FFTC Research Highlights

March 2003
RH2003-6

Alternative sources of leaf meals for ruminants

FEEDING ruminants during the dry season is crucial when trees and shrubs are scarce. While concentrates may be given, smallhold farmers usually cannot afford to buy these. Hence, researchers studied trees and shrubs as alternative leaf meals for ruminants.

Specifically, *Gliricidia sepium* (gliricidia) and *Samanea saman* (acacia) were studied as alternative leaf meals. Gliricidia is a medium-sized, deep-rooted perennial tree, commonly used for fences, hedgerows, charcoal production, and feed for ruminants. On the other hand, acacia reaches a height of 20-25 m with spreading branches and pinnate leaves. The pods are fleshy with sweet mesocarp, and high in energy showing high digestibility when used to replace rice bran in feeding heifers.

Leaf meals were prepared by drying leaves of gliricidia and acacia including browseable twigs in the forage dryer at 65^{o}C and grinding through a 20-mesh sieve.

The acacia ration had the highest crude protein (CP) content followed by the concentrate and gliricidia. Volume of milk yield was highest from those fed with concentrate but there were no significant differences among the treatment means for the rations, as well as in milk composition in the rations. Protein content was lowest for concentrate supplementation but highest for milkfat. Income from milk was higher when the animals were fed with leaf meals than with concentrate. Feeding leaf meals at 50% of the ration dry matter was recommended to reduce the cost of feeding and enhance utilization of gliricidia and acacia leaf meals as feed for ruminants.

News source: **Philippine Council for Agriculture, Forestry and Natural Resources Research and Development**

For further information, see Atega, T., Alinea, C., Rayos, A., and Robles, A. Leaf meals of *Gliricidia sepium* and *Samanea saman* as protein supplements for goats. College, Laguna: DTRI-UPLB, Philippines.

Cryopreservation of goat embryos through vitrification

CRYOPRESERVATION of goat embryos used to be tedious and complicated for field use. Researchers developed a simple and inexpensive cryoperservation procedure, which enhances the feasibility of on-farm embryo cryopreservation.

The technique, a modified vitrification procedure, is called minimum drop size technique. It involves the following steps: 1) Select morula to blastocyst stage embryos that are morphologically good to excellent in quality. 2) Wash embryos three times and maintain in a fresh holding medium. 3) Equilibrate the embryos by the two-step procedure at room temperature. 4) Place the embryos in a Petri dish (35 x 10 mm) with 2 ml vitrification solution A [VsA = 10% ethylene glycol (EG) in 20% FBS Hepes-buffered TCM-199 medium] for 10 minutes. 5) Transfer to vitrification solution B (VsB = 40% EG + 1M sucrose in 20% FBS Hepes-buffered TCM-199 medium) for 45 seconds. 6) Using a micropipette, transfer the embryos from the VsB solution into the LN_2 in a styrofoam box. 7) Freeze the VsB solution with the embryos (1-2 embryos per drop) in “pellet form” (3 mm in diameter). 8) Using a thumb forceps, place the frozen embryos in a cryotube before storing in an LN_2 tank for future use.

News source: **Philippine Council for Agriculture, Forestry and Natural Resources Research and Development**

For further information, see Ocampo, M. Protocol for embryo transfer and cryopreservation in goat. Los Baños, Laguna: PCARRD/DOST, 2002.

FFTC: An international information center for small-scale farmers in the Asian and Pacific region

Food and Fertilizer Technology Center (FFTC)
14 Wenchow St., Taipei, Taiwan ROC
Tel.: (886 2) 2362 6239 Fax: (886 2) 2362 0478
E-mail: fftc@agnet.org Website: www.fftc.agnet.org

Analysis of OPT8-511 RAPD fragments
closely linked with cold sensitivity at seedling stage in rice (*Oryza sativa L.*)

OPT8-511 was confirmed to be strongly associated with cold sensitivity of rice by random amplified polymorphic DNA (RAPD) analysis for cold tolerance with 94 F-2 population crossed with 'Dular' (cold sensitive cultivar) and 'Toyohatamochi' (cold resistant cultivar). A DNA marker from the RAPD fragment, OPT8-511, has been cloned with genomic DNA from rice cultivar (Dular) and the nucleotide sequence has been determined. The nucleotide sequence revealed that the putative open reading frame was 511 base pairs and contained 169 amino acid residues. It was 79% and 57% identical to the rice cDNA (C26347) in the DataBank at the nucleotide and amino acid sequence levels, respectively.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Molecules and Cells*, 10 (4) pp.382-385.

In planta visual monitoring of green fluorescent protein in transgenic rice plants

GREEN fluorescent protein (GFP) from the jellyfish *Aequorea victoria* is a widely used reporter that can be directly visualized in the living cells of both animals and plants. A synthetic gene (sgfp) encoding a modified form of the GFP was inserted into expression vector, Act1-sgfp, for the direct expression of GFP which is easily detectable in rice plants. Green fluorescence emitted from GFP could be visualized in calli, dry seeds, roots, and seedlings with green shoots of transgenic rice plants. In this visualization system with a charge-coupled device camera, band-pass filters and a light source indicating the presence of red chlorophyll auto-fluorescence from chloroplasts did not alter the green fluorescence of GFP.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Molecules and Cells*, v.10(4) pp.411-414.

Class I SLG gene from Chinese cabbage (*Brassica campestris*)
Isolation and characterization

IN *BRASSICA* species, self-incompatibility in the recognition reaction between self and non-self pollens is determined by two genes, SLG and SRK, at the S locus. A genomic DNA fragment containing a complete open reading frame of the SLG gene from Chinese cabbage was cloned and characterized. The genomic clone, named BcSLG2, was found to possess the region that shares a homology of 77% in amino acid identity with the SLG46 gene of *Brassica campestris*. Northern blot analysis revealed that the BcSLG2 gene expression is restricted to the pistil of Chinese cabbage flower.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Molecules and Cells*, v.10(6) pp.678-683.