In the year 2015-2016 ICAR-National Research Centre on yak (NRCY) has taken numbers of innovative steps for the technology demonstrations and training for Yak rearers for economically sustainable yak husbandry. In this connection Institute Technology Management Unit (ITMU) which is funded by National Agriculture Innovative Fund is also taking many forward steps for transfer of technology and commercialization of different products made up of yak wool and milk. This year will be remembered as breakthrough year for innovative research for yak wool technology. The Institute Technology Management Unit of National Research Centre on Yak in collaboration with ICAR-National Institute of Research on Jute and Allied Fibre Technology trained numbers of tribal man and women associated with yak rearing on fabric machinery and value addition of yak wool. This efforts were intended to nurture and support unemployed tribal youth who would be future entrepreneur to handle fabric machinery using yak wool for garment making and thereby boost the economy of yak husbandry. In this regards, a complete set of fabric machinery along with hitech sewing machines were purchased under NEH component of ICAR-NIRJAFT and successfully installed at this Centre. ICAR-National Research Centre on Yak also taking initiative to popularized yak wool by purchasing it from farmers doorsteps so that ruminative earning from yak wool encourages the farmers to take yak rearing as economically sustainable entity. During the 4th Interface meeting from 3rd to 5th March, 2016, the benefit of fabric machinery and different products made up of yak wool were displayed in front of yak stakeholders participating from different parts of the country. With continuation of its effort to develop and transfer of technology of yak wool, the ITMU-NAIF, NRCY is going to publish a news bulletin displaying technology know how of different wool products which are ready for transfer and commercialization. I am sure this News Bulletin will be treasure of knowledge for researchers, farmers, extension workers, financial institutions, agribusiness entrepreneurs etc. Lastly, I congratulate the in-charge ITMU, PI-NAIF, editors and whole team for bringing out research outputs in a news bulletin form.
Garments companies all over the world are taking steps to increase eco-friendly practices, and as a result, new all-natural fibers are popping up on the market. It has to believe that next frontier when it comes to environmentally friendly textiles, and that’s Yak wool. Fashion brands are under more scrutiny than ever when it comes to the sustainability of their operations. From where they source their materials and supply chain transparency, to how much energy and chemicals are used during production, consumers are wise up to what the true cost of their clothing is. In this connection Institute Technology Management Unit (ITMU) of ICAR-National Research Centre on Yak working with nomadic herders of the Himalayan region of India, where yaks roam free in a semi migratory system. ICAR-National Research Centre and ICAR- National Institute of Research on Jute and Allied Fibre Technology, came up with the idea for the brand of Yak Garments. ICAR-National Institute of Research on Jute and Allied Fibre Technology took some samples to their laboratory in Kolkata, and come up with very unique characteristics of yak wool. Now transferring of yak wool technology and access to the most effective and appropriate expertise to the farmer is must if we want to make yak wool remunerative as well. A proper technology transfer environment needs to be developed through complimentary synergy of existing partnerships and networks. To address those issues Indian council of Agricultural Research approved a scheme on “National Agriculture Innovation Funds” on 27th October, 2014. As the member of ICAR fraternity ITMU and NAIF of this centre taking some innovative steps to brand yak wool as premium natural fiber. To say yak wool as new fibre of economic interest, yak rearers need to train and educate about yak wool. In this regards an initiative for training on jute based yarn for yak rearers was conducted at ICAR-NIRJAF with collaboration of ICAR-NRC on Yak. With the installation of a fabric machinery and hi-tech sewing machine at ICAR-NRC on Yak, it gave boost to the process of training and disseminating technical knowhow to the unemployed tribal youth for entrepreneurship development for yak wool. This facility at this centre is precious because aside from the fact community of yak rearers access to this facilities easily since this centre is located in yak breeding tract of Arunachal Pradesh. This institute also showcases different value added yak wool product developed by the institute. Overall Institute Technology Management Unit and National Agriculture Innovation Fund of this Centre involved in protection, management and commercialization of innovative technologies and over reaches the over-all need. It acts as an interface between R & D, knowledge revolution and stakeholders. The diversity of task performed by ITMU-NAIF also include IPR management, technology licensing, developing public-private partnership, organizing filed demonstration and training programme to expand and establish yak husbandry as economically viable husbandry. We hope that newly developed technology based on Yak wool will further strengthen the intellectual property management and transfer regime of ICAR and make significant contribution to upliftment of economic status of yak farmers.
A sets Fabric machinery for weaving of yak wool product blended with other fibre is installed at NRCY, Dirang, in collaboration with ZTMC, East Zone and NIRJAFT, Kolkata by the initiative of Institute Technology Management Unit, NRC on Yak.

For the first time, with initiative of this centre a team of tribal man and women has been sent to NIRJAFT, Kolkata for 10 days training on “Weaving in Fabric machinery from 14th to 25th January, 2015. Since Yak fibre comes under specialty hair fibres comparing with other natural fibres and increase using yak wool for production by of textile industry, market demand for yak wool is increasing and an attempt has been made by this centre make yak wool product as economic sustainable entity. Though yak wool sale does not take much percentage in herder income portfolio, it is an interesting product in terms of its export potential for both herders and processors. On the other hand, many herders do not use yak wool for commercial use, so they have an opportunity to step further to increase their income by selling yak wool. Although yak produced sufficient wool per individual, herders use wool only for their own use, like for making ropes and making into yarn. As the market price for yak wool is cheap and no scientific intervention is introduced herders shows least interest in this avenue, instead many of them just use for domestic purposes like making some household items including belly support belt, bags, mattresses and blankets. This initiative will bring new prospect for value addition of coarse yak wool by blending other fibres which is already standardized. Carpets, Jacket, Sweater, wall hanging etc. from yak wool have been
prepared and evaluated for quality. Natural colour applications of wool and wool blended products are an innovative area taken up by this centre. Initiative also been taken to give a cooperative business framework as well as disseminating scientific knowhow for making yak wool as commercial entity to traditional yak farming system for the overall economic development of yak herdsman.
Wooden manual carpet making frame

Merritt Singer 31K Foot Compete with Motor

Shuttle with Pirn

Table liner in Yak Jute blended Fabric

Juki DDL (8700) Complete with Motor

Yak Jute blended Fabric

Design in Yak Jute blended Fabric

Wall hangings

Carpet
PRODUCTS DESCRIPTION AND PRICE:

- **Yak Jute blended Fabric**: Yak Jute blended Fabric cloths are prepared from coarse yak hair fibre blended with Jute and cotton (40:40:20) with beautiful computer designs and made in newly installed Fabric machinery. **Price**: Rs.300.00/meter
- **Man Over Coat**: Full size man over coat made up by Yak Jute blended Fabric (50:50). **Price**: Rs.3000.00
- **Table Liner**: Table liner made up by Yak, Jute and Cotton blended Fabric (40:40:20) **Price**: Rs.300.00/meter
- **Man Jacket**: Man Jacket made up by Yak Jute blended Fabric (50:50). **Price**: Rs.2500.00
- **Man half Jacket**: Man Jacket made up by Yak Jute blended Fabric (50:50). **Price**: Rs.1500.00
- **Women Half Jacket**: Women Half Jacket made up by Yak Jute blended Fabric (50:50). **Price**: Rs.1500.00
- **Carpet**: Carpets are prepared from coarse yak hair fibre with beautiful designs by hand knotted method. **Price**: Rs.350.00/Sq.ft.
- **Mat**: Mats are prepared from coarse yak hair fibre with beautiful designs by hand knotted method. **Price**: Rs.200.00/Sq.ft.
- **Blended Cap**: Value added caps can be prepared from yak hair by blending 50:50 with sheep wool and 75:25 with Angora rabbit wool. **Price**: Rs.600.00
- **Wall hangings**: Wall hangings are prepared from coarse yak hair fibre with beautiful designs by hand knotted method. **Price**: Rs.350.00/Sq.ft.
- **Chamar**: Chamar made up of yak hair tail. **Price**: Rs.350.00/Sq.ft (white)
- **Chiptazamu**: The traditional cap prepared from coarse yak hair is called *Chipta Jammu*. It gives good protection against rain and snowfall. This unique cap commonly contains four protrusions to drain the rain water. **Price**: Rs.350.00/Sq.ft.
- **Technology Display Centre**: ITMU-NRCY with collaboration with NIRJAFT established a technology display centre at Kolkata to showcase different value added yak product as well as display institute reports, charts, brochures etc.

MEETING ORGANISED / ATTENDED BY ITMU ICAR-NRC ON YAK

Ten days training on “Weaving in Fabric machinery” from 14-25th January, 2015, NIRJAFT, Kolkata.
Six tribal persons (4 female and two male) were sent for training at NIRJAFT, Kolkata for the acclimatized with weaving of jute based yarn under North-East component of ICAR-NIRJAFT. ICAR-NIRJAFT Kolkata, provide logistic and technological support to the tribal person and disseminating latest information in weaving and trained them on fabric machinery.

Yak Mela-2015, ICAR-National Research Centre on Yak, Dirang, 14th November 2015, Lumpo and General Ground Zemithang, Twang, Arunachal Pradesh.
The Institute Technology Management Unit (ITMU) of ICAR-NRC on Yak, Dirang in association with the institute's Extension Unit, actively participated in a one-day ‘YAK MELA’ at Lumpo and Zemithang village on the 14th of November 2015. The mela comprised of a livestock competition wherein the best milk producing yak, best yak bull and best Dzomo (yak-cattle hybrid female) were
awarded. In addition to this, prizes were also given to the best exhibited stalls in the mela wherein the exhibitors of the Brokpa community exhibited and gave live demonstration of Yak milk products preparation. The institute's different technologies, as well as the different ready-to-use products were demonstrated in the mela in order to encourage the local youth and yak rearers to promote entrepreneurship in the district. The mela was attended by hundreds of local denizens and yak rearers from different villages of the Panchen valley who greatly admired and appreciated the works of Institute Technology and Management unit of ICAR-NRC on Yak, for showcasing new technology. The mela concluded achieving a great success at the end of the day by providing a smile of satisfaction and happiness to each and every visitor who came to attend it.

Exhibition stall and participated in the Buddhist Culture Festival organized by Ministry of Culture, Govt. of India, and coordinated by Central Institute of Himalayan Culture Studies (CIHCS), Dirang, Arunachal Pradesh- 790116 on 1st and 2nd October 2015.

The Institute Technology Management Unit of ICAR-NRC on Yak, Dirang in association with Krishi Vigyan Kendra, West Kameng District, Arunachal Pradesh participated in the Buddhist Culture Festival organized by Ministry of Culture, Govt. of India, and coordinated by Central Institute of Himalayan Culture Studies (CIHCS), Dahung, Arunachal Pradesh- 790116 on 1st and 2nd October, 2015. Dr. D. Bhattacharjee, (Director In-charge cum Principal Scientist), Dr. P. J. Das (Senior Scientist cum in-charge ITMU, NAIF), Dr. M. Hussain (Senior Technical Officer cum in-charge Extension Unit) and Dr. S. S. Begum (Research Associate, ITMU) along with some other staff of the institute participated in the festival. The unit showcased/ demonstrated the different technologies of the institute. In addition to this, the different ready-to-use technologies of the unit were also set for demonstration and sale. Mr. Kiren Rijiju (Minister of State for Home Affairs, Govt. of India), Mr. Japu Deru (MLA of Bomdila) and Mr. Phurpa Tsering (MLA of Dirang) along with a large number of visitors visited the stall and appreciated the works of the Institute in developing the technologies for the use of the common people and for the upliftment of the society as a whole

Fabric Machinery displayed in 4th Interface Meeting on “Holistic approaches to sustain livelihood of rearers through scientific intervention in India” 3rd-5th March, organized at NRC on Yak.

The 4th Interface Meeting on “Holistic approaches to sustain livelihood of rearers through scientific intervention in India” was organised by ICAR-National Research Centre on Yak, Dirang, West Kameng District, Arunachal Pradesh on 3rd to 5th March 2016. The meeting was attended by a number of yak rearers from different parts of West Kameng District along with a number of delegates from different parts of India. Along with providing various interactions and communication programmes of the yak rearers with the renowned delegates, the meeting also showcased the various modern techniques that can be applied by the yak rearers in relation to value addition of yak products to catch the global market. In this regards, Dr. A. N. Roy, Principal Scientist, ICAR-NIRJAFT, Kolkata interacted with the yak rearers and also demonstrated them the various textile techniques that has been newly procured by the ICAR-NRC on Yak institute.

Acknowledgements: We express our deepest sense of gratitude to Director, ICAR-NIRJAFT, Kolkata. We are very thankful to Dr. A. N. Roy, Principal Scientist ICAR-NIRJAFT Kolkata for inexhaustible interest, and constant technical support in preparation value added yak wool products. We are grateful to the Director, ICAR-NRCY for granting permission to avail the facilities for making different value added yak wool products and publishing this News Bulletin.