

Poultry Welfare Research in Canada

Workshop June 5, 2006

AGASSIZ

Executive Summary

In June 2006, the Canadian Poultry Research Council (CPRC) and Agriculture and Agri-Food Canada (AAFC) hosted a workshop entitled "Poultry Welfare Research in Canada". Participants representing academe, industry and government met to review Canada's current capacity for poultry welfare research, and to decide where future efforts should be directed.

It was concluded that, although there is already a variety of poultry welfare-related research ongoing in Canada, there remains much work to be done. In terms of facilities, Canada is well poised to continue this work, but more research effort is needed to do so. Coordinated effort and collaboration among the varied expertise across Canada is required. A dedicated poultry welfare and behaviour specialist for Canada could champion this effort and create a 'virtual centre' of poultry welfare research across the country. Financial support for research is of course required, but, further to raising funds, there is a need to ensure knowledge gained from research gets to those in the industry who can implement it. Increased effort is therefore required, not only to relay research results to industry stakeholders, but to commit to application of these results in the field.

The following were identified as **priority areas requiring more research**:

- Methods of euthanasia and depopulation
- Transportation
- Beak trimming
- Relationship between productivity and bird welfare
- Effect of housing environment
- Aggression in male broiler breeders
- Feed restriction in broiler breeders
- Studies on pain, fear, frustration and emotional states
- Economic impact of improving poultry welfare

The following were identified as **issues requiring priority attention**:

- Getting research into practice
- Coordination of effort across Canada

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Introduction

In June 2006, the Canadian Poultry Research Council (CPRC) and Agriculture and Agri-Food Canada (AAFC) hosted a workshop entitled "Poultry Welfare Research in Canada". Over 40 participants representing academe, industry and government met to review Canada's current capacity for poultry welfare research, and to decide where future efforts should be directed.

The program included updates on current and planned poultry welfare research across the country, and allowed industry representatives to present their perspective on poultry welfare issues. Emerging programs of animal welfare standards within and outside Canada were also presented. A copy of the program is in Appendix A. Attendees were asked to combine the information presented with that gained from their own experience and identify future research priorities that would best address the animal welfare issues of our industry. Appropriate efforts beyond research funding were also addressed.

1. Overview of Ongoing Research

Each workshop participant was given an inventory of Canadian projects relating to poultry welfare and behaviour, as well as facilities with special equipment suitable for this type of research. A list of poultry welfare and behaviour projects outside of Canada was also provided. This list was by no means comprehensive, but gave participants an idea of the kinds of work being done elsewhere. Copies of the inventories are in Appendix B.

Guest speakers from research institutions across Canada presented overviews of ongoing poultry welfare-related research. Their presentations are summarized briefly below:

1.1 Atlantic Canada – presented by Bruce Rathgeber

Most current research projects at Nova Scotia Agricultural College (NSAC) are not specifically aimed at poultry welfare but are related to improving bird health. These projects put an emphasis on alternative nutrients in poultry feed, alternatives to antimicrobials and value-added uses for fruit crop by-products. Effort has also been put towards reducing carcass damage and skin scratches of market birds.

Topics of note include:

- using yeast beta glucan to reduce osteoporosis in laying hens and to replace antimicrobials in layer diets
- using apple and blueberry by-products to improve health and meat quality
- effects of lighting schedules on skin collagen metabolism and cardiac health
- using microwaves for toe trimming broilers to reduce skin damage

1.2 Quebec – presented by Renée Bergeron

Although facilities suitable for welfare research are available at McGill and University of Montreal, there are no current projects specifically related to poultry welfare.

1.3 Ontario – presented by Tina Widowski

There are many projects with poultry welfare implications underway at the University of Guelph relating to health, production and food safety. The University also has a Behaviour and Welfare Group which is putting forth efforts to determine the underlying causes of behaviour



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problems in poultry. Hyper-aggressiveness in broiler breeders, feather pecking in layers and starve-out in turkey poults are among the topic areas. There is also an industry-driven project underway that is looking for better ways to depopulate caged birds (organizations involved in this project include OMAFRA, CFIA and University of Guelph).

1.4 Manitoba & Saskatchewan – *presented by Hank Classen*

There are several projects at Saskatchewan specifically aimed at poultry welfare. One is aimed at addressing the unique problems of transporting broilers in the Canadian climate. A prototype trailer is being used to investigate temperature limits and ventilation requirements of the birds. A comparison of beak trimming techniques is also underway, as is a study on the effects of lighting regimes on behaviour and leg problems. Feeding silage to layers as a means to reduce feather pecking is also being investigated.

1.5 Alberta – presented by Michelle Jendral

Among the projects in Alberta are those exploring various technologies that could be used in welfare research. The utility of infrared thermography to detect disease and measure feather cover is being examined, as is the use of hormone levels in eggs as a non-invasive means by which to measure stress in birds. Also, a new method to measure bone density in live hens is being used in a variety of experiments. Researchers are assessing alternative cage systems for layers and trying to determine the appropriate group size for these birds. Reduction of broiler breeder aggression through management adjustments is also being explored.

1.6 British Columbia – presented by *Fred Silversides*

Much of the poultry research program in BC is related to genetics. The relationship between biodiversity and disease resistance, and the interactions between strain and housing environments (including free-range) are being investigated.

2. Industry Perspectives

The CPRC directors, representing the Council's Member Agencies, presented their perspectives on poultry welfare. A list of the priorities for each commodity group is shown in Appendix C. Many of the research priorities listed in the industry reports were also identified during group discussions. Further to research, emphasis was placed on the need to get research results into practice within the industry. There is often a disconnect between what goes on in the lab and what can be implemented in the field. This issue needs to be addressed. Also of note was the recognition that improving poultry welfare should have a minimum negative economic impact on the industry.

3. Breakout Group Discussion

Workshop participants were divided into discussion groups and asked to:

- identify industry priorities which need further attention from the Canadian poultry research community
- identify additional emerging areas of research need
- identify personnel requirements and how to address deficiencies
- identify any facilities and/or equipment lacking in Canada and suggest how these deficiencies can be addressed

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Each group presented its findings, which were noted as discussion items for the afternoon session. Points recorded by each table group are shown in Appendix D. Some of note were:

- *Welfare embodies all areas of biological function.* It is difficult, therefore, to easily define poultry welfare research. Although there are studies geared towards specific issues of poultry welfare, those relating to health, mortality etc. also have welfare implications and are part of the overall effort to improve the well-being of our flocks.
- *There are few research positions in Canada dedicated to poultry welfare.* Informal counts of full time equivalents dedicated to poultry welfare at research institutions across Canada revealed that there are relatively few hours spent on this type of research. For example, NSAC has one person who is working on poultry 25% of the time. Of that, 10% is spent on poultry welfare-related research. Alberta has only 1.5 full time equivalents for poultry welfare research. With the retirement of Ian Duncan from Guelph, there is no longer a dedicated poultry welfare and behaviour specialist in Canada.
- *Research vs. implementation.* Although there is a solid base of knowledge for many welfare-related issues, there is still a need to develop and apply that knowledge in the field. Certification and training programs are a possible means by which to achieve this goal.

4. Emerging Programs of Animal Welfare Standards – presented by David Fraser

There are a variety of approaches to developing and applying welfare standards:

- *Non-mandatory welfare codes/guidelines* are often developed by producers with government support and generally have no legal status; some are associated with auditing and inspection or certification programs to increase confidence in codes.
- *Government regulations* – such as those enforced in Sweden and the UK.
- *International agreements* – such as those enforced through EU Directives.
- *Corporate social responsibility.* Some corporations (e.g. McDonalds, other restaurants, grocers) have instituted programs and require minimum standards for their suppliers.
- *Labelling programs* are sometimes used to differentiate products based on welfare standards for sale in niche markets.

There is an overall need for science to develop standards and to help industry adopt them. There are different levels of standards depending on how welfare is defined and measured:

- Level 1 – good health, physical environment that supports basic biological need
- Level 2 – lack of suffering – no pain, no fear, no frustration
- Level 3 – allows for/promotes natural behaviour

Most poultry welfare research in Canada relates to nutrition, housing, genetics etc. and, as such, supports Level 1 standards. Relatively few researchers have the experience necessary to do Level 2 or 3 work.



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5. Overall Group Discussion

After the above sessions, the entire workshop group engaged in discussion led by Frank Robinson. The group was asked to address the following questions:

- What areas do we cover well now and what should we be moving to?
- What are the gaps that Canadian poultry researchers, the CPRC and AAFC can help fill?
 - infrastructure
 - personnel
 - techniques
- technology transfer vs. research (which is most limiting at present?)

A number of research areas are currently being covered well. In most cases, however, more work is required. These areas should therefore not be excluded from consideration for future financial support. Examples are given in the following table:

<i>Research areas that are being addressed</i>	<i>Additional work required</i>
<ul style="list-style-type: none">• Transportation conditions (low temperature limit, ventilation)	<ul style="list-style-type: none">• Other conditions• End of cycle hens• Turkeys• Effect of transit time on modern breeds of chicks• Specialty birds (e.g. ostriches)
<ul style="list-style-type: none">• Modified housing for layers	<ul style="list-style-type: none">• Differences in responses among breeds• Which components of modified cages are most important?
<ul style="list-style-type: none">• Bone strength in layers	<ul style="list-style-type: none">• Need to incorporate all data from rearing to end of cycle
<ul style="list-style-type: none">• Effects of lighting regimes	
<ul style="list-style-type: none">• Comparison of beak trimming methods	
	<ul style="list-style-type: none">• Mass euthanasia
	<ul style="list-style-type: none">• Feed restriction in broiler breeders

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5.1 Discussion items

The group raised several discussion items. Some are described in brief below:

5.1.1 Technology & information transfer.

There were several suggestions on how to improve technology transfer for poultry research in general. This issue is of particular concern to welfare research. More effort should be placed, not only on sharing results among researchers, but also on getting applicable information to industry stakeholders. The latter efforts must be targeted. For example, information relating to best handling practices should be directed to those who handle the birds (catching crews, producers, plant workers). Similarly, appropriate information should be directed to the consumer. This effort might best be accomplished in partnership with grocers. There remain questions about public perception of the current state of poultry welfare within our industry. Are we making an impact on shaping that perception?

Possible avenues by which to disseminate information are by website, magazine articles, newsletters or a 'travelling road show'.

5.1.2 Poultry welfare specialist in Canada.

It was concluded that there should be at least one dedicated poultry welfare specialist in Canada. This person should develop a poultry welfare network to champion efforts and connect researchers across the country. One possibility is to create a Canada Research Chair who specializes in poultry welfare. Although it would be beneficial to have a nucleus of personnel in one location, the physical separation of Canada's current research facilities makes it more likely that the poultry welfare specialist would lead a "virtual center". The CPRC will investigate avenues by which a poultry welfare lead in Canada might be created. It is possible that

this position would be created at AAFC or, perhaps more likely, at a university. In the latter case, all universities will be given opportunity to partner in creating this new position.

5.1.3 Staff certification. The idea of certification programs for those who handle poultry was put forward. Such programs could lead to standards by which poultry are cared for on farm, during transport and at the processing plant. Regular re-certifications would also serve as conduits by which to relay new information to the people who can use it.

5.1.4 Duplication vs. replication. In order to maximize research dollars, it is prudent to minimize duplication of effort among researchers. It was noted, however, that there is merit in replicating results achieved elsewhere to confirm them and to show that they are applicable to Canadian conditions. A balance must be struck between avoiding duplication and proving repeatability.

5.1.5 Codes of practice. With the dissolution of the Canadian Agri-Food Research Council (CARC), there is no longer a national organization to update the Recommended Codes of Practice for the Care and Handling of Farm Animals. The newly formed National Farm Animal Care Council (NFACC) has taken on the role of coordinating a consistent approach to Code development among commodity groups. It was noted that there should be a mechanism to increase the science involved in Code development.

5.1.6 Poultry scientist position at NSAC.

Although still at Nova Scotia Agricultural College (NSAC), Bruce Rathgeber is now a scientist with AAFC. The NSAC position will be filled and advertisements will go out soon.



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6. Research Priorities

From the presentations and discussions of the day was gleaned a list of research priorities:

- **Euthanasia**
 - mass depopulation during emergencies
 - routine depopulation (especially disposal of end-of-cycle layers, unwanted male chicks)
 - determining humane endpoints for sick or injured birds and appropriate techniques to euthanize
- **Transportation**
 - humane conditions, transit time
 - catching and loading/unloading techniques
 - education/training
- **Beak trimming**
 - best practices
 - short and long term effects
- **Relationship between productivity and bird welfare**
 - consequences of growing broilers too rapidly
 - impact of breast growth on leg strength in turkeys
 - effect of stocking density
- **Effect of housing environment**
 - air quality and temperature
 - lighting
 - litter quality
 - use of cages for layers
- **Aggression in male broiler breeders**
- **Feed restriction in broiler breeders**
- **Studies on pain, fear, frustration and emotional states**
- **Economic impact of improving poultry welfare**

7. Priority Activity Areas

The following activities were identified as priority items that require attention:

- **Getting research into practice**
 - technology transfer
 - certification/training programs
 - development and implementation of welfare standards
- **Coordination of effort across Canada**
 - Canada should have a poultry welfare research network (virtual centre) with an identified leader/coordinator to be located at a university or government research laboratory.
 - The CPRC does not have funding for such a position in its mandate, but accepts the role to assist in fund raising to put such a position in place.

The CPRC gratefully acknowledges the support of Agriculture and Agri-Food Canada for this event.



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Conclusion

There is a variety of ongoing research in Canada related to poultry welfare. Some projects are specifically targeted to welfare and behaviour and many more are related in that they deal with disease, nutrition, overall health and other issues. There remains, however, a great deal of work towards addressing current and emerging issues. In terms of facilities, Canada is well poised to continue this work, but there is a need for more personnel to do so. Coordinated effort and collaboration among the varied expertise across Canada is imperative. A dedicated poultry welfare and behaviour specialist for Canada could champion these efforts and create a 'virtual centre' of poultry welfare research across the country. Financial support for research is of course required, but, further to raising funds, there is a need to ensure knowledge gained from research gets to those in the industry who can implement it. Increased effort is therefore required, not only to relay research results to industry stakeholders, but to commit to application of these results in the field.

Many steps towards improving poultry welfare in Canada will have economic consequences. Adjustments to current business models may be necessary. Nevertheless, the Canadian poultry industry identified welfare among its top priorities and remains committed to maintaining and (where necessary) improving the welfare of its birds.

Appendices

Appendices are available on the CPRC web site (<http://www.cp-rc.ca/>) or upon request.

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