



Progress report on the implementation of the *Global Plan of Action for Animal Genetic Resources - 2007 to 2011*

Country: **Canada**

Strategic Priority Area 1: Characterization, Inventory and Monitoring of Trends and Associated Risks

- The state of inventory and characterization of animal genetic resources
- The state of monitoring programmes and country-based early warning and response systems
- The state of international technical standards and protocols for characterization, inventory, and monitoring

1. Which of the following options best describes your country's progress in building an inventory of its animal genetic resources covering all livestock species of economic importance (SP 1, Action 1)?

Glossary: An inventory is a complete list of all the different breeds present in a country.

- a. Completed before the adoption of the GPA
- b. Completed after the adoption of the GPA
- c. Partially completed (further progress since the adoption of the GPA)
- d. Partially completed (no further progress since the adoption of the GPA)

Please provide further details:

The list of mammalian breeds is completed but the actual census of population size is only based on the number of registered pure-bred animals. The list of avian breeds is complete but no accurate population census data are available.

2. Which of the following options best describes your country's progress in implementing phenotypic characterization studies covering morphology, performance, location, production environments and specific features in all livestock species of economic importance (SP 1, Actions 1 and 2)?

- a. Comprehensive studies were undertaken before the adoption of the GPA
- b. Sufficient information has been generated because of progress made since the adoption of the GPA

- c. Some information has been generated (further progress since the adoption of the GPA)
- d. Some information has been generated (no further progress since the adoption of the GPA)
- e. None, but action is planned and funding identified
- g. None, but action is planned and funding is sought
- f. None

Please provide further details:

Each animal breed registry compiles the phenotypic characterization and data analyses.

3. Which of the following options best describes your country's progress in molecular characterization of its animal genetic resources covering all livestock species of economic importance (SP 1)?

- a. Comprehensive studies were undertaken before the adoption of the GPA
- b. Sufficient information has been generated because of progress made since the adoption of the GPA
- c. Some information has been generated (further progress since the adoption of the GPA)
- d. Some information has been generated (no further progress since the adoption of the GPA)
- e. None, but action is planned and funding identified
- f. None, but action is planned and funding is sought
- g. None

Please provide further details:

All FAO-MoDAD panels have been tested and optimized for all livestock species relevant to Canada. However, not all breeds and populations have been completely characterized.

4. Has your country conducted a baseline survey of the population status of its animal genetic resources for all livestock species of economic importance (SP 1, Action 1)?

Glossary: A baseline provides a reference point for monitoring population trends. Population status refers to the total size of a national breed population (ideally, also the proportion that is actively used for breeding and the number of male and female breeding animals).

- a. Yes, a baseline survey was undertaken before the adoption of the GPA
- b. Yes, a baseline survey has been undertaken or has commenced after the adoption of the GPA
- c. Yes, a baseline survey has been undertaken for some species (coverage increased since the adoption of the GPA)
- d. Yes, a baseline survey has been undertaken for some species (coverage not increased since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

Please provide further details:

Baseline surveys are based on pure-bred registration data and not on actual number of animals on the ground.

5. Have institutional responsibilities for monitoring the status of animal genetic resources in your country been established (SP 1, Action 3)?

Glossary: Monitoring is a systematic set of activities undertaken to document changes in the population size and structure of animal genetic resources over time.

- a. Yes, responsibilities established before the adoption of the GPA
- b. Yes, responsibilities established after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

Please provide further details:

Canada has a national AnGR conservation program and two (2) non-government organizations: the Canadian Farm Animal Genetic Resources Foundation and Rare Breeds Canada that monitor status and trends as well as conservation initiatives across the country.

6. Have protocols (details of schedules, objectives and methods) been established for a programme to monitor the status of animal genetic resources in your country (SP 2)?

- a. Yes, protocols established before the adoption of the GPA
- b. Yes, protocols established after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

Please provide further details:

The Canadian Animal Pedigree Act and the Canadian Livestock Records Corporation compile yearly animal registrations for all registered farm animal breeds. However the avian data are very much incomplete. Canada's national genebank has established and fully implemented protocols to monitor molecular diversity for all farm animal genetic resources of economic relevance.

7. Are the population status and trends of your country's animal genetic resources being monitored regularly for all livestock species of economic importance (SP 1, Action 2)?

- a. Yes, regular monitoring commenced before the adoption of the GPA
- b. Yes, regular monitoring commenced after the adoption of the GPA
- c. Yes, regular monitoring is being undertaken for some species (coverage increased since the adoption of the GPA)
- d. Yes, regular monitoring is being undertaken for some species (coverage not increased since the adoption of the GPA)

- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

Please provide further details:

The Animal Industry Division of Agriculture and Agri-Food Canada, along with the farm animal breed registries, compile yearly statistics on animal breeding, registration and production.

8. Which criteria do your country use for assessing the risk status of its animal genetic resources (SP 1, Action 7)

Glossary: FAO has developed criteria that it uses to allocate breeds to risk-status categories based on the size and structure of their populations (<http://www.fao.org/docrep/010/a1250e/a1250e00.htm>).

- a. FAO criteria
- b. National criteria that differ from the FAO criteria
- c. Other criteria (e.g. defined by international body such as European Union)
- d. None

If applicable, please describe your national criteria or provide link to website describing criteria of international body:

Although different from FAO criteria, the measuring parameters (number of breeding females / males) are quite similar.

9. Has your country established an operational emergency response system (<http://www.fao.org/docrep/meeting/021/K3812e.pdf>) that provides for immediate action to safeguard breeds at risk in all important livestock species (SP 1, Action 7)?

- a. Yes, a comprehensive system was established before the adoption of the GPA
- b. Yes, a comprehensive system has been established since the adoption of the GPA
- c. For some species and breeds (coverage expanded since the adoption of the GPA)
- d. For some species and breeds (coverage not expanded since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

Please provide further details:

Current for most mammalian species but lacking for avian species.

10. Is your country conducting research to develop methods, technical standards or protocols for phenotypic or molecular characterization, or breed evaluation, valuation or comparison? (SP 2, Action 2)

- a. Yes, research commenced before the adoption of the GPA
- b. Yes, research commenced after the adoption of the GPA

- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

Please provide further details:

Phenotypic and breed evaluations are currently performed by the industry (registries and breeders). Molecular characterization is done at universities and at Canada's farm animal gene bank.

11. Has your country identified the major barriers and obstacles to enhancing its inventory, characterization and monitoring programmes?

- a. Yes
- b. No
- c. No major barriers and obstacles exist. Comprehensive inventory, characterization and monitoring programmes are in place.

If yes, please list them, being as specific as possible:

Minimal financial commitments from all levels of governments for the *in situ* conservation of farm animal genetic resources.

12. If applicable, please list the priority measures that need to be taken to address these barriers and obstacles and to enhance your country's inventory, characterization and monitoring programmes - please be as specific as possible:

Sustainable funding initiatives are needed to support minority and local breeds at risk. Better communication and collaboration between the breed registries and the national genebank in developing early warning and monitoring systems. Increased funding for *in situ* conservation and curatorial and educational activities and initiatives.

13. Please provide further comments on your country's activities related to Strategic Priority Area 1: Characterization, inventory and monitoring of trends and associated risks (including regional and international cooperation):

Developing Animal GRIN for Brazil-Canada-USA. Graduate-level training program (MSc and PhD), dedicated molecular characterization, gamete biology and reproduction, and cryobiology units funded by the government of Canada.

Strategic Priority Area 2: Sustainable Use and Development

- The state of national sustainable use policies for animal genetic resources
- The state of national species and breed development strategies and programmes
- The state of efforts to promote agro-ecosystem approaches

14. Does your country have adequate national policies in place to promote the sustainable use of animal genetic resources (see also questions 46 and 54)?

- a. Yes, since before the adoption of the GPA
- b. Yes, policies put in place or updated after the adoption of the GPA
- c. No, but action is planned and funding identified

- d. No, but action is planned and funding is sought
- e. No

Please provide the text of the policies or a web link to the document:

Policies exist for national and international trade in animal genetic resources, animal research, animal production and the transformation of animal products, and animal health. Several departments and agencies are involved.

15. Do these policies address the integration of agro-ecosystem approaches into the management of animal genetic resources in your country (SP5) (see also questions 46 and 54)?

Glossary: The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (for further information see <http://www.cbd.int/ecosystem/description.shtml>).

- a. Yes
- b. No, but a policy update is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

Please provide further details:

Canada does not have a national policy on animal breeding, breed improvement or for an agro-ecosystem approach for the sustainable use of farm animal genetic resources. These are industry and producer driven initiatives.

16. Are breed development programmes revised, for all major species and breeds in your country, with the aim of meeting foreseeable economic and social needs and market demands (SP4, Action 2)?

- a. Yes, regular revisions commenced before the adoption of the GPA
- b. Yes, regular revisions commenced after the adoption of the GPA
- c. For some species and breeds (coverage has increased since the adoption of the GPA)
- d. For some species and breeds (coverage has not increased since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

Please provide further information:

Breed development and marketing are the responsibilities of the animal industry.

17. Is long-term sustainable use planning - including, if appropriate, strategic breeding programmes - in place for all major livestock species and breeds (SP4, Action 1)?

- a. Yes, since before the adoption of the GPA
- b. Yes, put in place after the adoption of the GPA

- c. For some species and breeds (further progress made since the adoption of the GPA)
- d. For some species and breeds (no further progress made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

18. Have the major barriers and obstacles to enhancing the sustainable use and development of animal genetic resources in your country been identified?

- a. Yes
- b. No
- c. No major barriers and obstacles exist. Comprehensive sustainable use and development measures are in place.

If yes, what are they?

These are industry driven activities with limited government interventions.

19. Have the long-term impacts of the use of exotic breeds on local breeds (e.g. economic, environmental or genetic impacts) and on food security been assessed in your country (SP4, Action 1)?

Glossary: Exotic breeds are breeds that are maintained in a different area from the one in which they were developed. Exotic breeds comprise both recently introduced breeds and continually imported breeds.

- a. No exotic breeds are being used for agricultural production
- b. Yes, assessments were introduced before the adoption of the GPA
- c. Yes, assessments were introduced after the adoption of the GPA
- d. No, but action is planned and funding identified
- e. No, but action is planned and funding is sought
- f. No

Please provide further information:

In Canada, all livestock species and breeds can be considered exotic. Only 1 cattle, 3 sheep, 1 pig, 1 chicken and 2 equine breeds could be considered as local breeds or landraces.

20. Have recording systems and organizational structures for breeding programmes been established or strengthened (SP4, Action 3)?

- a. Yes, sufficient recording systems and organizational structures for breeding programmes have existed since before the adoption of the GPA
- b. Yes, sufficient recording systems and organizational structures for breeding programmes exist because of progress made since the adoption of the GPA
- c. Yes, recording systems and organizational structures for breeding programmes are partially in place (and were established or strengthened after the adoption of the GPA)
- d. Yes, recording systems and organizational structures for breeding programmes are partially in place (but no progress has been made since the adoption of the GPA)

- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

21. Are mechanisms in place in your country to facilitate interactions among stakeholders, scientific disciplines and sectors as part of sustainable use development planning (SP5, Action 3)?

- a. Yes, comprehensive mechanisms have existed since before the adoption of the GPA
- b. Yes, comprehensive mechanisms exist because of progress made since the adoption of the GPA
- c. Yes, mechanisms are partially in place (and were established or strengthened after the adoption of the GPA)
- d. Yes, mechanisms are partially in place (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

22. Have measures been implemented in your country to provide farmers and livestock keepers with information that facilitates their access to animal genetic resources (SP 4, Action 7)?

- a. Yes, comprehensive measures have existed since before the adoption of the GPA
- b. Yes, comprehensive measures exist because of progress made since the adoption of the GPA
- c. Yes, measures partially implemented (and were established or strengthened after the adoption of the GPA)
- d. Yes, measures partially implemented (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

23. Has your country developed agreements for equitable sharing of the benefits resulting from access to, and use and development of, animal genetic resources and associated traditional knowledge (SP3, Action 2)?

- a. Yes, sufficient agreements have existed since before the adoption of the GPA
- b. Yes, sufficient agreements exist because of progress made since the adoption of the GPA
- c. Yes, some agreements exist (progress has been made since the adoption of the GPA)
- d. Yes, some agreements exist (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

Please provide further information:

The trade and use of animal genetic resources is governed by bills of sales or legal contracts between individual parties.

24. Have training and technical support programmes for the breeding activities of livestock-keeping communities been established or strengthened in your country (SP 4, Action 1)?

- a. Yes, sufficient programmes have existed since before the adoption of the GPA
- b. Yes, sufficient programmes exist because of progress made since the adoption of the GPA
- c. Yes, some programmes exist (progress has been made since the adoption of the GPA)
- d. Yes, some programmes exist (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

25. Have priorities for future technical training and support programmes to enhance the use and development of animal genetic resources in your country been identified (SP 4, paragraph 42)?

- a. Yes, priorities have been identified or updated since the adoption of the GPA
- b. Yes, priorities were identified before the adaptation of the GPA but have not been updated
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

26. Have efforts been made in your country to assess and support indigenous or local production systems and associated traditional knowledge and practices related to animal genetic resources (SP 6, Action 1, 2)?

- a. Yes, sufficient measures have been in place since before the adoption of the GPA
- b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA
- c. Yes, some measures are in place (and were established or strengthened after the adoption of the GPA)
- d. Yes, some measures are in place (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

27. Have efforts been made in your country to promote products derived from indigenous and local species and breeds, and facilitate access to markets (SP 6, Action 2, 4)?

- a. Yes, sufficient measures have been in place since before the adoption of the GPA

- b. Yes, sufficient measures are in place because of progress made since the adoption of the GPA
- c. Yes, some measures are in place (and were established or strengthened after the adoption of the GPA)
- d. Yes, some measures are in place (but no progress has been made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

28. If applicable, please list priority requirements for enhancing the sustainable use and development of animal genetic resources in your country - please be as specific as possible:

Breed characterization and development. Animal-derived product development and acceptance, food safety. Economic feasibility and market development and access.

29. Please provide further comments on your country's activities related to Strategic Priority Area 2: Sustainable Use and Development (including regional and international cooperation):

Education and training (undergraduate and graduate levels, visiting scientists). International workshops and training in molecular characterization, assisted reproductive technologies and cryopreservation.

Strategic Priority Area 3: Conservation

- The state of national conservation policies
- The state of *in situ* and *ex situ* conservation programmes
- The state of regional and global long-term conservation strategies and agreement on technical standards for conservation

30. Does your country regularly assess factors leading to the erosion of its animal genetic resources (SP 7, Action 2)?

- a. Erosion not occurring
- b. Yes, regular assessments have been implemented since before the adoption of the GPA
- c. Yes, regular assessments have commenced since the adoption of the GPA
- d. No, but action is planned and funding identified
- e. No, but action is planned and funding is sought
- f. No

31. What factors or drivers are leading to the erosion of animal genetic resources? Please describe the factors specifying which breeds or species are affected:

Animal breeding and intense selection (dairy cattle, swine and poultry), small effective population sizes (most sheep and goat breeds, dairy cattle, swine, poultry and some equine). Assisted reproductive technologies (dairy cattle and swine).

32. Does your country have conservation policies and programmes in place to protect breeds at risk in all important livestock species (SP 7, SP 8 and SP 9)?

- a. Yes, comprehensive policies and programmes have been in place since before the adoption of the GPA
- b. Yes, comprehensive policies and programmes exist because of progress made since the adoption of the GPA
- c. For some species and breeds (coverage expanded since the adoption of the GPA)
- d. For some species and breeds (coverage not expanded since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

33. If conservation policies and programmes are in place, are they regularly evaluated or reviewed (SP 7, Action 1; SP 8, Action 1; and SP 9, Action 1)?

- a. Yes
- b. No, but action is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

34. What measures are being used in your country to conserve breeds at risk of extinction and to prevent breeds from becoming at risk (SP 8 and SP 9)?

In situ

Glossary: In situ - support for continued use by livestock keepers in the production system in which the livestock evolved or are now normally found and bred.

- a. Yes
- b. No, but action is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

Please describe the measures (indicating for each whether they were introduced before or after the adoption of the GPA) or provide a web link to a published document that provides further information:

Small number of dedicated small livestock breeders and keepers (www.rarebreedscanada.ca).

Ex situ in vivo

Glossary: Ex situ in vivo - maintenance of live animal populations not kept under their normal management conditions - e.g. in zoological parks or governmental farms - and/or outside the area in which they evolved or are now normally found.

- e. Yes
- f. No, but action is planned and funding identified
- g. No, but action is planned and funding is sought
- h. No

Please describe the measures (indicating for each whether they were introduced before or after the adoption of the GPA) or provide a web link to a published document that provides further information:

Small number of dedicated small livestock breeders and keepers (www.rarebreedscanada.ca).

Ex situ in vitro

Glossary: Ex situ in vitro - conservation, under cryogenic conditions including, inter alia, the cryoconservation of embryos, semen, oocytes, somatic cells or tissues having the potential to reconstitute live animals at a later date.

- i. Yes
- j. No, but action is planned and funding identified
- k. No, but action is planned and funding is sought
- l. No

Please describe the measures (indicating for each whether they were introduced before or after the adoption of the GPA) or provide a web link to a published document that provides further information:

Agriculture and Agri-Food Canada Canadian Animal Genetic Resources Program (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1297780434818&lang=eng>)

35. If your country has not established any conservation programmes, is this a future priority?

- a. Yes
- b. No

36. Has your country identified the major barriers and obstacles to enhancing the conservation of its animal genetic resources?

- a. Yes
- b. No
- c. No major barriers and obstacles exist. Comprehensive conservation programmes are in place

If yes, please list them, being as specific as possible:

Limited to no financial incentive to maintain minority and at risk breeds. No government strategy to support *in situ* conservation.

37. If your country has existing *ex situ* collections of animal genetic resources, are there major gaps in these collections (SP 9, Action 5)?

- a. Yes
- b. No

If yes, have priorities for filling the gaps been established?

- c. Yes
- d. No, but action is planned and funding identified
- e. No, but action is planned and funding is sought

f. No

38. Are arrangements in place in your country to protect breeds and populations that are at risk from natural or human-induced disasters (SPA 3)?

- a. Yes, arrangements have been in place since before the adoption of the GPA
- b. Yes, arrangements put in place after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

39. Are arrangements in place in your country for extraction and use of conserved genetic material following loss of animal genetic resources (e.g. through disasters), including arrangements to enable restocking (SP 9, Action 3)?

- a. Yes, arrangements have been in place since before the adoption of the GPA
- b. Yes, arrangements put in place after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

40. Is your country conducting research to adapt existing, or develop new, methods and technologies for *in situ* and *ex situ* conservation of animal genetic resources (SP 11, Action 1)?

- a. Yes, research commenced before the adoption of the GPA
- b. Yes, research commenced since the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

If yes, briefly describe the research:

Optimal breeding designs based on pedigree analyses, enhanced or new freezing technologies for semen, oocytes, embryos and gonads.

41. Does your country implement programmes to promote documentation and dissemination of knowledge, technologies and best practices for conservation (SP 11, Action 2)?

- a. Yes, programmes commenced before the adoption of the GPA
- b. Yes, programmes commenced since the adoption of the GPA
- c. No, but action is planned and funding identified

- d. No, but action is planned and funding is sought
- e. No

42. What are your country's priority requirements for enhancing conservation measures for animal genetic resources? Please list them, being as specific as possible:

At the national level, conservation efforts are based on *in vitro* conservation measures. At the present time all species and breeds are targeted equally. At the local levels, small populations are maintained *in situ*. Priorities are assigned based on the number of breeding females.

43. Please provide further comments describing your country's activities related to Strategic Priority Area 3: Conservation (including regional and international cooperation):

International collaborations in molecular characterization and development of an international (Canada, Brazil and USA) database for the management of animal genetic resources.

Strategic Priority Area 4: Policies, Institutions and Capacity-building

- The state of national institutions for planning and implementing animal genetic resources measures
- The state of information sharing
- The state of educational and research facilities capacity for characterization, inventory, and monitoring, sustainable use, development, and conservation
- The state of awareness of the roles and values of animal genetic resources
- The state of policies and legal frameworks for animal genetic resources

44. Has your country assessed its national institutional capacity to support holistic planning of the livestock sector since the adoption of the GPA (SP 12, Action1)?

- a. Yes, sufficient capacity has been in place since before the adoption of the GPA
- b. Yes, sufficient capacity is in place because of progress made after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

45. Have tools been developed for national planners to use in shaping the future development of the livestock sector in accordance with national priorities, including in relation to the deployment of animal genetic resources (SP 12, Action 4)?

- a. Yes, the development of tools commenced before the adoption of the GPA
- b. Yes, the development of tools commenced after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought

e. No



If yes, please describe the tools:

Several departments and agencies facilitate and regulate the trade of animal genetic resources especially in the areas of animal diseases and human health.

46. What is the current status of your country's national strategy and action plan for animal genetic resources (SP 20)?

Glossary: National strategy and action plan for animal genetic resources: a strategy and plan, agreed by stakeholders and preferably government-endorsed, that translates the internationally agreed Global Plan of Action for Animal Genetic Resources into national actions, with the aim of ensuring a strategic and comprehensive approach to the sustainable use, development and conservation of animal genetic resources for food and agriculture.

- a. Previously endorsed national strategy and action plan is being updated (or new version has been endorsed)
- b. Completed and government-endorsed
- c. Completed and agreed by stakeholders
- d. In preparation
- e. Preparation is planned and funding identified
- f. Future priority activity
- g. Not planned

Please provide a copy of your country's national strategy and action plan as a separate document or a web link to the document:

http://

47. Are animal genetic resources addressed in your country's National Biodiversity Strategy and Action Plan (<http://www.cbd.int/nbsap/>)?

- a. Yes
- b. No, but they will be addressed in forthcoming plan
- c. No

48. Has your country established or strengthened a national database for animal genetic resources (SP 15, Action 4)?

- a. Yes, a national database has been in place since before the adoption of the GPA
- b. Yes, a national database is in place because of progress made since the adoption of the GPA
- c. Yes, a national database is in place but still requires strengthening (progress since adoption of the GPA)
- d. Yes, a national database is in place but still requires strengthening (no progress since adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

49. Have your country's national data on animal genetic resources been regularly updated in DAD-IS?

Note that the Commission on Genetic Resources for Food and Agriculture has requested FAO to produce global status and trends reports every two years.

- a. Yes, regular updates have been occurring since before the adoption of the GPA
- b. Yes, regular updates started after the adoption of the GPA
- c. No, but it is a future priority
- d. No

50. Has your country established a National Advisory Committee for Animal Genetic Resources (SP 12, Action 3)?

- a. Yes, established before the adoption of the GPA
- b. Yes, established after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

If yes, list its main functions:

Linkages between the genebank, universities, animal breeding industry and animal registries, NGOs and CSOs.

51. Is there strong coordination and interaction between the National Focal Point and stakeholders involved with animal genetic resources, such as the breeding industry, livestock keepers, government agencies, research institutes and civil society organizations (SP 12, Action 3)?

- a. Yes, strong coordination has been in place since before the adoption of the GPA
- b. Yes, strong coordination was established after the adoption of the GPA
- c. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

52. Does the National Focal Point undertake activities to increase public awareness of the roles and values of animal genetic resources (SP 18)?

- a. Yes, activities commenced before the adoption of the GPA
- b. Yes, activities commenced after the adoption of the GPA
- c. No, but activities are planned and funding identified
- d. No, but activities are planned and funding is sought
- e. No

If yes, briefly describe them:

Meetings with producer and breeder associations and registries, presence at farm shows, press releases, public tours of the genebank, undergraduate and graduate level courses and training (MSc and PhD).

53. Have national policies and legal frameworks for animal genetic resources been reviewed and appropriate changes made if necessary (SP 20)?

- a. Yes, frameworks were reviewed before the adoption of the GPA and appropriate changes made
- b. Yes, frameworks have been reviewed since the adoption of the GPA and appropriate changes made
- c. Yes, frameworks have been reviewed since the adoption of the GPA, but appropriate changes not yet made
- d. No, but action is planned and funding identified
- e. No, but action is planned and funding is sought
- f. No

54. Have your country's needs for research and education been reviewed in all areas of management of animal genetic resources since the adoption of the GPA (SP 13, Action 1)?

- a. Yes
- b. No, but action is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

If yes, briefly describe them:

Active research activities in molecular characterization, gamete biology and assisted reproductive technologies, and cryobiology. Undergraduate and graduate training in animal genetics, physiology of reproduction, embryology and cryobiology.

55. Have partnerships been established among research, training and extension institutions and networks of researchers, breeders and conservation organizations to support the implementation of the Global Plan of Action (SP 14, Action 2)?

- a. Yes
- b. No, but action is planned and funding identified
- d. No, but action is planned and funding is sought
- e. No

56. Have organizations (including where relevant community-based organizations), networks and initiatives for sustainable use, breeding and conservation been established or strengthened (SP 14, Action 3)?

- a. Yes, comprehensive organizations, networks and initiatives have existed since before the adoption of the GPA
- b. Yes, comprehensive organizations, networks and initiatives exist because of progress made since the adoption of the GPA

- c. Yes, some organizations, networks and initiatives exist (established or strengthened since adoption of the GPA)
- d. Yes, some organizations, networks and initiatives exist (but no progress made since adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- g. No

57. Are there any national NGOs active in your country in the fields of:

Characterization?

- a. Yes
- b. No

Sustainable use and development?

- c. Yes
- d. No

Conservation of breeds at risk?

- e. Yes
- f. No

If yes, please list the national NGOs and provide links to their web sites:

Canadian Farm Animal Genetic Resources Foundation (<http://www.cfagr.com/>)
 Rare Breeds Canada (<http://www.rarebreedscanada.ca/>)

58. Has your country established or strengthened research or educational institutions in the field of animal genetic resources management (SP 13, Action 3)?

- a. Yes, adequate research and education institutions have existed since before the adoption of the GPA
- b. Yes, adequate research and education institutions exist because of progress made since the adoption of the GPA
- c. Yes, research and education institutions exist but still require strengthening (progress made since the adoption of the GPA)
- d. Yes, research and education institutions exist but still require strengthening (no progress made since the adoption of the GPA)
- e. No, but action is planned and funding identified
- f. No, but action is planned and funding is sought
- d. No

59. Please provide further comments describing specific activities related to Strategic Priority Area 4: Policies, Institutions and Capacity-building (including regional and international cooperation):

Workshop training in animal genebanks, molecular characterization, semen collection and freezing, held in Tunis (Tunisia). Training in molecular characterization and population genetics at CIMA (Cuba). Hosting and training of graduate students (Iran and Libya) in the area of cryobiology. Molecular characterization of Tunis sheep (Tunisia) and Fipa cattle (Tanzania).

Implementation and financing of the Global Plan of Action for Animal Genetic Resources

- The state of international collaboration for planning and implementing animal genetic resources measures
- The state of financial resources for the conservation, sustainable use and development of animal genetic resources

60. Has your country established or strengthened international collaboration in (SP 16):

Characterization?

- a. Yes
- b. No, but action is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

Sustainable use and development?

- e. Yes
- f. No, but action is planned and funding identified
- g. No, but action is planned and funding is sought
- h. No

Conservation of breeds at risk?

- i. Yes
- j. No, but action is planned and funding identified
- k. No, but action is planned and funding is sought
- l. No

If yes, briefly describe the collaboration:

Workshop training in animal genebanks, molecular characterization, semen collection and freezing, held in Tunis (Tunisia). Training in molecular characterization and population genetics at CIMA (Cuba). Hosting and training of graduate students (Iran and Libya) in the area of cryobiology. Molecular characterization of Tunis sheep (Tunisia) and Fipa cattle (Tanzania).

61. Are there any international NGOs active in your country in the fields of:

Characterization?

- a. Yes

b. No

Sustainable use and development?

c. Yes

d. No

Conservation of breeds at risk?

e. Yes

f. No

If yes, please list the international NGOs:

International NGOs are not active in Canada, but there is a free exchange of ideas, knowledge and samples for molecular characterization.

62. Has national funding for animal genetic resources programmes increased since the adoption of the GPA?

a. Yes

b. No

If yes, provide brief details:

63. Has your country received external funding for implementation of the GPA?

a. Yes

b. No

If yes, provide brief details (from whom, for what, how much):

64. Has your country established or strengthened international research and education programmes to assist developing countries and countries with economies in transition to better manage animal genetic resources (SP 16)?

a. Yes, programmes established before the adoption of the GPA and strengthened since

b. Yes, programmes established before the adoption of the GPA but not strengthened since

c. Yes, programmes established since the adoption of the GPA

d. No, but action is planned and funding identified

e. No, but action is planned and funding is sought

f. No

If yes, briefly describe them:

Undergraduate and graduate training of international students in all areas of animal and poultry sciences, population and quantitative genetics, assisted reproductive technologies and cryopreservation.

65. Has your country established or strengthened international support to assist developing countries and countries with economies in transition to obtain training and technologies and to build their information systems (SP 15)?

- a. Yes, programmes established before the adoption of the GPA and strengthened since
- b. Yes, programmes established before the adoption of the GPA but not strengthened since
- c. Yes, programmes established since the adoption of the GPA
- d. No, but action is planned and funding identified
- e. No, but action is planned and funding is sought
- f. No

If yes, provide brief details:

The Canadian International Development Agency and the International Development Research Centre provide support in all areas of agriculture, education and health.

66. Has your country provided funding to other countries for implementation of the Global Plan of Action?

- a. Yes
- b. No, but action is planned and funding identified
- c. No, but action is planned and funding is sought
- d. No

If yes, provide brief details and specify whether it was bilateral or multilateral; research cooperation or aid; and to whom and for what it was given: