

Cost effective conservation programs – Somatic Cells

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Cryo Preservation Material

- Semen
- Embryos
- Oocytes
 - proven techniques
 - developed (to a different degree) for a number of species
 - clear path for breed revival
 - can be used to support conservation programs

Somatic Cell Cryo Conservation (SCCC)

- Diploid body cells available on all animals
- Skin cells
- Hair follicles
- Tissues in general
- Thus → available on (all) species

SCCC

the general principle

- The collection process
 - Collect somatic cells on animal
 - Put into deep freezer
 - Document
- The reconstitution process
 - Take out of freezer
 - Create fibroblast cell lines
 - Perform cloning of somatic cells from the fibroblast lines
 - To reconstitute animal

Collection of somatic cells

- Use ear clippings from tagging
- Tissue sample from the ear placed in numbered vial
- Do for 25 males and 25 females from population
- Put sample in travel container in liquid nitrogen

Collection of somatic cells ..

- Collect minimal data (foto, GPS coordinates)
- Put sample in final storage container
- Enter data in central database (CryoWEB)
- Verify sample quality
- Same procedure for sheep, pigs, goats, cattle..

The Pilot Study

- The proposal is published in AGRI, 2005, 36:1–6
- Test of feasibility: joint project between IAS (VN) and FAL (D)
- The Objective
 - Perform in the field collection of SC on 4 breeds from 3 species
 - Remote area

The investment



The investment...



The investment...



The investment...



Collecting the samples



Collecting the samples..



Collecting the samples..



Fixed costs

Item	Amount(€)
GPS device	100
Digital camera	260
Transportation cryo tank	317
Main cryo tank	900
computer	1630
tagger	15
scale	15
syringe etc	15
training of crew	50
total costs	3302

Variable costs

Item	Amount(€)
400 ear tags/vials	850
Liquid nitrogen	200
Consumables	317
Transportation	900
accommodation	1630
incentives for animal owners	15
incentives for crew	15
total costs	4247

Populations sampled

breeds/species	young ♂	adult ♂	young ♀	adult ♀	total
Bach Thao Goat	20	5	3	23	51
Co Goat	25	-	-	25	50
Phan Rang Sheep	18	7	7	18	50
Ninh Thuan-Co Pig	41	5	45	8	99
Binh Thuan-Co Pig	22	3	20	5	50
Total	126	20	75	79	300

Summary Pilot

- Initial investment – €3000
- Cost per breed (50 samples) – €1000
- Collection procedure – 2 months

Update SCCC 2010

- routine biotech procedure
- \$150000 for one horse
- \$3000 per sow
- .
- .
- currently a pig breeding company is considering establishment of a nucleus herd in China through SCCC

Update SCCC 2010

- Thus far: ..emergency program..
- What if costs for cloning go further down?
- Do we need to reconsider our options?
- Only collect semen to be used in breeding programs?
- But SC for the rest?

Thank you for your attention