ANNUAL REPORT
2017-18

REGIONAL RESEARCH STATION (HILL ZONE)
UTTAR BANGA KRISHI VISWAVIDYALAYA
KALIMPONG-734301, DARJEELING
WEST BENGAL

Forward

Uttar Banga Krishi Viswavidyalaya with its Regional Research Station (Hill Zone) situated at Kalimpong District, West Bengal is continuing its effort towards ensuring food, nutritional and livelihood security of farming community by generating location-specific farm technologies on important crops grown in hills.

The Regional Research Station is committed to focus for addressing the problem in today's climate changed world. Besides this, the station has been reviewing and resetting its research priorities from time to time on the basis of previous findings and the ensuing demands of the hill environments.

The support received from the authority, teachers and non-teaching staff in carrying out all sphere of activities is duly acknowledged.

(Dr. Sarad Gurung)

ABOUT THE STATION

The Regional Research Station, Kalimpong represents the hilly region of Darjeeling and Kalimpong district of West Bengal. It has two other sub-stations under its administrative control and is located at Pedong and Dalapchand respectively. The Station caters to the needs of farmers and offer solutions to the location specific problems in the hilly agro-climatic zone of West Bengal, comprising of the Kalimpong district and Darjeeling district. The station activities are focused to conduct location specific, production and productivity oriented research in agricultural and horticultural crops and are disseminated to the farming community through KVK and state agricultural machineries.

Station	Area (acres)	Altitude (m)	Latitude	Longitude
RRS, Kalimpong	80.54	1140	27°06' N	88°47' E
RRSs, Pedong	29.00	1233	27°15' N	88°62' E
RRSs, Dalapchand	59.00	1300	22°57' N	88°36' E

STAFF STRENGTH

Sl. no.	Staff Position	Numbers
1	Teaching Staff	11
2	Non-Teaching Staff	20
3	Field worker RRS Kalimpong	44
4	Field worker/other staff RRSs Pedong	06
5	Field worker of Dalapchand	08
6	G.K.M.S RRS (Hill Zone)	02
Total		**91**

OBJECTIVES

- Development of suitable farming system for Hill Zone.
- Identification and development of suitable cropping sequence.
- Conservation of plant genetic resources and Improvement of crop varieties.
- Management of rhizome rots and wilt in ginger and Citrus dieback problem.
- Soil testing and recommendations for judicious application of macro and micro nutrients in farmer's field.
- Agronomic practices of Yacon (Bhui Apple)
- Development of fodder component of animal nutrition by fitting the crop in crop sequences and or through Silvi-pastoral system.

Draft proposal for creation of new posts for Academic/Research/Administrative Support Staff for improvement of UG and PG studies in UBKV.

Sl. No.	Name of the Post Regional Research Station. Kalimpong	Sanctioned	Existing Position	Vacant Position	Additional Requirement (Post to be created)
1	Associate Director of Research	1	Nil	1	
2	Associate Professor	4	1	3	3(1 each in Agril. Entomology, Soil Science, Agril. Extension)
3	Assistant Professor	9	6	3	4 (1 each in Agril. Statistics, Vegetables & Spices, Agronomy, Agro Forestry,)
4	Assistant Director of Farm	1	Nil	1	Nil
5	Sub Assistant Engineer (Civil)	Nil	Nil	Nil	1
6	Stenographer	Nil	Nil	Nil	1
7	Accountant	Nil	Nil	Nil	1
8	Junior Cashier	1	1	Nil	Nil
9	Junior Assistant	4	5	Nil	Nil
10	Junior Store keeper	1	1	Nil	1
11	Junior Peon	6	5	1	2
12	Junior Laboratory Attendant	4	3	1	2
13	Field Assistant	6	2	4	Nil
14	Technical Assistant	2	Nil	2	1
15	Junior Darwan	7	7	0	3
16	Junior Sweeper	1	Nil	1	4
17	Cook	1	1	Nil	Nil
18	Helper (Cook)	1	1	Nil	Nil
19	Helper (Vehicle)	1	1	Nil	Nil
20	Junior Driver	3	2	1	Nil
21	Junior Mali	4	3	Nil	4
22	Tractor Driver	1	0	Nil	Nil
23	Power Tiller cum Pump Operator	1	1	Nil	2
24	Junior Duplicating/ Xerox Operator	Nil	Nil	Nil	1
25	Field Worker	86	58	28	Nil
26	Plumber	Nil	Nil	Nil	1
27	Electrician	Nil	Nil	Nil	1
28	Helper (Electrician)	Nil	Nil	Nil	1
29	Office Superintendent	1	1	Nil	Nil

Note: In Field Assistant category earlier 6 personnel were appointed but later out of which 3 personnel have been shifted to AICRP Project.

SALIENT FINDINGS OF RESEARCH CONDUCTED DURING 2017-18

Crop Production

i. A field experiment was conducted during the*rabi* season of 2016-17 at the Regional Research Station (Hill Zone), Uttar BangaKrishiViswavidyalaya, Kalimpong to standardize the sowing time and level of nitrogen application for wheat (cv. PBW 343) cultivation in hilly region of West Bengal. The analyzed data revealed that the grain yield and yield attributing characters shows better result with earlier sowing and with increased nitrogen level. Sowing at 1st November resulted significantly higher grain yield (4.97 t ha $^{-1}$) of wheat over 15th November and 1st December sowing. Application of nitrogen at 150 kg ha $^{-1}$ produced maximum grain yield (5.25 t ha $^{-1}$), however, it was at par with nitrogen at 125 kg ha $^{-1}$ and 100 kg ha^{-1}.

ii. Investigation was carried out in the farmer's field of Kalimpong to evaluate the effect of foliar application of different level of GA_3 and micronutrients on Darjeeling mandarin. The experimental design was adopted randomized block design in which there was seven main plot treatments representing combinations of three growth regulators (GA_3 @ 7.5 ppm and 15 ppm, BA @ 200 ppm and 400 ppm and 2,4-D @ 7.5 ppm and 15 ppm) and two micro nutrients (Zn @ 0.5% and Boron @ 0.1%). Foliar application of GA_3 at the rate of 15 ppm along with zinc (0.5%) and boron (0.1%) improved growth morphology, fruit yield attributes is also effective in enhancing the fruit yield with better fruit quality. Generally, it could be concluded that the treatment (T3) seems to be the promising treatment for the hilly region of Darjeeling.

iii. An experiment on stem cuttings with IBA were conducted in low- cost green-house to standardised the multiplication methods of *Ginkgo biloba* and it was found that the sprouting percentage of semi-hard stem cuttings of *G. biloba*, rooting behaviours of cuttings treated with different concentrations of IBA, IBA (300 mg/l)recorded highest percentage (73.33%) of rooting followed by IBA (600 mg/l) in the first year. In terms of rooting (%) and average roots/plant in first year the results as recorded were (Cutting-I). However, the growth hormones with high concentration (900 mg/l) seems negatively related (33.36) and is comparable with control

Crop Protection

iv. Maximum rhizome yield of ginger was obtained in wider spacing of 30x30 cm which was statistically at par with 25x30 cm plant spacing and minimum yield was obtained in closer spacing of 15x20 cm. Thus from the present investigation it may be concluded that 25x30cm plant spacing was found to be optimum for better crop return and lower incidence of rhizome rot and wilt complex disease of ginger.

v. Documentation on the Seasonal Incidence of major insect and mite pests of chilli (Capsicum annum L.) cv Dalley and of major insect pest and natural enemies of okra in hill agro-climatic zone of West Bengal has been made and will be continued for 2 years.

vi. Extensive surveys were conducted in eight blocks of Darjeeling and Kalimpong Districts to record the diseases of living fossil *Ginkgo biloba,* During the survey three types of symptoms observed and recorded in different locations of survey. The pathogens have been isolated for characterisation. The symptoms were :

i) **Leaf Blight**: A dark brown circular lesion appears in the leaf, gradually the lesions coalesce and whole leaf becomes brown and dies.

ii) **Felt like symptoms**: The symptoms were white to grey mycelial mats on some areas of the branches. These mats progressively expanded and coalesced to occupy larger areas and finally girdled the branches. These diseased samples have been collected and identification of associated pathogen is in progress.

iii) **Dieback**: twigs start to die from tip, finally whole twigs dies.

vii. Population dynamics of insect pests in okra and common bean were studied at RRSs, Pedong. In okra, maximum population of white fly, jassid, shoot borer and aphid during August and September during vegetative stage. The maximum infestation of blister beetle, red cotton bug and fruit borer was recorded in reproductive stage in September to November. In beans, maximum population of bean aphid was recorded during July to September (in vegetative stage). The maximum infestation of blister beetle and pod borers was recorded in reproductive stage in September to October. White fly and leaf hopper/ jassid, pod bug, sting bug were recorded as minor pests. Studies on population dynamics will be repeated.

Crop Improvement

ix. Characterization of local chilli cv. Dallay using descriptors for *Capsicum* spp developed by IPGRI is being studied with the objective of isolating desiring lines for use in future research programme. A total of 63 characters are being studied (Plant descriptors-19; Inflorescence & fruit-38; Seed-6).

x. Characterisation of germplasm of Local Zingiberaceae family has been carried using NBPGR descriptors for 3 seasons.

ALL INDIA COORDINATED RESEARCH PROJECTS (AICRPs)

Sl. No.	Project	Incharge	Funding Agency
1.	AICRP on Floriculture	Ms. S. Pradhan	ICAR/STATE
2.	AICRP on MAP & B	Mr. B.Thapa	ICAR/STATE

AICRP on Floriculture

- Ninety three species under 32 genera of orchids are being maintained at Pedong Centre under low cost UV-sterilized agro-shade net covered orchidarium. Thirty different hybrids of Cymbidium are also being maintained and evaluated at RRS (HZ) Kalimpong centre. Some of the species are rare, endangered or already extinct in the wild.
- Among the Cymbidium species, *Cymbidium devonianum* produced highest number of flowers (27.49).
- The species namely, *Coelogynenitida, Cymbidium devonianum, Cymbidium tigrinum, Paphiopedilumvenustum, Paphiopedilumhirsutissimum, paphiopedilum insigne, Paphiopedilumspicerianum, Paphiopedilumfairrieanum*have been found superior for pot cultivation.
- Cymbidium hybrids revealed significant differences were observed for most of the vegetative and flowering parameters studied. Cymbidium cv. Golden girl recorded highest number of pseudobulbs per plant (12.11), pseudobulb length (12.85 cm) and leaf number per plant (34.52). Early flowering was reported in Kennywine (346.05 days). Highest number of spikes/plant (6.54), number of flowers per spike (18.63), and longest vase life (41.52 days) was recorded in var. Kennywine. The flowering duration was recorded maximum in Tal Graig Sutherland (62.72 days) which was statistically at par with Kennywine (62.48 days). Largest flower size was recorded in December Gold (14.55 cm) while MinisharaArtishion reported smallest flowers (8.02 cm).
- Among the hybrids, Golden girl, Kennywine, December gold, Culvetra Sydney performed exceedingly well in Kalimpong region with respect to both vegetative and flowering parameters and can be recommended for commercial cut flower production.
- Among the 12 genotypes of gerbera, Goliath, Red Explosion, Sangria, Sunway, Kalimpong Red and Kalimpong pink produced good quality flowers and can be recommended for commercial cultivation in Darjeeling hills of West Bengal.

- Pre-treatment with NaOCl, 1000ppm + tween 20, 0.1% and wet storage in water at 13-15° C for 6 days was found to be most suitable for increasing the post-harvest life of cut anthurium stems.
- In Alstroemeria, the varieties Pluto and Pink Panther performed better and can be recommended for commercial cultivation.
- Among the different growing medias studied,Alstroemeria cv. Pluto performed best in the media consisting of ((Sand + soil + FYM) + vermicompost + cocopeat (2:1:1;v/v) with respect to vegetative and reproductive parameters.

AICRP-MAP & B

Mandate

AICRP-MAP & B**,** Kalimpong centre is engaged in research areas like germplasm management, varietal improvement, development of good agricultural practices (GAP) and disease pest management.

Achievement

a) Crop Improvement

- Centre is mainly working on important high value endangered and high altitudinal Medicinal plants to develop location specific technology.
- Centre is also working on collection, conservation, identification and maintenance of traditional medicinal plants of different communities of Darjeeling hills.
- Collection, evaluation and characterization of Swertia chirayita, Valeriana jatamansi, Berginia ciliata and Centella asiatica is in progress at this centre.
- Distribution pattern and Mapping of Swertia chirayita in Darjeeling was carried out and classified Sukiapokhri (6400ft msl) and Sonada-(6800ft msl) as High Population Area,Lava (7200ft) and Ghoom (7400ft) as Medium Population Area whereas Rimbick (6800ft), Algara (5600ft) and Takdah (5500ft) as Low Population Area.
- Ex-situ conservation of Highly endangered medicinal plants is going on in the Herbal garden of the station under AICRP on MAP &B.

b) Crop Production

- Vegetative propagation of Valeriana jatamansi also been standardized for mass seedlings Production.
- Centre has brought significant contribution in varietal development, production and protection technology for the benefit of medicinal and aromatic plants growing farmers.
- Standardization of planting method of Chirota has been done for better production.
- Seed germination technology was standardized and found maximum germination of Chirota by KNO_3 @ 2% seed treatment.

c) Crop Protection

- Centre has reported four new diseases viz. Stem rot diseases of Valeriana (Sclerotinia sclerotiorum), Viral Mosaic of Valeriana, Seedling blight of Chirota and leaf blight of Chirota (Cledosporium tennuissimum). One root-knot nematode (Meloidogyne javanica) was also reported.

Swertia chirayita

- KSC-4 and KSC-5, IC number has been obtained. Trait specific character has been characterised and evaluated i.e. highest dry weight per plant and seed yield per plant
- IC number for 10 lines has been obtained and under morphological characterisation.
- KNO_3 (3%) treated seed was found to be the best (52.33 %) and significantly superior to all other hormonal treatments.
- June sowing gave maximum percentage of germination. June sowing also starts early germination (26 DAS) and lasted for upto 46 DAS.
- Maximum fresh root biomass was recorded with the application of VAM + PSB. Whole biomass more fetched with the incorporation of VAM + PSB during transplanting stage and statistically superior to other set of treatments
- First reported and identified casual organism of **leaf spot** (*Alternaria alternata*) and **leaf blight** (*Cladosporium tenuissimum* Cooke) and **Seedling blight** (*Rhizoctonia solani*) of *Swertia chirayita*

Valeriana jatamansi

- Two lines of *Valeriana jatamansi* (KVJ-2 and KVJ-3) are under AVT- 1 for multilocation trial for varietal development.
- 5000 QPM has been produced.
- IC number for 10 lines has been obtained and under characterisation
- More root and rhizome growth was recorded with 30 x 45 cm and was statistically at par with the 30 x 30 cm spacing at 15, 18, 21 and 24 month stage of data recording, and significantly superior to closer spacing.
- 18 month stage showed more root biomass accumulation was registered with 30 x 45 cm spacing.
- Identification of casual organism of **stem rot** (*Sclerotiana sclerotiarum*) disease of *Valeriana jatamansi*

Bergenia ciliata

- IC number for 10 lines has been obtained and under characterisation .
- Baseline data on Reproductive ecology has been generated.

Other salient achievements:

- 20 IC numbers has been obtained for other crops like *Centella asiatica* and *Acorus calamus*
- Established herbal garden with more than 100 medicinal plants of sub-temperate and temperate region.
- Set up tissue culture laboratory for QPM production through micropropagation techniques for mandate crops.
- Germplasm catalogue of Chirota (*Swertia chirayita*), Indian Valerin (*Valeriana jatamansi)* and Pakhanbhed (*Bergenia ciliata*).

Societal outcome of the R&D activities undertaken:

- Mr. Krishna Bhattrai from Kagey, Kalimpong, Block 2 was supplied with Different Basil varieties for cultivation.
- In collaboration with KVK, Marketed his product on Tulsi Ark Drops and Tulsi tea

- Providing technical knowhow for cultivation of Tulsi and awareness for conservation of medicinal plants

ON GOING TRIALS / EXPERIMENTS/ INVESTIGATIONS AT RRS (HILL ZONE)

No.	Trial/Experiment	Funding Agency	Associated Scientists
1	Identification of suitable ginger based cropping sequence and intercropping system for hill agro-ecological region of West Bengal	UBKV	Dr. B. R. Sharma
2	Association of mycorrhizal fungi with *Ginkgo biloba* in Hill and mountainous Ecosystem of West Bengal.	NMPB	Dr. Sajeed Ali
3	Identification of suitable ginger based intercropping system for hill agro-ecological region of West Bengal	UBKV	Dr. B. R. Sharma
4	Development of Eco-Friendly Integrated Management Strategy for Rhizome Rot And Wilt Complex disease of Ginger In Hill Agro-Climatic Zone of West Bengal	UBKV	Dr. Sajeed Ali
5	Standerisation of vegetative propagation methods for mass multiplication of *Ginkgo biloba* in Hill and mountainous Ecosystem of West Bengal.	NMPB	Dr. Sarad Gurung
6	Isolation, characterisation and evaluation of *Trichoderma* spp and Fluorescent Pseudomonads from Hill Agro-climatic Zone of West Bengal	UBKV	Dr. Sajeed Ali
6	Standerisation of tissue culture methods for mass multiplication of *Ginkgo biloba* in Hill and mountainous Ecosystem of West Bengal.	NMPB	Dr. Sarad Gurung
7	Survey of diseases of of *Ginkgo biloba* in Hill and mountainous Ecosystem of West Bengal.	NMPB	Dr. Sajeed Ali

GOI FUNDED PROJECT

Gramin Krishi Mausam Sewa, AMFU-Kalimpong

Funding Agency: India Meteorological Department, Ministry of Earth Science, GOI.

Nodal Officer: Dr KoushikRoy

Research Associate: Dr. Agniswar Jha Chakraborty,

Meteorological Observer: Shri. Surajit Halder

In 2017-18, total 103 Number of AAS bulletins were issued by AMFU Kalimpong. During the preparation of bulletins, the NDVI and SPI values are taken into consideration to enrich the advisory for the end-users and decision makers.

AMFU-Kalimpong sent 79 SMS's through m-Kishan portal and 1, 36,160 numbers of farmers were benefitted from this service. Total 6, 61 numbers of farmers were registered in m-Kisan portal in this year 2017-18.

Three (3) Farmers Awareness Programmes were organized in different places of hill region of West Bengal namely Lower Dungra, Sungdung and Upper dungra on 21st February, 2018, 28th February, 2018 and 23rd March, 2018 respectively. In these programmes 57, 40 and 32 numbers farmers were participated.

One research paper was published by AMFU Kalimpong.

Dr. Koushik Roy (Nodal officer) AMFU Kalimpong participated one training programme at Umiam, Maghalaya on 13th -20th March, 2018. The title of that training programme was 'Development of Climate Risk Management tools in Agriculture and water resources management using Extended Range Forecast' at Space Application Centre (NESAC), Development of Space, Govt. of India.

EXTERNALLY FUNDED PROJECTS

Sl. No.	Project	PI	Funding Agency
1	Introduction Evaluation and Standardization of nursery technology of living fossil *Ginkgo biloba* (Ginkgoaceae) in Hill and Terai Agro-climatic zones of West Bengal	Dr. Sajeed Ali	NMPB, Ministry of AYUSH, GoI
2	Collection , conservation,digitisation and standardisation of protocol for mass regeneration of selected endangered,rare and vulnerable medicinal plants of North East region.	Dr. T.S. Ghimiray	NMPB, Ministry of AYUSH, GoI
3	Medicinal Orchid: A step towards Popularization for commercial cultivation through collection, conservation and Multiplication in Himalayan Region of Darjeeling and Sikkim	Mr B. Thapa	NMPB, Ministry of AYUSH, GoI

VOLUNTARY CENTRE

Sl. No.	Project	PI
1.	All India Coordinated Rice Improvement Programme	Mr. BandanThapa
2.	All India Wheat & Barley Improvement Programme	-Do-
2.	All India Coordinated Research Project on Mandarin	Dr. S. Gurung

EXTENSION ACTIVITIES

- Farm advisory services
- On-farm testing
- Imparting technical know-how to the farmers
- Training for farmers, farm women and Extension functionaries.
- Pamphlets/booklets.
- Conducting Field day/Farmers Day.

MEETS/WORKSHOPS/ FARMERS' TRAINING ORGANIZED

1. Three (3) Farmers Awareness Programmes were organized under AMFU Kalimpong in different places of hill region of West Bengal namely Lower Dungra, Sungdung and Upper dungra on 21st February, 2018, 28th February, 2018 and 23rd March, 2018 respectively. In these programmes 57, 40 and 32 numbers farmers were participated respectively.

2. Awareness cum Training Programme on Medicinal plant cultivation and conservation on 22.2.18 at RRS/Hill Zone

3. Two days Farmers Training on Ginger and Large Cardamom under MIDH-Spices Scheme held on 27-28 February 2018 at Salambong village Kalimpong 1.

FARM ACTIVITIES

The farm activities involve production of different crops pertinent to the region with emphasis on production of quality seed material. The crops include oilseeds, ginger and large cardamom etc. The farm produced 5.0 t quality seeds of ginger.

Existing area under cultivation as in March 2017-18 (April)

Sl. No.	Name of Crop	Area (acre)
1	Ginger	3.0
2	Mustard	4.0
3	Research Block	4.0
4	Large cardamom	1.0
	Total	**12.0**

Seed Availability

Sl. No.	Name of Crop	Kg
1	Ginger	2500
2	Soybean	100
3	Green Gram	15
4	**Maize**	

	i	NLD	80
	ii	A de Cuba	80
	iii	Dewaki	10

Area Expansion

An area of 33 acres has been brought under cultivation with maize, ginger, turmeric and mandarin. It is proposed to cover 30 acres of farm area with different crops during 2017-18 as given in the following table:

Sl. No.	Name of Crop	Area (acre)	Required planting materials/seed (kg)
1	Ginger	20	2500
2	Turmeric	3.0	200
3	Maize	7.0	80.0
4	Bhindi	1.0	5.0
6	Large cardamom	2.0	10,000
Total		**33**	

MIDH-2017-18

Sl. No.	Name of Crop	Area (acre)	Production (kg)
1	Ginger	7.5	5000
2	Turmeric	2.5	750
Total		**10.0**	5750

FLD ON GINGER

Sl. No.	Name of Crop	Area (acre)	Production (kg)
1	Ginger	2.5	1000
Total		2.5	1000

Notes: 2.5 acre= 1.00 hectare

Farmers training on ginger - (Two days training) - one number

VISIT OF DIGNITARIES/SCIENTISTS

1. ADG, ICAR, Govt of India
2. Dr. N Reddy Scientist DMAPR Anand Gujarat
3. Dr. S.S. Singh, Director, ATARI, Kolkata
4. Dr. Ashok Chowdhury, Dirctor of Research, UBKV, Coochbehar
5. Dr. F. H. Rahman, Principal Scientist, ATARI, Kolkata

OTHER ACTIVITIES

1. Celebration of 71th Independence day on 15th August 2017
2. Celebration of Republic day on 26th January 2018
3. Krishi Mela 2017
4. Ban Mahautsabh
5. Distribution of *Ginkgo biloba* saplings to Kalimpong Science Centre

INFRASTRUCTURE AND LOGISTICS

Administrative building, Guest house, Staff quarters, Godown, Threshing floor and Farm office

INFRASTRUCTURE AND LOGISTICS REQUIRED

- Research building
- Staff quarters
- Boundary wall
- Campus all weather roads
- Farm land terracing
- Farm approach roads for movements of farm machinery
- Irrigation facilities, water harvesting structures

FACULTY

Name: **Dr. Sarad Gurung** Designation: Associate Professor and In-Charge Specialization: Pomology and PHT Contact No.: 9434429066 Email ID: sgurung_hort@rediffmail.com	Name: **Dr. Binay Raj Sharma** Designation: Professor Specialization: Plant Pathology Contact No.: 9434429067 Email ID: brsharma_kpg@yahoo.co.in
Name: **Dr. Sajeed Ali** Designation: Associate Professor Specialization: Plant Pathology Contact No.: 8906705665 Email ID: drsajeedaliubkv@gmail.com	Name: **Mr. Biswajit Patra (Study leave)** Designation: Assistant Professor Specialization: Agricultural EntomologyContact No. : 9547152202 Email ID: biswa.kris@gmail.com
Name: **Dr. BiplabTudu** Designation: Assistant Professor Specialization: Agricultural Entomology Contact No.: 9932382475 Email ID: btudu_bckv@rediffmail.com	Name: **Mr. SibdasBaskey (Study leave)** Designation: Assistant Professor Specialization: Plant Pathology Contact No.: 9734452339 Email ID: baskeysibdas83@gmail.com
Name: **Mr. Hriday Kamal Tarafder** Designation: Assistant Professor Specialization: Soil Science &Agril. Chemistry Contact No. : 8697335105 Email ID: hridaykamalt25@gmail.com	Name: **Smt. SumitaPradhan** Designation: Assistant Professor Specialization: Floriculture Contact No. : 9564017005 Email ID: ss-bajrachrya@yahoo.com
Name: **Sri BandanThapa** Designation: Assistant Professor Specialization: Genetics and Plant Breeding Contact No. : 9007655410 Email ID: bandhan.thapa@gmail.com	Name: **Dr. Kousik Roy** Designation: Assistant Professor Specialization: Agronomy Contact No. : 8902430449 Email ID: Roy.kousik64@gmail.com

PUBLICATIONS

1. **Agniswar Jha Chakarborty, Koushik Roy, Hriday Kamal Tarafder and Surajit Halder.** 2018. Importance of Gramin Krishi Mousam Sewa in Hill Region of West Bengal .*Int.J.Curr.Microbiol.App.Sci*. **7**(03): 2435-2441.
2. **Ali Sajeed, Sharma B.R., Sherpa Furtengi, Chowdhury A.K.**, (2017) Cultural, morphological and genetic variability in *Exerohilum turcicum* — A review. *Progressive research- An International journal.*Vol 12 (special IV). 2721-2724
3. **Chakarborty, A. J., Roy, K.,Tarafder, H. K. And Halder, S. (2018).**Importance of GraminKrishiMousamSewa in Hill Region of West Bengal.*International Journal of Current Microbiology and Applied Sciences*. 7: 2435-2441.
4. **Roy, K and Tarafder, H.K.** (2017). Evaluation of different mustard varieties with different sowing techniques in hill zone of West Bengal. *International Journal of Plant Science.*12(2):200-202.
5. **Sharma, B.R., Debnath Anamika, Ali S., Baskey S., Thapa Anjana, and Dutta S.** (2017). Identification and characterization of different pathogens associated with Rhizome Rot and Wilt disease complex of ginger in Darjeeling Himalayas. *J. Mycopathol.Res.* 54(4): 517 – 521.
6. **Tarafder, H.K., Barma, P., Tudu, B., Patra, B., Gurung, S., Sharma, B.R. and Ali, S.** (2017). Darjeeling mandarin production constraints: issues and strategies. *Progressive research- An International journal.* 12: 1523-1525.

LIST OF TRAININGS/WORKSHOP/SEMINAR ATTENDED

Short course/winter school/summer school/CAFT training

No	Date	Topic	Organised by	Attended by
1	09.02.17 to 01.03.17	Ecological Agriculture for Sustainability	GBPAUT, Pantnagar, Uttarakhanad	Dr.Koushik Roy
2	01.11.17 to 21.11.17	Conservation agriculture and soil health	PAU, Ludhiana	Mr.H.K. Tarafder

Seminar/Symposium/Training/Workshop/Group Meeting organised /attended

1. Organised **International conference** in collaboration with Himalayan scientific Society for Fundamental and Applied Research (HIMSFAR), Krishi Sanskriti and Kalimpong Science Center in Kalimpong on 'Contemporary Issues in Integrating Climate-The Emerging Area of Agriculture, Horticulture, Biodiversity, Forestry; Engineering Technology, Applied/fundamental Sciences and Business Management for Sustainable Development" on 11-12 May, 2017.

2. Attended and presented paper on **National Symposium** on spices and Aromatic crops at School of Agriculture Science and Rural Development,Nagaland University,Medziphema Campus, from 15-17 March 2018 by Dr S.Gurung, Dr B.R Sharma and Dr.B.Tudu

3. Attended and presented paper on **International conference** on Global Research Initiatives for sustainable agriculture and allied sciences on 02-04.12.2017 at MPUAT, Udaipur, Rajasthan by Mr. Furtengi Sherpa, JRF.

4. Attended **XXV Group meeting** of the All India Coordinated Research Project on Medicinal, Aromatic Plants and Betelvine. 11th-14th November 2017, MPAUT Udaipur ,Rajasthan by B.R Sharma, K.Roy and B.Thapa.

5. Attended **5th Group Discussion** All India Coordinated Research Project on (Fruits) 15-18 February 2018 at National Research Centre for Banana Trichy,Tamil Nadu by Sarad Gurung.

Participated the training programme on "Development of Climate Risk Management tools in Agriculture and water resources management using Extended Range Forecast" at Space Application Centre (NESAC), Department of Space, Govt. of India, Umiam, Maghalaya on 13th -20th March, 2018 by Dr. Koushik Roy. (Nodal officer) AMFU Kalimpong

Trainings Imparted

1. Imparted training on Medicinal plant cultivation and conservation on 22.2.18 at RRS/Hill Zone by B.R Sharma, S. Gurung, Sajeed Ali, B. Tudu, B .Thapa, H.K.Tarafder, and S. Chakravarty.

2. Improved Package and practice of Ginger and Large cardamom cultivation in Hill Zone on 27 February, 2018 at Salambong by B.R Sharma, S. Gurung, Sajeed Ali and B. Tudu

3. Field Day celebration on Ginger cultivation at Dungra Busty on 31.4.17. by B.R Sharma, S.Gurung, Sajeed Ali and B.Tudu
4. Quality Nucellar Seedling Production of Darjeeling Mandarin on 21st May, 2017 at RRS (HZ), UBKV, Kalimpong by B.R Sharma, S.Gurung, Sajeed Ali, and H.K.Tarafder
5. Imparted training on awareness programmes organized under AMFU Kalimpong in three different villages of hill region of West Bengal namely Lower Dungra, Sungdung and Upper Dungra on 21st February, 2018, 28th February, 2018 and 23rd March, 2018 respectively by K.Roy, A. Jha Chakravarty S.Halder and J. Lepcha, ADA Kalimpong 1)

Extension bulletins.

1. Leaflet on Agro-meteorology for the farmers in vernacular (nepali) language.*(Koushik Roy)*

Student related activities

1. Conducted Theory and Practical class for PhD Course No FSC 602(Advance in production of fruit crop-I (2+1) and FSC 603(Advance in production of fruit crop-ii(2+1) by S.Gurung

3. Acted as External examiner in Horticulture department Sikkim University November 2017 by S.Gurung.

LIST OF SUPPORTING STAFF

Sl. no.	Name	Designation
Non-Teaching Staff, RRS, UBKV, Kalimpong		
1	Sri. Madan Kumar Bhujel	Junior O/S
2	Smt. Bishnu Tamang	Jr.Asstt
3	Sri. Edward FitzPatrick	Sr.Peon
4	Smt. Laxmi Gurung	-do-
5	Smt. Leela Gurung	Lab. Attendant
6	Smt. Jyoti Ghimirey	Lab. Attendant
7	Sri. Raju Pradhan	Jr Assistant
8	Sri. Tshering Thendup Bhutia	Driver
9	Sri. Netra Prasad Sharma	Lab. Attendant
10	Sri Vishal Chhetri	Jr Cashier
11	Sri. Nirmal Bagdas	Sr. Driver
12	Miss Prerna Pradhan	Jr. Asst.
13	Miss Anita Tamang	Do
14	Miss. Kalpana Gurung	-do-
15	Smt. Uma Sherpa	Sr. Peon
16	Sri. Bikram Chettri	Sr. Peon
17	Smt. Rajina Pradhan	Jr Storekeeper
18	Smt Rupa Rai	Jr Peon
19	Sri Deepak Tamang	Cook
20	Sri. Kumar Gurung	Guest House helper
GKMS GraminKrishiMousamSewa, RRS Kalimpong		
21	Dr. Agniswar Jha Chakraborty	R.A
22	Sri Surajit Haldar	Met. Observer
Field Worker, RRS Kalimpong		
23	Sri. Bishnu Prasad Nirola	Mali

24	Smt. Puspa Subba	-do- Gr.II
25	Smt. Sheela Gurung	-do-
26	Smt. Kamala Sharma	-do-
27	Smt. Tara Gurung	F/W Gr. III
28	Miss Sashi Gurung	F/W Gr. II
29	Sri. Bhim Kr. Chettri	F/W Gr. II
30	Sri. Mahendra Gurung	Sr. Mali
31	Miss Rita Chettri	F/W Gr. II
32	Smt. Shantamit Lepcha	-do-
33	Smt. Dhanrati Tamang	-do-
34	Smt. Bishnu Chettri	-do-
35	Smt. Puspa Pradhan	-do-
36	Sri. Sunil Pradhan	-do-
37	Sri. Bimal Gurung	-do-
38	Smt. Kalpana Gurung	-do-
39	Smt. Narmaya Gurung	-do-
40	Smt. Munna Tamang	-do-
41	Miss Punam Gurung	-do-
42	Smt. Champa Chettri	-do-
43	Smt. Sumitra Tamang	-do-
44	Smt. Maily Gurung	-do-
45	Smt. Shyammaya Rai	-do-
46	Smt. Manmaya Tamang	-do-
47	Miss Kali Chettri	-do-
48	Smt. Durgamaya Chettri	-do-
49	Smt. Sashi Rai	-do-
50	Smt. Laxmi Tamang	Mate
51	Sri. Bijoy Tamang	F/W Gr.II
52	Sri. Manoj Tamang	Mali
53	Smt. Anu Chettri	F/W
54	Smt. Ujata Gurung	-do-
55	Smt. Asha Gurung	-do-
56	Smt. Geeta Sharma	Field Assistant
57	Sri. Tejoshi Khawas	-do-

58	Dr. Suresh Mahato	-do-
59	Dr. Binay Chettri	-do-
60	Sri. Dipendra Lama	-do-
61	Sri. Hem K. Gurung	V. Helper
62	Mingma lepcha	Tractor driver
63	Sri. Fauda Singh Mangrati	Sr Darwan
64	Sri. Prem Tshering Lepcha	Sr. Darwan
65	Sri. Laxman Roka	Sr. Darwan
66	T.B Chetrri	Mali
67	Johnny Tamang	F/W Gr.I
Field Worker, RRSS Pedong, Kalimpong		
68	Sri. Abdulay Bhutia	F/W Gr. I
69	Sri. Pempo Tsh. Bhutia	F/W Gr. I
70	Sri. Subash Subba	F/W
71	Sri. Phuchung Bhutia	Darwan
72	Sri. Mahesh Gurung	Field Asstt.
73	Sri. Manish Gurung	Field Worker
Dalapchand Farm		
72	Sri. Bal Bahadur Tamang	Field Worker
73	Sri. Harka Raj Rai	Field Worker
74	Sri. LakpaTamang	Field Worker
75	Sri. Dhan Bahadur Kami	Field Worker
76	Sri. Birdhoj Rai	Field Worker
77	Smt. Pokchey Bhutia	Field Worker
78	Smt. Nermit Lepcha	Field Worker
79	Sri. Dil Bahadur Rai	Senior Darwan

LIST OF RETIRED STAFF DURING 2017-18

Sl. No.	Name	Post held
1.	Smt Sanju Chetrri	Lab Attentend
2.	Nima Tshering Tamang	F/W
3.	Arjun Rai	F/W

VISIT OF DIGNITARIES/SCIENTISTS


Visit of ADG, ICAR and Director, ATARI, Kolkata


Visit of Prof Ashok Choudhury, Director of Research, UBKV


ACTIVITIES OF GKMS

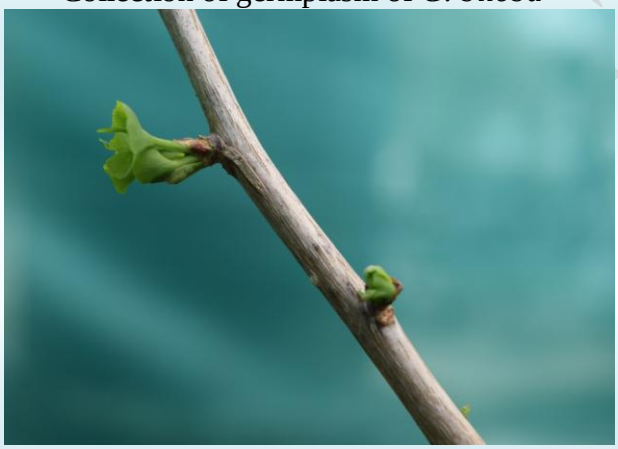
NMPB FUNDED PROJECT ON *G. BILOBA*

A low cost poly house under NMPB project

A Trial on cutting of *G. biloba*

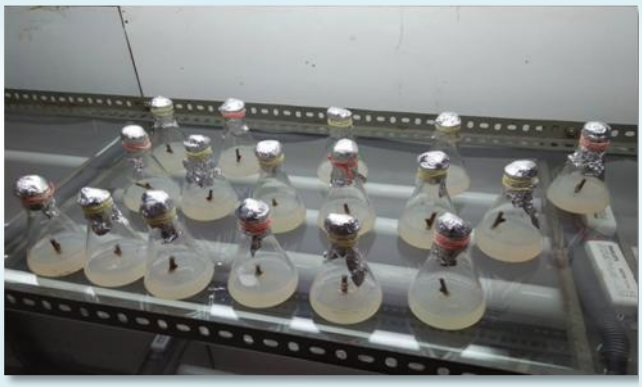
Collection of germplasm of *G. biloba*

Sprouting *Ginkgo biloba* cutting



A sprouting *Ginkgo biloba* cutting

Establishment of mother block of *G. biloba*



Tissue culture of *Ginkgo biloba*

Front Line Demonstration on Ginger under MIDH

Varietal trial on Maize


GROUND
APPAL


BUCKWHEAT
VARIETY-TEETA
(LOCAL)


BUCKWHEAT
VARIETY-TEETA
(LOCAL)

INTERNATIONAL CONFERENCE

NEWS PAPER COVERAGE

हिमालय दर्पण
१८ अप्रेल २००८

कालेबुङ साइन्स सेन्टरलाई जिन्गोबाइलोबा पौधा प्रदान

कालेबुङ, १७ अप्रेल (निसं): डा. अशोक चौधरी, निर्देशक, अनुसन्धान निर्देशालय, उत्तर बङ्ग कृषि विश्वविद्यालय, कुचबिहारको बाहुलीबाट कालेबुङ साइन्स सेन्टरका प्रमुख डा. बी. बी. गुरुङलाई जिन्गोबाइलोबाका पौधाहरू प्रदान गरियो। जिन्गोबाइलोबामाथि नेसनल मेडिसिनल प्लान्ट बोर्ड, आयुस मन्त्रालय, भरात सरकारको अनुदानमा उक्त पौधामाथि शोधकार्य गरिरहेका रिजनल रिसर्च स्टेसन (हिल जोन), उत्तर बङ्ग कृषि विश्वविद्यालय कालेबुङका एसोसिएट प्रो. डा. साजिद अली अनि उनका पी. एचडी शोधार्थी फुरतेन्जी शेर्पाले उक्त पौधामाथि शोध एवं पहाडमा यसको विस्तारमा कार्य गरिरहेका छन्। उनी दुवैको सफल कार्यको आधारमा उक्त पौधाहरू कालेबुङको एक पर्यटकीय शैक्षिक संस्थान कालेबुङ साइन्स सेन्टरलाई जहाँ स्थानीय मात्र नभएर देश विदेशदेखि शैक्षिक भ्रमणमा आउने विद्यार्थीहरूले सो पौधा देख्न र जान्न पाओस् भन्ने उद्देश्यले प्रदान गरिएको हो।

जिन्गोबाइलोबाका पौधा हस्तान्तरण गर्दै।

डा. बी.बी. गुरुङले भने, जिन्गोबाइलोबा अर्थात् जिन्को जसलाई जिन्को ट्री पनि भनिन्छ जो जिन्कोफाइटा शाखाको एक मात्र जीवित प्रजाति हो। यसका अन्य प्रजातिहरू विलोप भएर गइसकेका छन्। यो पौधा फसिल डेटिङअनुसार २७० मिलियन वर्ष पुरानो हो अर्थात् यो पौधा डाइनोसर युगको हो। कालेबुङ साइन्स सेन्टरमा थुप्रै प्रजातिका डाइनसोरका कृतिम मोडलहरू पार्कमा राखिएका छन्। वैज्ञानिकअनुसार ती डाइनसोरहरूले विशेष शाकाहारीले यी पौधाहरू खाने गर्थे। यसर्थ यी पौधाहरू पनि पार्कमा रोपिनाले यहाँ शैक्षिक भ्रमणमा आउने नानीहरूले उक्त पौधाहरू विषय जान्ने अवसर पाउँने छन्। यति मात्र नभएर यस पौधाको विशेष औषधीय गुणहरू पनि छन् जो पहाडमा राम्ररी सप्रन सफल रहे यसले यहाँको आर्थिक विकासमा मदत पुऱ्याउने एवं विश्वस्तरका मान्छेहरूलाई आकर्षित गर्नेछन् भनी बताइएको छ।

विज्ञानका विविध विषयमा दुई दिवसीय कार्यशाला

कालेबुङ, १२ मई (निसं): हिमालयन साइन्स सोसाइटी, कृषि सस्कृति, युबीकेबी अनि कालेबुङ विज्ञान केन्द्रको संयुक्त आयोजनामा दुई दिवसीय अन्तर्राष्ट्रिय वैज्ञानिकहरूलाई लिएर कृषि साथै विज्ञानका विविध विषयमा दुई दिवसीय सम्मेलन सम्पन्न भयो। कालेबुङ विज्ञान केन्द्रमा हिजोदेखि आयोजना भइरहेको कार्यशालामा हिजो उत्तर बङ्गाल कृषि विश्वविद्यालयका उपकूलपति डा. चिरन्तन चट्टोपाध्य प्रमुख अतिथि रहेका थिएभने आज मकैबारी टिस्टेटका चेयरमेन राजा ब्यानर्जी अनि इटलीका फ्लोरेन्जा बोर्टोलोटी, बीसीकेभीका प्रो. शङ्कर आचार्यका विशेष उपस्थिति रहेका थिए।

कार्यशालामा वृत्तचित्र प्रस्तुत गर्दै। फोटो : दर्पण

कार्यशालामा जापानका वैज्ञानिक डा. सुनिल कौलले आफूले गरिरहेको क्यान्सर रोग सम्बन्धी प्रयोगलाई कार्यशाला मार्फत सचेतना गराए। कार्यक्रमबारे जानकारी गराउँदै कार्यक्रम अध्यक्ष बि. बी गुरुङले अन्तराष्ट्रिय सम्मेलन प्रथमचोटि कालेबुङमा राखिएको बताए। विज्ञान विषयमाथि यहाँका जनताले पनि जान्न पाउन् भन्ने उद्देश्यले कार्यशाला आयोजना गरिएको उनले बताए। कार्यशालालाई तक्निकि सुविधा मार्फत विविध देशमा ओनलाइन पनि प्रस्तुत गरिरहेको उनले जानकारी गराए।

यसै गरी विभिन्न देशबाट आएका वैज्ञानिकहरूले आफूले गरिरहेका प्रयोगहरूको कार्यशाला मार्फत प्रदर्शनी गरे। जापानका वैज्ञानिक डा. रेनु बारबा, डा. शङ्कर आचार्य, डा. गौतम रोय, डा. सामुएल राई, डा. सुमित्र चक्रवर्ती लगायत विभिन्न देशका २५० वैज्ञानिकहरू कार्यशालामा उपस्थित थिए। विभिन्न ठाउँका वैज्ञानिकहरूले गरिरहेका प्रयोग गरिरहेका अनि आविष्कारहरूको जानकारी आदानप्रदान गरेर कालेबुङ जिल्लालाई एजुकेसन हबको रूपमा स्थापित गर्नु कार्यक्रमको उद्देश्य रहेको आयोजक पक्षले बताएको छ। कार्यक्रममा वैज्ञानिकहरूले वित्तचित्र मार्फत आफ्नो आविष्कार अनि अनुभवहरू साझा गरेका थिए।

Obituary

"I have passed the mountain peak and my soul is soaring in the firmament of Complete and unbounded freedom; I am in comfort, I am in peace."

LATE KUMAR PRADHAN

F/W (RRSS, Pedong)

Sadly missed along life's way,
Quietly remembered every day;
No longer in our life to share,
But in hearts, you are always there.

MAY YOUR SOUL REST IN PEACE

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