

The National Animal Germplasm Program (NAGP) Program Update – August 10, 2002

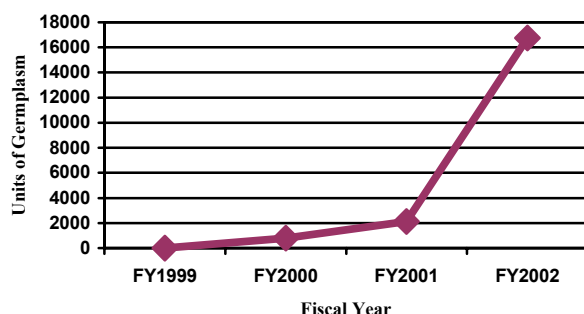
USDA Agricultural Research Service and Cooperative State Research, Education and Extension Service

Flexibility for economic growth and production of high quality protein through biodiversity

Accession Development: The overall NAGP collection in Ft. Collins continues to grow. Presently, dairy, beef, sheep, goats, chickens and swine are included in the collection at Ft. Collins. The NAGP staff would like to thank the industry, university and other ARS locations that have contributed to this effort.



**Across Species Collection of Germplasm:
Swine, Cattle, Sheep, Goats, Chickens.**

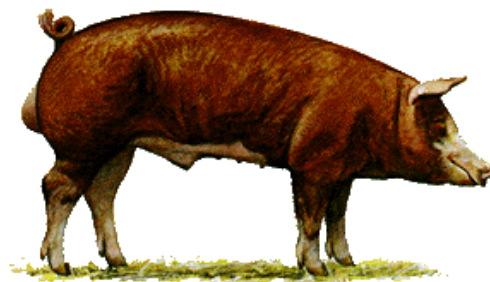


Special Live Animal Populations: Effective management of livestock genetic resources requires a combination of cryoreserves and live animal populations. Some animal populations are very distinct and should be so recognized. The NAGP Policy Coordinating Committee took such a step by creating a special designation for unique livestock populations. The designation is called, “The National Registry of Genetically Unique Animal Populations”. The first population so recognized was a herd of University of Minnesota Holsteins that was formed in the 1960’s and has been maintained as a closed control line since its formation. This line is important because it represents Holstein genetics prior to when effective selection was implemented by the dairy industry. Presently, the phenotypic difference between the Control and Selected lines is 12,126 pounds of milk. In addition to this recognition, semen and embryos from this population have been added to the repository in Ft. Collins.



Swine: NAGP Committee Members have been involved in a range of activities that are needed to develop the swine collection.

- The Germplasm and Gamete Physiology Lab (GGPL)/Beltsville has verified that viable pregnancies can be obtained by shipping semen to Ft. Collins and freezing it 24 hours after collection.
- Evaluation of different freezing extenders at NAGP/Ft. Collins indicated that significantly higher post-thaw viability could be achieved by using the ARS-BF5 extender.
- The Technical Committee reviewed the shipping and freezing protocols evaluated by GGPL and NAGP/Ft. Collins and concluded they were the best practices, at this time, to implement in the preservation of swine for the repository.
- The American Livestock Breeds Conservancy with support by NAGP has drafted a National Swine Census reporting the changes in breed registration numbers since 1970. The report will be officially released in the fall of 2002.
- Several land grant institutions are engaged in collecting Hereford pigs. The Hereford is a minor breed of pigs found in the U.S.
- In addition to collecting Hereford pigs NAGP has been evaluating inbreeding levels and genetic relationships. Pedigree records indicate a 2001 inbreeding level of 3.3% with a ΔF /year of 1.1%.



Beef Cattle Collection: The NAGP Beef Species Committee initiated collecting semen from the beef cattle industry. Targeting Limousin, Gelbvieh and Salers breed of cattle, a request for germplasm was placed in breed publications that asked cattle breeders to donate semen to the NAGP repository. Although this process was only initiated in June 2002, NAGP has acquired semen from bulls that were part of the original importations from Europe. In some cases this semen was frozen in the 1960's.



Aquaculture: The NAGP Aquaculture Committee is in the process of planning a symposium for January's World Aquaculture Meeting in Louisville, Kentucky (February 15-21, 2003). The symposium will address genetic conservation issues as well as cryopreservation and genetic improvement of aquatic species. Louisiana State University has worked with NAGP on transferring their cryopreservation and post-thaw analysis protocols for red snapper, catfish and oyster germplasm to the NAGP.



Name Change: Since the NAGP was formed in 1999 it had been located in what was the National Seed Storage Laboratory (NSSL). On January 14, 2002 ARS renamed the facility to the National Center for Genetic Resources Preservation (NCGRP). The name change reflects the expanded mission for the facility by the addition of NAGP and the intent to preserve insects and microbes. Under-Secretary Joseph Jen, Acting ARS Administrator Ed Knipling and U.S. Representative Bob Schaffer all participated in the renaming ceremony.



Small Ruminant Populations: The Small Ruminant Committee continued to pursue development of sheep and goat collections.

- Sul Ross State in Texas initiated collections of Spanish and Angora billies. The germplasm collected to date has been sent to Ft. Collins and additional collections are planned for fall of 2002.
- Louisiana State University initiated the collection of Gulf Coast Natives and has submitted that germplasm to the repository in Ft. Collins.
- Two issues confront the cryopreservation of small ruminants: 1) which commercial extenders to use, and 2) the need for field collections. NAGP has been addressing these issues by testing different commercial extenders and freezing in the vapor phase of liquid nitrogen in a Styrofoam box. Preliminary results indicate Biladyl yielded better post-thaw motility than the Two-Step Extender. When freezing samples outside a laboratory, freeze rates may be harder to control. Test results indicate that ram semen can be successfully frozen in the vapor phase of liquid nitrogen across a range of temperatures, represented by height above the liquid nitrogen (4,5 & 6 cm). This result implies that technicians freezing semen in the field have flexibility with freezing rates and therefore the height of liquid nitrogen in the freezing container.

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