

ICAR-CSWRI TECHNOLOGIES

Avishaan: A Prolific Sheep



- Introgressed the FecB gene of Garole sheep (West Bengal) into non-prolific Malpura (Rajasthan)
- Avishaan sheep is evolved with the implementation of structured breeding plan and FecB gene detection through crossing of three indigenous breed
- A flock of 100 Avishan ewes can produce 160-170 lambs as against 85 from single bearing ewes

Performance of Avishaan sheep

Genetic composition, %
(Garole : Malpura : Patanwadi) 12.5 : 37.5 : 50

Prolificacy, %	74
Litter size	1.8
EPE at weaning, kg	24
Lambing, %	90
3- month weight, kg	16
6-month weight, kg	24
Lamb survivability, %	95
Adult survivability, %	99

Avishaan ewes produced 45% more mutton than monotocus Malpura ewes



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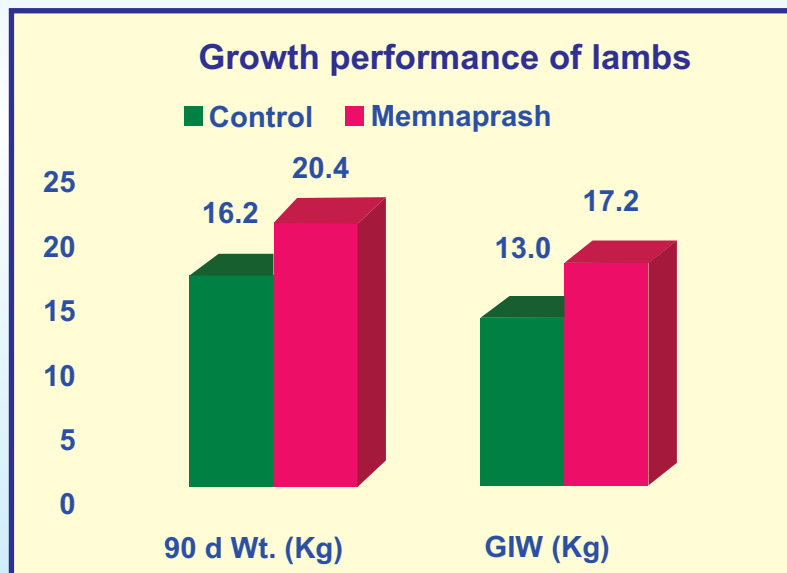
Progesterone Impregnated Vaginal Sponges (AVIKESIL-S) for Oestrus Synchronization



- Oestrus synchronization facilitates in concentrated breeding and Artificial Insemination
- Sponge is loaded into the vaginal speculum, pushed using a plunger until it reaches cervix
- Sponges kept in situ for 12 days and oestrus is detected 24 h after sponge removal
- Easy flock management and reduction in heat detection time
- Production of three lamp crops per two year
- Cost/kit (25 sponges+1 speculum+1 plunger) - Rs. 766/-
- Impact: success rate at field level- 84.5 %

Memnaprash for Lamb: High Survival and Productivity

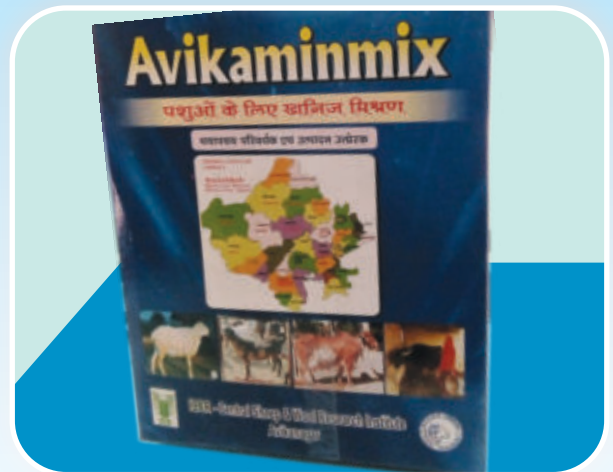
- Memnaprash, the tradename acquired for 'Liquid Milk Formula (LMF)' developed by CSWRI has 24-28% protein, 10-12% fat
- 1 kg powder makes 6 L milk that can be bottle-fed to lambs as shown in figure
- Its feeding increases survivability & supports faster growth of preweaning lambs



An investment of Rs 200 promises a net profit of Rs 600 per lamb due to extra weight gain besides survival of the orphans, twins/triplets.

Avikaminmix: Area-specific Mineral Mixture

- Avikaminmix is an area-specific mineral mixture for the semi-arid region of Rajasthan
- It is available in powder & pelleted forms



Mineral Deficiency Map of Animals



- It is developed for improving health, reproduction and production in sheep, goats, cattle and buffaloes
- The pelleted/tablet form has advantage of delivering the micronutrients in more complete & quantifiable manner
- It is useful for correcting the mineral deficiency in flock that is not generally fed with concentrates
- A packet of 1 kg costing Rs. 70/- can meet out mineral requirement of a flock comprising 100-200 sheep

Organic Sheep Manure from Wool Waste

- The institute has developed a technology to utilize wool waste (30%), sheep manure (50%) and crop waste (20%) into organic compost named as “Avikhad”
- Advantage of wool waste: holding water for longer duration, contains higher amount of natural potash, improves the soil fertility, increases the irrigation interval of the crops, control environmental pollution, decreases the dependency on chemical fertilizers, increases the productivity of crops, decreases the water evaporation from soil
- Organic compost from sheep manure and waste provides extremely good results in higher crop yield and sustainable production of horticultural crop and ornamented plant and nursery



Value Added Sheep Milk Products

- Sheep milk: contains about one third more energy than cow and goat, making it a favorite of high performance athletes
- Mozzarella cheese preparation from sheep milk: This cheese is rich (33%) in proteins
- Paneer obtained from sheep milk contain 26% protein and 11% fat with 18% cook yield
- Gulabjamun were prepared using sheep milk based khoa. The yield of khoa is 22.4%. The gulabjamun are highly acceptable
- Processing technique and formulation is also optimized for processing of sheep milk into Kulfi. The sheep kulfi is relished by all the consumers



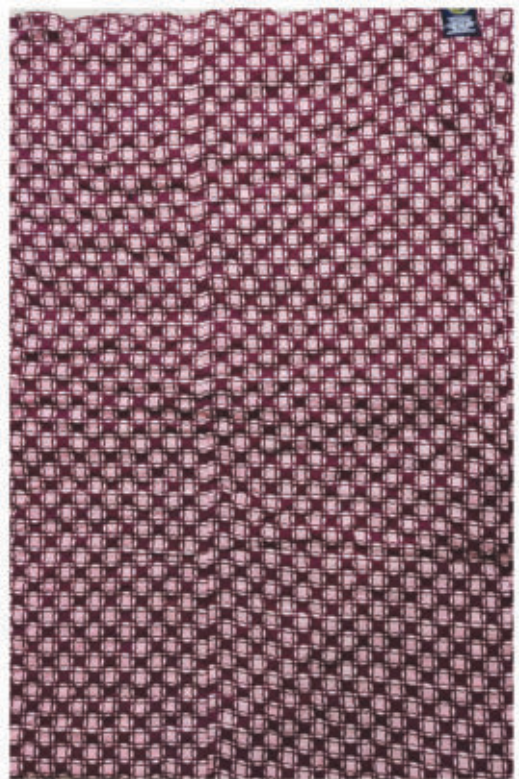
Value Added Sheep Meat Products

- Meat and meat products are rich in proteins, health promoting elements like conjugated linoleic acid (CLA), minerals
- Mutton products like sausages, patties, nuggets, loaves, enrobed products, croquettes, kabab, kofta, pickle and mutton soup have been developed
- The functional, inulin fortified, low fat mutton nuggets have been developed which can be stored for 18 days
- Fibre content of mutton nuggets has been improved using 5% seedless date paste
- Meat from cull sheep is very tough. The toughness reduced by Cucumis trigonus Roxb (Kachri) powder and papain
- Mutton based snacks and biscuits developed which could be stored up to 45 days. It is a condensed nutrient source for army people
- Vacuum packaging is useful in enhancing the keeping quality of the mutton snacks at ambient storage
- The meat products from sheep have good market in the southern part of the country as well as Jammu & Kashmir



Rajai (Quilt) from Coarse Wool

- Rajai (Quilt) is produced using coarse wool web wrapped in cotton cover
- Rajai is lightweight, warm, soft and affordable compared to Jaipuri cotton quilt



Quilt from wool



Shawls from Pure Pashmina & Angora Blend Wool

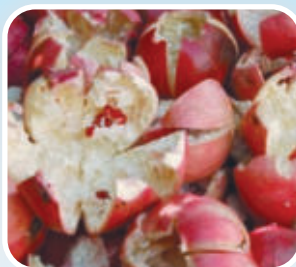
- Carrier fibre technique for pashmina spinning is developed
- Carrier spun pashmina shawls are comparable with traditional hand spun shawls in terms of their strength, handle and other performance properties
- Angora blended shawl shows 30% higher whiteness and 20% higher softness compared to the conventionally produced shawl
- Angora blended shawls prepared using Indigenous fine cross bred wool for blending in place of imported Merino wool



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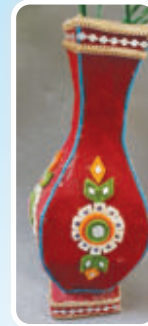
Biomaterials as Colourant, Anti-microbial and Anti-moth for Woollen Products



- Peanut and chickpea husk yield bright colour
- Walnut husk and pomegranate rind extract gives good antimicrobial efficacy against *S. aureus* and *E. coli*
- Silver oak leaves, walnut husk, pomegranate rind extract and nanokaolinite (1%) provides good anti moth efficacy
- Silver oak, walnut husk and sesame leaves: high tannin content (> 40%) imparts moth resistance
- Biomaterials ensure sustainable processing of textiles

Development of Woollen Handicrafts from Coarse Wool

- The handmade felt viz. Namda is one of the handicraft products which are made from non-apparel or carpet grade wool with traditional design
- Innovative and durable handicrafts and wall hangings are developed from handmade felts into valuable products
- Different home furnishing articles like handmade painting, soft toys, wall hangings and useable households are developed by using modified manufacturing technique



- The technology is also adopted by and rural artisans of Tonk, Malpura, Bhaghera, Chandsen of Tonk district
- This is economical utilization of coarser wool. It is a good opportunity to women/artisans to improve their livelihoods
- A start-up is established by young entrepreneurs for marketing of handicrafts

Commercial Broiler Rabbit Production

- CSWRI has developed technology for rabbit farming and supplying germplasm to the southern state of the country
- Rearing of broiler rabbit a unit of eight female and two male rabbits of Soviet Chinchilla/ New Zealand White etc. breed of 6 months age group is an economical size for starting commercial farming



- A pair of rabbit can produce 30 offspring's in a year which can be marketed at 12 weeks of age with 2 kg live weight
- An income can be generated from Rabbitry is 3 lakh per annum
- This technology has good potential to develop a business plan for young entrepreneurs