/or mix and/or assist in the mixing as required of all experimental rations.**
- 5. It is recommended that this employee be the first choice to serve as a replacement staff when one is required for peak periods, holiday replacement or sick leave replacement**
- 6. It is recommended that the pelleter be installed.**
- 7. It is recommended that any facilities for mixing research rations be designed and operated so that they will meet the appropriate regulations when they come into force.**

SECTION 4 – Budget and Additional Recommendations

Budget

Ms Lana Crewe has provided a list of FTEs and done a commendable job in comparing the budgets (as attached) of the teaching and research animal and poultry complexes of McGill University and the NSAC, which are very different institutions with different budgeting systems. Fourteen percent more of the total budget for the NSAC animal complex comes from the NSAC operating budget than at McGill (57.9% vs. 43.9%). There are probably 3 reasons for this that represent conscious decisions that have been taken by each institution and which have resulted in quite different complexes for the fiscal year 2002, the year the comparisons were made. Some years ago McGill made the conscious decision to focus on swine, as one of its three priorities, with a 48-sow herd farrow to finish that requires, in its relatively new facility, about 1.5 full time employees. This generates a gross income annually of about \$100,000. The NSAC made the decision to discontinue swine and focus on fur animals, primarily mink. The fur unit requires about 2 full time equivalents but currently has a gross income annually of only about \$20,000 for a difference of \$80,000. Due to recommendations of CCAC with respect to quality of facilities and the ability to care for the birds over the last few years the NSAC laying flock has been reduced by about 2200 birds to a flock of 1400 layers (McGill has about 3450 layers) which represents a gross loss of annual income to the NSAC of about \$50,000. These two decisions have resulted in the fact that the two teaching and research complexes have set some different priorities which have affected their respective incomes. The decision to focus on mink and increase the herd to 400 females will result in an increased income of about \$55,000 net of the lost revenues from the fox pelts. It should be noted that the prices paid for pelts can vary significantly from year to year and this will impact on the budget. The doubling of the number of laying hens

in the new poultry unit will also add about \$30,000 in income. These changes will increase the proportion of the budget of the complex at the NSAC coming from income. Thirdly at McGill we do not operate a feed mill on the scale which the NSAC does so this is not in the McGill budget with no revenue source to support it.

The above outlines some of the reasons for the observed differences in the two revenue sources between the two complexes. We recommend that the objective of the NSAC complex to serve as a teaching and research laboratory be kept clearly in focus as the number 1 objective but at the same time that the relative revenue sources are monitored regularly.

The question as to why the NSAC complex is spending roughly \$100,000 over budget annually is a serious one. According to the figures provided by Ms Lana Crewe approximately \$40,000 is beyond local budget control (salary policy, insurance, amortization and electricity). It is the view of the reviewers that these costs should not just be “downloaded” year after year to the complex, if such is in fact the situation. The item salary recoveries (\$8,000) should be in control of the budget administrator and such salary recoveries should be budgeted accurately and then collected. All other items should be budgeted realistically.

With the restructuring of the animal and bird populations, the restructuring of the feed delivery system, the restructuring of the labor force and a much improved budget and budget management system it is the view of the reviewers that savings in casual costs, probably for all units, feed costs and general savings from reduced ruminant numbers could amount to between \$50,000 and \$60,000 annually. These savings combined with the \$40,000 noted above as being beyond the control of the complex together come to \$90,000 to \$100,000 or in essence equal the annual over expenditure. These projections may be a bit overly optimistic in the short term but with the increased income anticipated from the fur (400 female mink) and poultry (twice the number of layers), even though these units will have increased costs, the budget for the complex should be able to be balanced each year.

For this to be achieved and be sustainable there must be an equitable formula so the budget from the NSAC and that from income are able to share equitably in covering the costs of inflation. For example at the McGill University animal and poultry complex all salary increases are provided for by the University while increases in all other line items are covered by increases in revenues. There is no scientific basis for this method of sharing in the increases in costs due to inflation but it has worked reasonably well for over 20 years at least. We recommend that the NSAC develop some similar method whereby the institution and the revenue lines effectively share in meeting the annual costs of inflation. It is recommended that a budget/budgeting process be developed that will allow the complex to stay within budget for the items under its control and that the coordinators and the person responsible for the budgets meet monthly to review where each unit is with respect to its budget and to review the projections to year end.

- 1. It is recommended that the objective of the NSAC complex to serve as a teaching and research laboratory be kept clearly in focus as the number 1**

objective but at the same time that the relative revenue sources are monitored regularly.

2. It is recommended that a budget/budgeting process be developed that will allow the complex to stay within budget for the items under its control.
3. It is recommended that the NSAC develop a method whereby the institution and the revenue lines effectively share in meeting the annual costs of inflation (costs over which the complex has no control).
4. It is recommended that the coordinators and the person responsible for the budgets meet once per month.

Additional Recommendations and Observations

1. It is recommended that the coordinators be responsible, in conjunction with the chair of the ACC, for increasing the awareness and implementation of biosecurity measures, including hand washing and footbaths.
2. It is recommended that the coordinators be responsible, in conjunction with the chair of the ACC and the faculty who are the major users, for developing standard operating procedures for all units and appropriate equipment.
3. It is recommended that serious consideration be given to making the senior project optional rather than required. These projects take a great deal of faculty and staff time and in some cases put an added burden on the animal resources.
4. It is recommended that the three buildings, which will be vacated, when the sheep will be housed in the dairy unit, be examined in terms of other uses and/or taken down. It is recommended that one or more of them be used to house the field equipment, which now stays outside all winter. Secondly one of the buildings is capable of housing beef cattle and should be kept, at least in the short term, in case a beef project were to come to the NSAC outside the basic herd concept which we have recommended. The fate of these buildings should be approved by and recorded in the minutes of both the monogastric and ruminant committees.
5. It is projected that the reduced animal numbers in the ruminant units will take pressure off the overall management cycle including field operations. For the fur unit it is again projected that the elimination of two species, even with more mink, will again take pressure of the management cycle. For poultry it will be important that the new unit and its activities stay within what can be managed.
6. The reduction in the requirement for forages, due to the reduced number of dairy animals and sheep, will allow for some changes in cropping programs that might include the production of cash crops.

END