

# **Value Chain on Zona Free Cloned Embryos for quality animal production from Elite Buffaloes and Pashmina Goats.**

## **Environmental and Social Safeguards Management**

### ***A. Basic Information***

#### **1. Project statistics:**

Component code	:	<b>2</b>
Name of Consortium Leader	:	NDRI, Karnal
Name of CPI	:	<b>Dr S.K.Singla</b>
Name of CoPI	:	<b>Dr Riaz Shah</b>
Institution	:	<b>National Dairy Research Institute, Karnal -132001</b>
Mailing address	:	<b>Principal Scientist, Animal Biotechnology Centre (ABTC), National Dairy Research Institute, Karnal-132001 (Haryana), India.</b> Telephone No: <b>0184-2259529</b> Fax No. <b>0184-2250042</b> Email: <b>singlasuresh@yahoo.com</b>
Consortium partner	:	<b>SKUAST-K, J &amp; K, Srinagar.</b>
2. Date of Start	:	10 February 2009
3. Planned duration	:	3.6 years
4. Project cost	:	Rs. 8.96 Crores

#### **5. Project objectives:**

1. Optimization of Zona-free cloned embryo production in Buffalo (NDRI)
2. Optimization of Zona-free cloned embryo production in Pashmina goats (SKUAST-K)
3. Cloned embryo freezing, thawing and transfer to recipients will be optimized and healthy progenies generated in Buffalo (NDRI) and Pashmina goats (SKUAST-K)
4. Dissemination of generated technology to end users (*State Govt. AH nuclear farms, to be included in third year*) and/or through direct sale of cloned embryos to farmers.

## 6. Brief project description:

In India, we have the largest and best buffaloes of the world. Still, the percentage of elite animals is very little and there is an urgent need to enhance this number. There is an acute shortage of outstanding bulls and the technology of cloning can decrease this gap of demand and supply of elite bulls in the shortest possible time. No other reproductive technique like in-vivo embryo transfer, in-vitro fertilisation or any other technique can bring about faster multiplication of elite buffaloes. The outstanding buffalo bulls and buffalo-cows can be multiplied like in a Primitive kind of Xerox machine, resulting in similar progenies with almost similar genetic characters. This technology is the need of the hour and needs to be exploited for harvesting the benefits in shortest possible time. The outstanding animals produced can become an important part of the “National Milch Herd” of the country.

Pashmina fibre being high in demand in India and many parts of the world is produced mainly from the Changthang sub-division of Leh region of J&K, parts of HP and Uttarakhand. Due to harsh cold-arid agro-climatic conditions of the area, the only sustainable agricultural activity is goat rearing for the production of high value fibre-Pashmina. The production of Pashmina from an individual adult goat in Ladakh region ranges between 100g to 700g in a year (average being 250g/animal/year). The proportion of low fibre producing goats is very high (60% to 70%) out of a total Changthangi goat population of 1.65 lakh (ICAR AP-Cess Fund Project report 2004). Conventional breeding strategies has led to a marginal improvement in the productivity from these economically important animal species. There is a meagre availability of elite germplasm for breeding and upgradation for this quality trait.

Rapid improvement in productivity from these animals can be achieved by using advanced reproductive technologies like ETT and somatic cell nuclear transfer (Cloning) for the production of elite progeny of desired sex (males) for use in breeding, or females of high Pashmina yielding potential.

Zona-free cloning of Pashmina goats, (especially elite males having a production performance of >600g/annum) will have a drastic impact on the upgradation of less productive local flock, considering the limited total population of Pashmina goats in Ladakh area (1,65,000 only). Consequently, the production/animal of Pashmina fibre is likely to increase which will subsequently result in the improved livelihood security of the tribals of the area, whose per capita annual income ranges from Rs. 3000/= to 5000/= only.

## 7. Environmental category issues in the subproject

- Social:
- Environmental

## 8. Safeguard policies triggered (World Bank policies)

Safeguard Policies Triggered (World Bank Policies)		
	Yes	No
Environmental Assessment (OP/BP 4.01)	[ ]	[ X ]
Natural Habitats (OP/BP 4.04)	[ ]	[ X ]
Pest Management (OP 4.09)	[ ]	[ X ]
Cultural Property (draft OP 4.11-OPN 11.03 -)	[ ]	[ X ]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[ X ]

Indigenous Peoples (OD 4.20)	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

### B. Risk analysis and related issues

No risk is involved.

### 9. Impact assessment

#### A: Environmental Safeguard : Activities, Issues, Impact and Mitigation Measures

**Table 1: Environmental Safeguard : Activities, Issues, Impact and mitigation Measures**

Activities <sup>1</sup>	Issues <sup>2</sup>	Anticipated level of Impacts <sup>3</sup>		Mitigation Measures (Negative Impact) <sup>4</sup>
		Positive	Negative	
Value Chain on Zona-free Cloned Embryos for quality animal production from Elite Buffaloes and Pashmina Goats	Nil	nil	Nil	Nil

#### B. Social Safeguard: Activities, Issues, Impact and mitigation Measures

**Table 2 : Social Safeguard : Activities, Issues, Impact and mitigation Measures**

Activities <sup>1</sup>	Issues <sup>2</sup>	Anticipated level of Impacts <sup>3</sup>		Mitigation Measures (Negative Impact) <sup>4</sup>
		Positive	Negative	
To test the progenies of cloned buffaloes and Pashmina animals and further propagation.	Nil	nil	Nil	Nil

### 10. Potential indirect and/ or long-term Impacts due to anticipated future activities in the project areas (assessment of anticipated conflict/ complimentarily with the current as well as those proposed for the next five years in the areas of activities of the sub-project):

- We intend to develop the basic protocols for cloned animal production in buffalo and goat species for a period of 4 years.

- The standardized and established protocol for cloned animal production will be utilized for mass production of male & female elite animals at bull mother farms, so that availability of outstanding bulls will enhance significantly.

**11. Identify the key stakeholders and describe mechanisms for consultation with and to them done/ disclosure so far done including pre-project consultations with stake holders workshop before formulating the full proposal, discussing the full proposal with some stakeholders before submission to the PIU:**

The primary stakeholders for this sub-project will be the animal scientist specifically geneticists, physiologists, biotechnologists, animal breeders, human biologists and livestock industry. The project was formulated after intense consultations with stakeholders at the stakeholders' workshop on September 16-18, 2008 at CIFE, Bombay. The project objectives, activities and partners were finalized after this three day consultations.

**12. Chronology of meetings/ activities held in connection with preparation of the concept note & full proposal**

- **Brainstorming amongst our group of scientists at ABTC, NDRI, Karnal.**
- **Broad strengths of the NDRI group were discussed.**
- **Brainstorming amongst our group of scientists at ABTC, NDRI, Karnal and the scientists of the SKUAST-K, Srinagar and with stakeholders.**
- **Broad consensus reached for working in the area of Buffalo & Goat cloning using embryos produced using zona free oocytes.**
- **Intense consultations at CIFE, Bombay conference and the project objectives, activities and partner was finalised after three day consultation(s).**
- **Series of telephonic discussions & exchange of e-mails.**
- **Final shaped project proposals were submitted.**
- **Suitable last minute discussions & final approval granted.**

**13. Measures to Address the Issues:**

As there are no environment related and social issues involved in the research project submitted, there are no problems envisaged.

**14. Consultation/ disclosures to be done in future:**

The sub-project shall be initiated with the launch workshop at NDRI, Karnal. Annual workshops shall be organized to review the progress as per milestones of the project. The outcome of the project will be shared among the scientific community by publishing research papers in the international and national journals, annual reports, writing popular articles and bulletins etc. A training workshop on handmade cloning technology for the Scientists from NARS will also be organized by the NDRI, Karnal. A website will also be launched on research activities and outcomes in the area of the subproject.

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**Consortium PI**

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**National Coordinator**

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**National Director**