

Proceedings of the 15th Scientific Advisory Committee Meeting of KVK, Boudh

The 15th scientific advisory committee meeting of KVK, Boudh was held at 10.30 AM on Dt. 28.12.2018 at KVK training hall under the chairmanship of Dr. Mahamaya Prasad Nayak, Joint Director Information, OUAT, Bhubaneswar. Dr. R.K.Patnaik, Associate Dean, College of Agriculture, Chiplima participated in the SAC meeting as Chief Guest. Members present in the meeting are annexed herewith. Dr. Sutanu Kumar Satapathy, Sr. Scientist & Head, Boudh made a brief welcome to the Hon'ble Members and requested the dignitaries to inaugurate the meeting by lightening the lamp and requested the Chairman to conduct the meeting.

After a brief introductory Remark, the Chairman asked the Sr. Scientist & Head to start the proceedings as per the agenda.

Agenda-1 Approval of the proceedings of last SAC meeting.

The Sr. Scientist & Head briefly presented the proceedings of the last SAC meeting. The chairman taking the consent of the members approved the proceedings.

Agenda-2 Action taken on the proceedings of last SAC meeting.

The Sr.Scientist & Head presented the following action taken report on the recommendations of last SAC meeting having relevance to Kharif season.

14th Scientific Advisory Committee Meeting held on 29.12.2017

Recommendations	Action Taken
Record key Parameters in slides for better understanding for OFT & FLD.	➤ Included in this presentation
60 Nos. of training shall be conducted annually	➤ Training Programmes Included for the year 2018-19
Herbicide Targa super shall be included in OFT and also new Kharif onion varieties introduced in the farming community	➤ Assessment of Effect of Herbicide application yield of Kharif Tomato
One day old chicks distributed to the experienced farmers for backyard poultry	➤ Non-availability of chicks in CDVO, Boudh
Linkage of farmers to district level hatchery at Boudh	➤ CDVO Hatchery is not functioning
Sufficient amount of eggs for hatchery to be brought for district for making availability to the farmers 2-3 times in a year.	➤ By CDVO, Boudh
Triple resistant IIHR varieties of tomato must introduce	➤ OFT on Assessment of Triple Disease Resistant Tomato Hybrid "Arka Rakshak" and "Arka

	Samrat” in Rabi-2018-19
BPH tolerant Rice variety Hasanta and Integrated management of WBPH and BPH in paddy should in OFT	<ul style="list-style-type: none"> ➤OFT on Assessment of BPH tolerant Rice varieties ➤OFT on Assessment of Integrated management of WBPH and BPH in paddy
IPM modules for Shoot and fruit borer in Brinjal.	➤Assessment of IPM modules for Shoot and fruit borer in Brinjal
Veterinary scientist to be requited who shall take up for both the fishery & veterinary.	➤ Post Vacant
Lead focus shall be considered towards horticulture & veterinary	➤Included in the Training for the year 2018-19
Demonstration to be conducted regarding oil palm	➤Included in the Training for the year 2018-19
Trainings regarding high value cash crops like Banana, Kharif Onion etc. to be taken by NHRDF & KVK.	➤Included in the Training for the year 2018-19
Area under Oilseed & Pulses to be increased.	➤Blackgram & Greengram 20 ha for Kharif-2018 & Greengram 50 ha included for Rabi 2018-19 (Under CFLD Programme)
First phase grower trainings for farmers on Lemon grass oil extraction and Oil palm processing technology to be conducted.	➤Not Included
Use of bio-fertilizer, bio-pesticides, organic farming, NADEF or vermin composting should be given importance	➤Included in the OFT,FLD & Training programmes. A unit has been included for Vermicomposting in crop cafeteria.
Upland of Boudh district to be utilized in efficient manner by including short duration varieties of crops, vegetable cultivation through crop diversification	➤Included in Training on IFS & Module Activities
Awareness regarding major pest attack in crops. It is to be informed earlier for better pest management	➤Awareness Programme & Field visit on BPH, Stemboror, BLB &Earlier information regarding pest attack given by Message through KMAS & Voice Message by Reliance Foundation.
Emphasis to be given for soil testing and more number of soil samples shall be tested	➤Soil Awareness camp conducted in the adopted villages
Seed treatment shall be important for efficient management of the pest	➤Included in the training & Seed treatment awareness Campagain in a convergence mode with Line Deptts.
Market linkage for vegetables and other cash crops shall be strengthening	➤OFT On Assessment of existing marketing approach of Rabi onion
Training regarding important crops shall be given emphasis	➤Training on Package & Practices of Paddy, Pulses, Banana, Onion & Oilseed Crops.

Proper documentation of success story of farmers	➤ To be Included
Awareness on blanching prevention to be considered which is harmful to our eco system	➤ No Fishery Scientist
Rice fallow to be covered maximum extend of 68 %	➤ Greengram 50 ha included for Rabi 2018-19 (Under CFLD Programme)
Demonstration on soil testing shall be considered at farmer's field	➤ Awareness Campaign on Soil Health Management in Adopted Villages has been conducted.
Trial on bio-fertilizer effect for significant result to be taken up	➤ FLD on Demonstration on HYV of Paddy Rajalaxmi ➤ FLD on Demonstration on INM Practices in Chilli
Trial on weed management to be considered in the district	➤ FLD on Demonstration of IWM in transplanted Paddy ➤ OFT on Assessment of herbicide in Greengram ➤ Assessment of effect of Herbicide application yield of Kharif Tomato ➤ FLD on Demonstration on weed management in Onion
Bund plantation of Arhar (Pigeon pea) to be followed in the Boudh district	➤ By Department of Agriculture
Line sowing of paddy for preventing BPH attack	➤ Awareness Programme on BPH has been taken
Rural Youth should be involved in technology transfer in training	➤ Strengthening of Rural Youths through Rural Youth training conducted by KVK.

Agenda- 3 Achievements made during: Rabi- 2017-18

The Senior Scientist and Head of KVK, Dr. S.K.Satapathy presented the overall achievements made by the KVK during the year Rabi- 2017-18 and Kharif 2018 including mass dissemination by KMA, Voice message, message in newspaper etc.

On-Farm Testing:

Nine numbers of OFTs have been assessed during Rabi- 2017-18 involving 85 farmers in farmer's field based on problem of farmers. Some of Salient achievements of the OFTs are discussed.

➤ Assessment of tomato var. BT-136

1. **T O-1** = BT 136
2. **T O-2** = Utkal Pragyan

➤ Assessment of Herbicide application in Onion

1. **T O-1** = Pre-emergence Application of Pendimethalin
2. **T O-2** = Pre-emergence Application of Oxyfluorfen

➤ Assessment of IPM modules for fruit fly in bitter gourd

1. **T O-1** = Installation of Cuelure trap @ 20 traps /ha+ alternate spray of neem oil 0.15% @ 1lit/ha and spinosad 45 SC @ 150 ml/ha+ hoeing/raking the soil periodically at 15 days interval.
2. **T O-2** = Use of poison bait (1 lit water+ 100 gm gur + 2ml Malathion)+ alternate spray of neem oil 0.15 % @ 1 lit/ha and spinosad 45 SC @ 150 ml/ha

Front Line Demonstration:

K.V.K has conducted 5 Nos. of frontline demonstrations in: Rabi-2017-18. Salient achievement of some FLDs are given below.

- Demonstration on weed management in Okra

Technology: Pre-emergence application of pendimethalin @ 2.5 lit/ha and post emergence application quizalofop ethyl 5EC @1 lit/ha 20 DAS

- Demonstration on ethrel application in bitter gourd

Technology: Foliar application of ethrel @ 200 ppm at 2 & 4 leaf stage

- Demonstration on IPM for white flies in Okra

Technology: Installation of Yellow sticky trap 50/ha and application Neem based pesticide 2.5 lit/ha of water and Acetamiprid 100 gm/ha.

- Demonstration on use of acaricide against red spider mite in Brinjal

Technology: Application Etoxazole 10 % SC @40 gm a.i/ha

- Demonstration IPM against thrips in watermelon

Technology: Installation of Yellow sticky trap 50/ha and application Neem based pesticide 2.5 lit/ha of water and Solmon 300 OD (Beta-Cyfluthrin + Imidacloprid) @ 60 gm a.i. /ha

FLD on oilseed and pulses

Crop & Variety	Year & Season	Area (ha)		Name of villages & No. of Beneficiaries	Yield (q/ha)		Increase over FP (%)	Net Income (Rs / ha)		BC ratio	
		Target ed	Achie ved		CD	FP		CD	FP	CD	FP
Greengram (IPM-02-03)	Rabi 2017-18	50	50	Lambkani, Badigaon, Kanakpur 125 Nos.	6.5	4.8	11	19700	14000	1.94	1.62
Mustard (M-27)	Rabi 2017-18	10	10	Lambkani 25 Nos.	5.8	4.5	28	23000	10650	2.12	1.46
Groundnut (Kaderi-6)	Rabi 2017-18	10	10	Lambkani, Khuntipada, Erada 25 Nos.	14.2	11.8	20	32650	21500	2.04	1.68
Sunflower (MSFH-17)	Rabi 2017-18	10	10	Nuapalli, Rengali 25 Nos.	7.4	5.8	27	11000	6750	1.98	1.63

Training Programmes:

Sl. No	Type of Training	No of training Programme	Total Participants
1	Training for Farm & Farm women	39	975
2	Rural Youth	04	60
3	In-service Personnel	03	45
4	Vocational	02	30
Total		48	1110

Agenda- 4 Achievements made during: Kharif- 2018**On-Farm Testing:**

Seven numbers of OFTs have been assessed during Kharif -2018 involving 49 farmers in farmer's field based on problem of farmers. Some of Salient achievements of the OFTs are discussed.

➤ **Assessment of BPH tolerant Rice varieties**

1. **T O-1** = Hasanta-Small bold grains, white kernel, straw colour hull. Moderately resistance to leaf folder, leaf blast, Sheath blight & bacterial leaf blast Avg. yield-55-60qt, duration-145 days
2. **T O-2** = Pratiksyia-Medium slender, tolerant to complete submergence ecology :Flood prone shallow lowlands

➤ **Assessment of aromatic rice varieties in medium land**

1. **T O-1** = Cultivation of Aromatic paddy CR-907
2. **T O-2** = Cultivation of Aromatic paddy Geetanjali

- **Assessment of Onion varieties in Kharif Season**
 1. **T O-1** = Bhima super
 2. **T O-2** = Bhima super dark red
- **Assessment of effect of Herbicide application yield of Kharif Tomato**
 1. **T O-1** = Pre-emergence application of pendimethaline @2.5 lit/ha
 2. **T O-2** = Pre-emergence application of Pendimethaline @2.5 lit/ha + Post emergence application of quizalfopethyle @ 1 lit/ha
- **Assessment of IPM modules for Shoot and fruit borer in Brinjal**
 1. **T O-1** = Pheromone trap @ 25 traps/ha+ alternate spray of neem oil 0.15 % @ 1lit/ha and Flubendamide 39.35 SC @ 200 ml/ha
 2. **T O-2** = Regular clipping of wilted twigs+ pheromone trap (20 traps/ha)+ alternate spray of neem oil 0.15 % @ 1 lit/ha and spinosad 45 @ 150ml/ ha.
- **Assessment of Pesticides against Sesamum pod borer**
 1. **T O-1** = Cartap Hydrochloride or Fipronil @ 150ml/ha.
 2. **T O-2** = Profenophs @ 1lt./ha
- **Assessment of Integrated management of WBPH and BPH in paddy**
 1. **T O-1** = Making alleys at a distance of 2 m in paddy field.use of spider trap @ 25/ha, need based Alternate Spraying of flonicamid 50 WG @ 60 gm /acre and neem based pesticide 3000 ppm @ 600 ml/acre @ 10 days interval.
 2. **T O-2** =TO- 1 repeated with Spraying of pymetrozene 50 WG @ 120 gm/acre

Front Line Demonstration:

K.V.K has conducted 5 Nos. of frontline demonstrations in Kharif -2018. Salient achievement of some FLDs are given below.

- **Demonstration on drought tolerant paddy variety Sahabhagidhan**
Technology: Drought tolerant variety Sahabhagidhan (Application of NPK (60:30:30) along with Azotobacter 5kg/ha and ZnSo₄ @10-12 kg/ha with need based pesticide)
- **Demonstration on Hybrid variety of Paddy Rajalaxmi**
Technology: Variety: Rajalaxmi, seed rate @ 15 kg/ha with (Application of NPK (60:30:30) alongwith Azotobacter 5kg/ha and ZnSo₄ @10-12 kg/ha with need based pesticide)
- **Demonstration of IWM in transplanted Paddy**
Technology: Nursery management, Time based application of pre-emergence Pyrazosulfuron @200gm/ha ,post-emergence of herbicide 2. Fenox a prop-p-ethyle 6.9E.C @500ml/ha 13-15DAT
- **Demonstration on INM practices in Chilli**
Technology: Soil application of Azospirillum & PSB each @ 5kg/ha incubated with FYM + 75 % of RDF (120:60:80 kg NPK/ha)

➤ **Demonstration on Management of leaf curl in Chilli**

Technology: Spraying of Acetamiprid @ 150 gram/ha. Alternatively at 15 days interval. Blue sticky trap (20 traps/ha) + alternate spray of acetamiprid 20 SP @ 125 gm/ha and neem oil 0.15 % @ 1lit/ha

FLD on Oilseed & Pulses:

Crop & Variety	Year & Season	Area (ha)		Name of the villages & No. of Beneficiaries	Yield (q/ha)		Income (Rs / ha)	
		Targeted	Achieved		CD	FP	CD	FP
Blackgram (Prasad)	Kharif-2018	10.0	10.0	Amthapada, Gaundisara, Manmunda	Continuing.....			
Greengram (IPM-02-14)	Kharif -2018	10.0	10.0	Amthapada, Sinduripur, Gaundisara	Continuing.....			
Pigeonpea	Kharif-2018	30.0	30.0	Amthapada, Lambakani, Isirisinga, Rampur, Khuntiapada, Kulimunda 125 Nos	Continuing.....			

Training Achievements

Sl. No	Type of Training	No of training Programme	Total Participants
1	Training for Farm & Farm women	30	750
2	Rural Youth	2	30
3	In-service Personnel	-	-
4	Vocational	-	-
Total		32	780

Other Extension Activity

Extension Activities	Number	Participants
Scientist visit to farmers fields	95	235
Farmers visits to KVK	246	256
44 CD Film Shows	14	330
KMAS	27	32508
Spl. Day celebration	2	80
Field Day	3	150
Group meeting	6	150
Kissan Mela / Web Telecast	2	200
Lecture delivered as resource person	7	150
Exposure visit	1	10
Leaflets	2	1000
Newsletter	1	500

Publications

Sl.No.	Item	No.	No. of copies printed
1	Book/ Booklet	3	3000
2	Leaflets	2	2000
3	Poster/Flex	19	19
4	News letter	2	1000
5	News paper Coverage	13	-
6	Technical report	3	12
7	Year planner	1	50
	Total	43	6081

Instructional Farm Activity

Sl. No	Activities	Quantity produce
A	Seed production	
1	Pigeon pea (var. PRG-176)	Yet to be harvest
2	Dhanicha (var. Local)	1.0 qts
B	Seedling production	
1	Vegetable seedlings (Brinjal,Chilli, Drumstick,Tomato, Onion, Cole crops)	386490 Nos
2	Vermicompost	4.0 qts
3	Mushroom	0.5 qts

Agenda 4 Action Plan for Rabi: 2018-19

The Senior Scientist presented the detailed action plan for Rabi 2018-19. This includes 3 OFTs, 7 FLDs including Pulse crops and 29 Nos of trainings covering 620 farmers, farmwomen, rural youth and extension functionaries.

The members interacted among themselves and following action points were suggested.

- More seedlings and propagating materials of medicinal plants to be produced at KVK level.
- Popularization of local Brinjal variety by planting in scientific way at crop cafeteria.
- Onion varieties to plant in convergence with NHRDF for their varieties.
- Different varieties of Banana crop to be planted in the crop cafeteria through AICRP
- Local Papaya varieties to be given emphasis by including in crop cafeteria and seedling production.

- Different breeds of poultry to be managed in separate capsules and a breeding room to be managed for upto 21 days old chicks.
- Forestry unit to be impoverished by introducing shade loving plants, planting of Black Pepper, ginger etc. to be introduced.
- Planting of trees around the boundary of KVK and Agro-Polytechnique College for aesthetic purpose.
- More beds of mushroom to be produced.
- Different components of decomposition to be introduced at vermicompost polythene units like vegetable waste, decomposes liquid, etc. as separate component units.
- OFT on cotton to be introduced in the next Kharif Season.
- Popularization of bund plantation of pigeon pea or greengram to be given emphasis.
- Different varietal trial based upon the rainfed condition of Boudh district e.g. short duration varieties.
- Non chemical method of weed management to be taken as a trial in some crops for reducing chemical use.
- Introduction of sun hemp (chain) for weed suppression to can be used as a trial in Agronomy.
- Problems in fruit crops like mango and guava to be indentified and solution for remouncing the gap to be carried out accordingly.
- Skipped row method to be popularized in rice crop for reducing the BPH attack.
- Emphasis shall be given on more vocational trainings.
- Importance shall be given on fruit crops and encouraging the value chain and marketing to be carried out.
- Popularization of drumstick and papaya cultivation by bonding drumstick, due its high nutritional value.
- Ripe papaya (var. YMV resistant) to be export to Bhubaneswar market.
- Viral disease in cucurbit especially pumpkin management to be carried out
- Problem identification regarding cultivation of pumpkin and watermelon shall be carried out
- Method of ITK for management of meely bug in rice to be encouraged.
- Area increase in sunflower cultivation.
- Germination test and quality seed ccheck of onion to be given more importance

- Hay and silage method of cultivation to encouraged for fodder cultivation. The seeds of fodder to be introduced at KVK adopted village and a fodder plat as demo unit to be introduced at crop cafeteria of KVK campus.
- Animal health camp to be organized in KVK operated villages in convergence with veterinary department.
- Advanced Farmer/Progressive farmer to be encouraged for fodder cultivation.
- An auto breeding fish breed and a new species with no hatching technique to be introduced in KVK farm pond unit for rearing.
- Field day shall be organized with ATMA after paddy transplanting to create awareness on BPH.
- LAC CULTIVATION AT Boudh to be encouraged to explore and utilized huge population of Palasa trees for brooding of Lac resins.
- Fund regarding introduction and training under Lac farming to be placed by DFO, Boudh
- Bamboo plantation to be encouraged in small canals on tributaries of rivers.
- More technology based upon rainfed condition shall be introduced.
- Importance to be given on off season vegetable cultivation.
- Small and marginal farmers shall be given importance and trial in KVK to be based upon small and marginal farmer's practices.
- Entrepreneurship development to be encouraged.
- Oil palm processing unit shall be formed at the district and capacity building on oilpalm processing shall be carried out.
- Awareness and encouragement of farmers regarding maize cultivation and pulse cultivation to be given.
- Sweet corn and papaya to be given emphasis based upon its export value.
- Value chain, marketing and export of drumstick and value added products to be encouraged.
- Training, Awareness and trials to be conducted based on INM and IPM.
- Marketing linkage of fruit crops, value added products cash crops to be given more importance.
- Strengthening of linkage between KVK and Line deptt.
- Model price for commodities on weekly basis to be communicated through KMAS.
- Linkage of all RMC will be conducted which included RMC of Boudh district.
- FAQ norms of paddy is not procured. 5-10 % of FAQ norms of paddy is followed.

- Procurement through e-NAM shall be carried out for Boudh district which include cotton crop, Mahua crop etc.
- Other crops like Watermelon, Pumpkin and Onion has highest building at e-NAM of Boudh
- Emphasis on weather forecasting awareness
- Livelihood component for small and marginal farmer based upon mushroom cultivation, Chick Rearing.
- Entrepreneurship development promoting commercial crops like Banana, Watermelon and pumpkin
- Capacity building through training of Rural Youths on Marketing methods and primary processing. Entrepreneurship and hand hold support to given to Rural Youth.
- Scientific modification in KVK and crop cafeteria.
- Emerging road map based on important crops like cotton, fruit crops etc.

The Chairman appreciated in his presidential remarks stated that convergences of all line departments with KVK are doing betterment of the farming community. The meeting was ended at 2.30 pm with vote of thanks by Smt. J.R.Mallick, Scientist (Plant Protection).

Sd/-
Sr. Scientist & Head
KVK, Boudh

Annexure: I

List of participants present in the Rabi 15th SAC meeting with their address and status in the meeting.

Sl. No	Name	Designation &Address	Status
1	Dr. Mahamaya Prasad Nayak	Joint Director Information, OUAT,BBSR	Chairing
2	Dr. R.K.Patnaik	Associate Dean, College of Agriculture, Chiplima	Special Invitee
3	Sri Manoranjan Mallik	DDA, Boudh	Member
4	Sir T.S.Raut	DDM, NABARD	Member
5	Sri Raghava Mallick	PD, Watershed	Member
6	Sri Narayan Mahanandi	DAO, Boudh	Member
7	Sri Bishnu Ch. Behera	ACF,Boudh	Member
8	Sri Biswanath Kheti	AFO, Boudh	Member
9	Sri Hadibandhu Mahakud	Secy, RMC,Boudh	Invitee
10	Dr. Ruth Dung Dung	VAS,Baghiapada,Boudh	Invitee
11	Sri Abhijit Mohanty	RMC,Staff,Boudh	Invitee
12	Sri Abhilash Mahakud	Tech. Assistant, NHRDF,Boudh	Invitee
13	Sir Ranjit Kumar Das	Tech. Officer, NHRDF,Boudh	Invitee
14	Miss Surajyoti Pradhan	Scientist (Agronomy), KVK,Sonepur	Invitee
15	Sri Sanjit Pradhan	Progressive Farmer	Member
16	Sri Ramesh Naik	Progressive Farmer	Member
17	Smt Ritanjali Naik	Progressive Farm Women	Member
18	Smt. Gurubari Sahoo	Progressive Farm Women	Member
19	Sri Jayadev Pradhan	Progressive Farmer	Member
20	Dr. Sutanu Kumar Satapathy	Sr.Scientist & Head, KVK,Boudh	Convener

PHOTOGRAPHS OF 15TH SAC MEETING OF KVK, BOUDH



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Published in Odia News Paper “The Pramaya”

କୃଷି ବିଜ୍ଞାନ କେନ୍ଦ୍ରରେ ଉପଦେଷ୍ଟା ମଣ୍ଡଳୀ ବୈଠକ

ବନ୍ଧିଆପଡ଼ା, ୨୨।୧୨ (ଆପ୍ତ) : ବୌଦ୍ଧଜିଲ୍ଲା ବନ୍ଧିଆପଡ଼ା କୃଷି ବିଜ୍ଞାନ କେନ୍ଦ୍ରରେ ୧୫ତମ ଉପଦେଷ୍ଟା ମଣ୍ଡଳୀ ବୈଠକ ଅନୁଷ୍ଠିତ ହୋଇଛି । ଏଥିରେ ଓଡ଼ିଶା କୃଷି ଓ ବୈଷୟିକ ବିଶ୍ୱ ବିଦ୍ୟାଳୟ ଯୁଗ୍ମ ନିର୍ଦ୍ଦେଶକ ଡଃ ମହାମୟୀ ପ୍ରସାଦ ନାୟକ ସଭାପତିତ୍ୱ କରିଥିଲେ । ଅଗ୍ରଣୀ ଚାଷୀଙ୍କ ପାଖରେ କିପରି ଆଧୁନିକ ଜ୍ଞାନ କୌଶଳରେ ଆୟ, କଦଳୀ ଓ ପନିପରିବା ପ୍ରମୁଖ ଉତ୍ପାଦନ ବିଷୟରେ ଧ୍ୟାନ ଦେବା ପାଇଁ ଚାଷୀଙ୍କୁ ପରାମର୍ଶ ଦିଆଯାଇଥିଲା । କାର୍ଯ୍ୟକ୍ରମରେ ସମ୍ମାନିତ ଅତିଥି ଭାବରେ ଉପକୃଷି ନିର୍ଦ୍ଦେଶକ ମନୋରଞ୍ଜନ ମଲିକ, ଜଳଛାୟ ପ୍ରକଳ୍ପ ନିର୍ଦ୍ଦେଶକ ରାଘବ ମଲିକ, ଡିଡିଏମ୍ ନାରୀତର ଟି ରାଉତ ଯୋଗଦେଇ ଚାଷୀ ଫାର୍ମସ ପ୍ରଭୃତ୍ୟର ଗଠନ କରି କିପରି ଲାଭବାନ ହୋଇପାରିବେ ସେ ବିଷୟରେ ସୂଚନା ପ୍ରଦାନ କରିଥିଲେ । ବୌଦ୍ଧ କୃଷି ବିଜ୍ଞାନ କେନ୍ଦ୍ରର ବରିଷ୍ଠ ବୈଜ୍ଞାନିକ ଡକ୍ଟର ଶାନ୍ତାନୁ ଶତପଥୀ ଧନ୍ୟବାଦ ଦେଇଥିଲେ ।