



## IMPORTANT EVENTS

■ **Training on “S&WC Techniques for climate smart agriculture in the context of extreme weather events”**

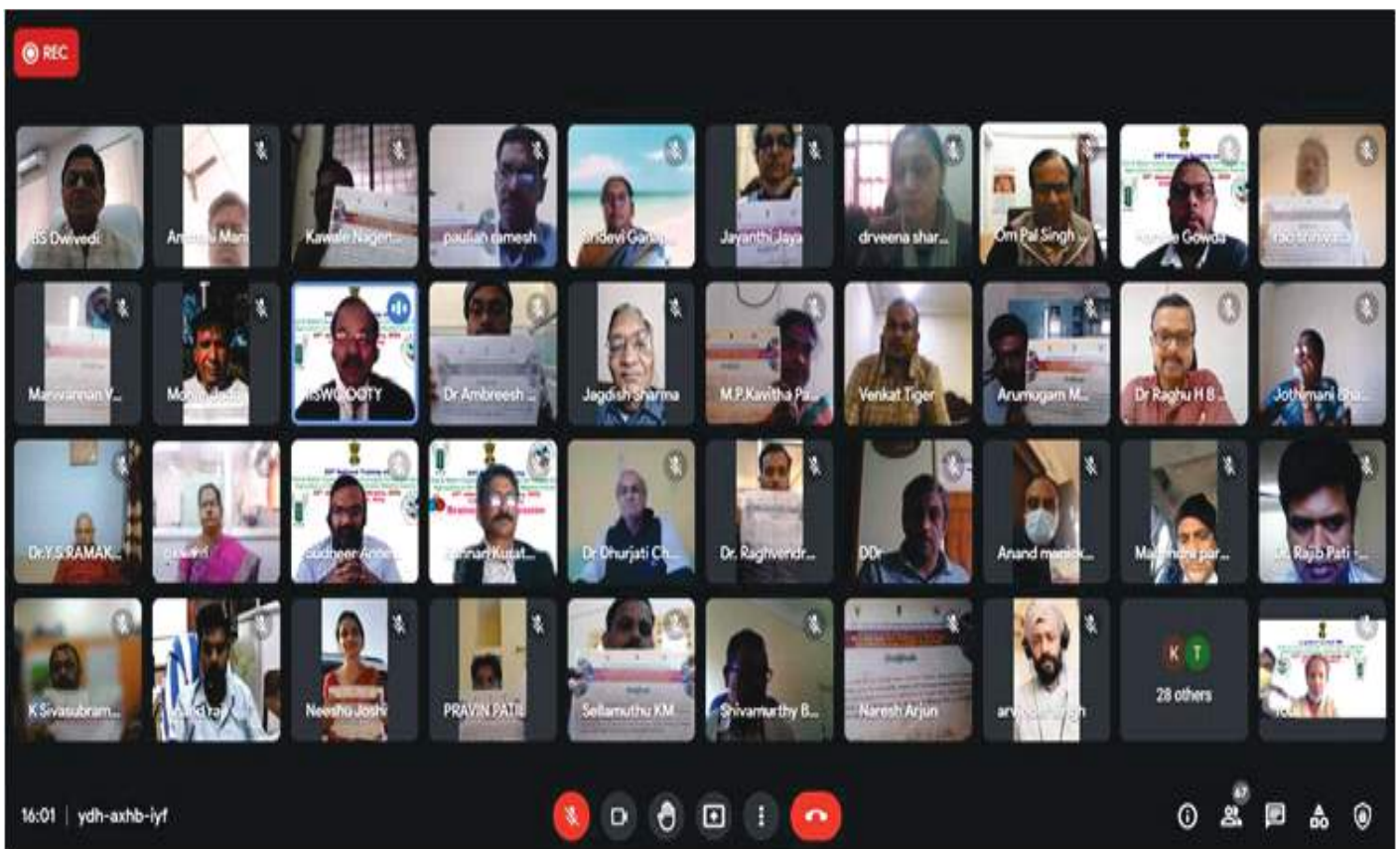
ICAR-IISWC, RC Udhagamandalam organised National level online training programme, sponsored by DST, on “Soil & Water Conservation Technologies for Climate Smart Agriculture in the Context of Extreme Weather Events” during 24<sup>th</sup> January to 4<sup>th</sup> February, 2022.

The schedule was designed for Group 'A' gazetted officers from Central and State government involved in Natural Resource Management(NRM), officers/ professors holding scientific and teaching posts in Central and State Agricultural Universities to acquaint the participants about the latest tools, techniques and models on soil & water conservation technologies in the context of extreme weather events. 50 participants of 14 subject disciplines from 10 different states across the Nation participated in the programme. Speaking on the Dr K.Kannan, Principal Scientist and Head of the Centre emphasised the

importance of new vision in combination with improved tools and methods to deal with natural resource management, soil and water conservation technologies under different climate change scenarios.

Shri D. Venkatesh, IFS, Conservator of Forests and Field Director, Mudumalai Tiger Reserve (MTR), The Nilgiris, in his Guest of Honour address underlined the importance of micro-watersheds in the development of hilly region and stressed upon the need to preserve the highly fragile ecology and environment of Western Ghats. He further expressed concern about the invasive species like Lantana and Wattle from Australia devastating the watersheds across the Sholas (Natural forests) in the Western Ghats regions.

Dr B.S. Dwivedi, Director, ICAR-NBSS & LUP, Nagpur, in his Chief Guest address highlighted the sustainable utilization of our natural resources and their benefits to be shared for nearly 85% of small farm holders in India and insisted that, all stakeholders' involvement in changing the conventional soil survey system to modern data mining techniques to attain Land





Degradation Neutrality (LDN) which was proposed in UNCCD as 26 Mha of degraded lands to be restored by 2030. Dr Dwivedi elaborated upon five point programme (i) Integrative approach for Land Use Planning to enhance the institutional capacity building (ii) precision agricultural procedures for soil, water, nutrient, pest management practices (iii) rejuvenation of watersheds which was already implemented in 12 states across the country including Karnataka, Andhra Pradesh, Arunachal Pradesh, Odisha, and Mizoram and Bihar in pipeline (iv) generation and sharing the quality data sets with the help of the different stakeholders and (v) proper management and utilization of the local natural resources, judicious application of fertilizers and local wisdom on soil and water resources management practices to tackle the climate change effects that need to be addressed on priority. Certificates for successful completion of the course were given to all the participants. Scientific and technical staff members of the centre, Head of offices and other dignitaries across the Nation attended the proceedings.

#### ■ *Four months regular training*

The four months (8<sup>th</sup> October, 2021 to 7<sup>th</sup> February, 2022) certificate course on “Soil and Water Conservation and Watershed Management” organised at the Institute Headquarters, Dehradun concluded on 7<sup>th</sup> February, 2022. A total of 27 officers including eight (8) women representing six states (Punjab-9; Nagaland-5; Mizoram-4; Kerala-3; Madhya Pradesh-2; Chattisgarh-1) and three Scientists from ICAR-IISWC participated in the 122<sup>nd</sup> batch of programme.

Officer trainees were kept quarantined for a week prior to the commencement of the training. The



2022, Col. Rohit Srivastava, Commanding Officer, Eco Task Force, Dehradun graced the occasion as Chief Guest and rewarded the certificates to the merit holders. The overall merit certificate of the batch was bagged by Dr (Ms) Jyoti from Punjab for her excellent performance who was also awarded merit for her performance in Conservation Agronomy.

The Certificate of Merit for Integrated Watershed Management was jointly awarded to Dr Jyoti from Punjab and Mr Suraj S. Adiyoly from Kerala. Merit certificate for Conservation Forestry was jointly awarded to Dr Gulshan Kumar Sharma, Scientist, ICAR-IISWC, RC, Kota and Dr Inderpal Singh from Punjab while merit certificate for Soil Management for Controlling Land Degradation, module was awarded to Dr Inderpal Singh from Punjab.

Dr Manoj Kumar, Scientist, ICAR-IISWC, RC, Chandigarh won the Merit certificate for Soil & Water Conservation Engineering Module and the Local Project both. The merit for Study tour was bagged by Ms. Smitha, M.S from Kerala.

Hon'ble Chief Guest, Col. Rohit Srivastava, speaking on the occasion, underlined the importance and enormity of the problem of soil and water conservation and urged the Officer trainees to address the issue with zeal and vigour to percolate the knowledge of the training at the field level.

Dr M. Madhu, Director, ICAR-IISWC, Dehradun in his address highlighted the brand value of ICAR-IISWC as a training organisation. He urged the Officer Trainees to disseminate the knowledge acquired during the training into their states, carry forward the relationship with other fellow trainees and



with ICAR-IISWC and be proactive in sharing technologies and skills pertaining to their states with other Trainee colleagues in future.

Dr D. V. Singh, Head (HRD&SS) Division presented the overall training report of the four months Certificate Course. The module of this training programme consisted of 47 % practical and 53% theory. The participants acknowledged and appreciated the efforts made by the IISWC, Dehradun for organizing training programme in the best possible way and gave their valuable suggestions for further improvement of the course.



The United Nations commemorated 4<sup>th</sup> World Pulse Day on 10<sup>th</sup> February, 2022. In this context, the ICAR-IISWC, Dehradun and its Research centres organised a variety of programmes to raise awareness about the role of pulses in human nutrition and agricultural diversification among farmers, students, local delegates and representatives; and the general public. At Dehradun, programme was attended by 100 participants, including 40 farmers, 20 students, scientists, technical staff, administrative personnel, and field workers. Dr Sharad Pandey, Dean, College of Agriculture, Forestry, and Fisheries, Himgiri Zee University, Dehradun The chief guest at the event underlined the importance of the World Pulse Day programme and pulses in agriculture and food security. He also marked the importance of identifying and promoting the medicinal properties of significant pulses from India's hilly regions. Dr M. Madhu, Director, IISWC enlightened the audience by highlighting the numerous roles of pulses in today's world. He discussed how pulse production could be boosted up by including

pulses in sole and intercropping systems. Dr Madhu inspired the participants to cultivate pulses and start of pulse-based businesses. He also discussed the role of pulse in reducing the effects of climate change. Dr N. K. Sharma, Principal Scientist and Head, SS&A Division; Dr D. Mandal, National Fellow ICAR & Principal Scientist; Dr Raman Jeet Singh, Scientist and Dr Devideen Yadav, Scientist also expressed their views on the occasion about the role of pulses in agro-diversification and the use of scientific production practices to achieve sustainable crop yields and soil quality. The importance of pulses in human nutrition and the benefits of including pulses in the diet, such as its high protein and mineral content, fibre content, and reduced cholesterol content and how the pulses reduced water footprint in agricultural production. One awareness quiz about pulses was also organized. Participating farmers also expressed their thoughts on the practical aspect of pulse production in the Uttarakhand.





### ■ *Seedlings distribution programme*

ICAR-IISWC, RC, Ballari organized a seedlings distribution programme on 17<sup>th</sup> February, 2022 at Chilumehalli Tanda village, adopted SCSP. In order to build awareness and demonstrate dry-land horticulture crops, Mango (200), Sapota (250), Guava(250), Jamun (50), Lemon (200), Custard apples(50), coconut(200), 250 areca nut (250) and tamarind(50) grafted seedlings were distributed to the beneficiary farmers. The programme was aimed at underlining the importance of horticulture crops and their role in maintaining the farm economic sustainability and environmental balance in agro-ecosystem among the beneficiary farmers. Total 1450 seedlings were distributed to the nine beneficiary farmers for establishment of block plantations in the village.



### ■ *Demonstration on vermin-compost production*

Demonstration of Vermicompost production technology using HDPE vermi bed under the TSP scheme was conducted by ICAR- IISWC, R C Ballari at Mattajanhalli village, Ballari District, Karnataka on 19<sup>th</sup> February, 2022. The participating farmers were enlightened about the benefits of vermi compost application to the field and horticultural crops and briefed about the basic requirements for vermiculture, various processes involved in vermin composting, role of



vermin technology in waste management, precautions to be taken in vermi composting *etc.* Live demonstration was conducted, Also, HDPE vermi bed and earth worms were distributed among the beneficiary farmers.

### ■ *Training cum exhibition on “Value addition and livelihood opportunities for improved farm returns”*

One day training cum exhibition on “Value addition and livelihood opportunities for improved farm returns” was organised by ICAR-IISWC, RC Udhagamandalam at Bendarawadi village, Gundlupet taluk, Chamarajanagar, Karnataka on 22<sup>nd</sup> February, 2022 under SCSP.

A series of technical sessions were conducted and issues like SCSP programme and ways to increase economic returns through value addition and diversification; the need for soil and water conservation and back yard poultry as an alternate livelihood option for landless farmers; livelihood opportunities for agripreneurship development among rural youth and importance of SGHs in women empowerment were discussed in detail.

Shri Somachari, Apiculturist & former employee of Karnataka State Horticulture department made a demonstration on honey bee rearing. Around 200 farmers including farm women and students actively participated and clarified their doubts. Progressive farmers and village leaders expressed their views during the feedback and exhibition session. On the occasion, relevant literature, power sprayer and small farm tools were distributed to the beneficiary farmers.



■ **Training on “Mushroom cultivation for doubling farmer's income”**

ICAR-IISWC, RC, Chandigarh organised one day training programme on “Mushroom cultivation for doubling farmer's income” at village Bhojnagar, district Solan, Himachal Pradesh on 24<sup>th</sup> February, 2022. A total of 23 farmers including 8 women farmers actively participated in the training. A live demo was conducted on the preparation of soawn, mixing of mushroom seed, filling bags and other relevant activities for the emergence of mushrooms. Farmers were also apprised about the health benefits of mushrooms, types of mushrooms, cultivation practices, infrastructure required, financial help and other supports from the various departments.



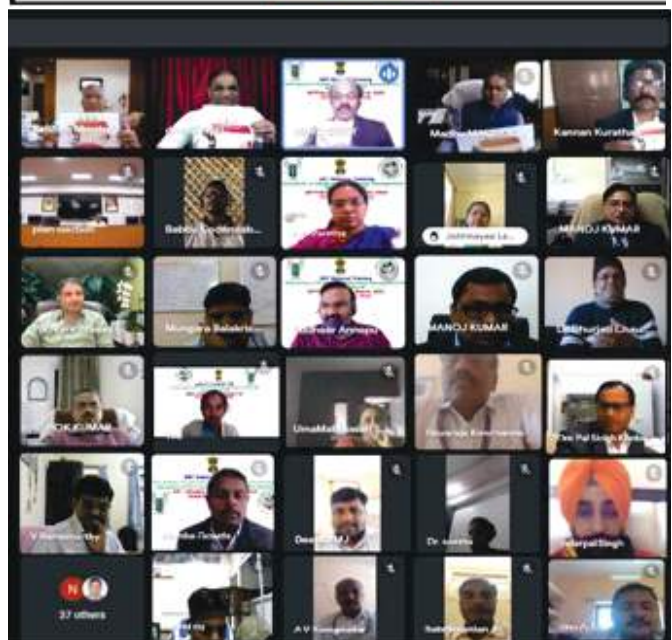
■ **Training on “Advances in integrated watershed management for rural livelihood”**

The DST funded two week national online training programme on “Advances in Integrated Watershed Management for Rural Livelihood” for Group 'A' officers was virtually inaugurated on 28<sup>th</sup> February,

2022 at ICAR-IISWC, R.C, Udthagamandalam.

Dr Y.V.N. Krishna Murthy, Registrar, IIST-ISRO, Trivandrum and Former Director NRSC-ISRO in his chief guest address highlighted the importance of prioritization of watershed programme by integrating spatial technologies, field studies and participatory approach.

Dr K.S. Subramanian, Director of Research, Tamil Nadu Agricultural University, Coimbatore in his address emphasized the working concept of “more crop per drop” and expressed the need to implement various water saving technologies. Thiru. M. Asokan, Additional Director of Agriculture, Tamil Nadu, speaking on the occasion, elaborated upon various schemes run by the Tamil Nadu Government for watershed development.





## HUMAN RESOURCE DEVELOPMENT

### [A] Capacity Building: *(In house employees)*

- Four months certificate course on “Soil and Water Conservation and Watershed Management” organised at the Institute Headquarters, Dehradun concluded on 7<sup>th</sup> February, 2022.
- ICAR-IISWC, Dehradun organized a Sensitization Workshop on the preparation and submission of progress details for the Institute's Annual Report on 9<sup>th</sup> February, 2022.

### [B] Capacity Development: *(Programs organised for stakeholders)*

- DST funded training programme on “S&WC Tech. for Climate Smart Agri. in the Context of Extreme Weather Events” concluded at ICAR-IISWC, RC Udhagamandalam concluded on 4<sup>th</sup> February, 2022.
- Four months certificate course on “Soil and Water Conservation and Watershed Management” organised at the ICAR-IISWC, Dehradun concluded on 7<sup>th</sup> February, 2022.
- Educational/exposure visit of B. Tech. (Agri. Engg.) students from CTAE, MPUAT- Udaipur was organised by ICAR-IISWC, RC Vasad on 15<sup>th</sup> February, 2022.
- Training cum exhibition on “Value addition and livelihood opportunities for improved farm returns” was organised by ICAR-IISWC, RC Udhagamandalam at Bendarawadi village under SCSP on 22<sup>nd</sup> February, 2022.
- One day training programme on Mushroom cultivation for doubling farmer's income was organised by ICAR-IISWC, RC Chandigarh at village Bhojnagar, Solan on 24<sup>th</sup> February, 2022.
- Exposure visit for BSc (Agri.) UG students on Soil and water conservation was organised by ICAR-IISWC, RC, Udhagamandalam on 24<sup>th</sup> February, 2022.
- One day training on Sustainable use of crop residues was organised by ICAR-IISWC, RC, Koraput at Village Podagada Katurput Block, Semiliguda Koraput Odisha on 24<sup>th</sup> February, 2022.
- Exposure visit for Assistant Horticulture Officers was organised by ICAR-IISWC, RC Ballari on 25<sup>th</sup> February, 2022.
- Exposure visit for BSc (Agri.) UG students on Soil and water conservation was organised by ICAR-IISWC, RC, Udhagamandalam on 26<sup>th</sup> February, 2022.
- Two days farmer's training-cum-exposure visit on “Dryland Horticulture and its Management Technique” was organised by ICAR-IISWC, RC, Ballari under SCSP on 26<sup>th</sup> and 28<sup>th</sup> February, 2022.
- Inaugural function of DST funded national level online training programme on “Advances in Integrated Watershed Management for Rural Livelihood” was organised on 28<sup>th</sup> February, 2022 at ICAR-IISWC, RC Udhagamandalam.

## FARMERS OUT-REACH ACTIVITIES (TSP/SCSP)

- ICAR-IISWC, Dehradun and its Research Centre's celebrated Fourth World Pulse Day programme on 10<sup>th</sup> February, 2022.
- ICAR-IISWC, RC Ballari organised a seedlings distribution programme at Chilumehalli Tanda village under SCSP on 17<sup>th</sup> February, 2022.
- ICAR- IISWC, RC, Ballari demonstrated vermicompost production technology to TSP beneficiaries at Mattajanahalli village under TSP on 19<sup>th</sup> February, 2022.

- ICAR-IISWC, RC Udhagamandalam organised One-day training cum exhibition at SCSP adopted Bendarawadi village, Gundlupet taluk, Chamaraanagar District, Karnataka on “Value addition and livelihood opportunities for increased farm returns” on 22<sup>nd</sup> February, 2022.
- ICAR-IISWC, Dehradun participated in exhibition organised by Council for Science and Tehnology(Vigyan Dham), Jahjara, Dehradun, during 22-28<sup>th</sup> February, 2022.
- ICAR-IISWC, Dehradun organised small farm tools demonstration cum distribution programme organized in village Dorbasi (Buggawala), Haridwar on 24<sup>th</sup> February, 2022 under SCSP.

### AZADI KA AMRIT MAHOTSAV

#### ■ *Sensitization programme on “High Yielding Groundnut variety demonstration & Improved INM practices”*

On account of celebration of Azadi Ka Amrit Mahotsav a sensitization workshop on “High Yielding Groundnut variety demonstration & Improved INM practices” was organised by ICAR-IISWC, RC, Ballari on 4<sup>th</sup> February, 2022 at Chilemahalli Thanda village, Vijayanagara District, Karnataka . The participants were sensitised about High Yielding Groundnut variety Kadiri Lepakshi and agro chemicals *viz.*, micronutrient fertilizer and plant growth regulators. The field demonstrations under the head “Improved nutrients and best management practices for enhanced groundnut crop productivity and soil fertility” have been initiated for increasing the awareness among the farmers. In the beginning of the Rabi cropping season, an improved groundnut variety (Kadiri Lepakshi/ K 1812), NPK bio fertilizer and seed treatment chemicals were distributed among farmers. During the proceedings farmers were sensitised about the importance of Gypsum and



micronutrients to the groundnut crop and its method of application for better uptake of nutrients. The issues like role of vermicompost and bio fertilizers for maintenance of soil health, adoption of better package of practice for groundnut cultivation and mechanization of groundnut cultivation were also discussed. About 25 farmers participated in the programme. Field (groundnut) visits were undertaken and on the spot advice were provided to the farmers on appropriate pest control measures, in consultation with Dr Govindappa, Senior Scientist (Pathology), KVK, Hagari, Karnataka.



#### ■ *Training on “Sustainable use of crop residues and demonstration of portable vermin-bed”*

ICAR-IISWC, RC, Koraput organised a training programme on sustainable use of crop residues and demonstration of portable vermin-bed and celebrated “Azadi ka Amrit Mahotsav (AKAM)” to commemorating 75<sup>th</sup> years of Independence on 24<sup>th</sup> February, 2022. A total of 56 farmers including 6 women



from two villages namely, Podagada and Kuturput participated in the programme. A wide range of topics, including on importance of vermi compost in organic agriculture; preparation of vermi compost by using low cost portable vermibed; economic aspects of vermi compost; use of vermi compost in horticultural crops and Do's and Don'ts while doing vermi composting through low cost portable vermibed were discussed during the programme. Demonstrations and field visits were also conducted on the occasion.



- ICAR- IISWC, RC, Ballari organised sensitization programme on “High Yielding Groundnut variety demonstration & Improved INM practices” under Azadi ka Amrit Mahotsav (AKAM) at Chilemahalli Thanda on 4<sup>th</sup> February, 2022.
- ICAR-IISWC, RC, Ballari organised sensitization programme on “High Yielding Groundnut variety demonstration & Improved INM practices” under Azadi ka Amrit Mahotsav (AKAM) on 4<sup>th</sup> February, 2022.
- ICAR-IISWC, RC-Vasad, organised “World Pulse Day” at village- Navagam, Dist- Kheda, Gujarat, under Azadi ka Amrit Mahotsav (AKAM) on 10<sup>th</sup> February, 2022.
- ICAR-IISWC, RC, Udhagamandalam organised World Pulses Day workshop at Passaihnapura village, Gundlupet taluk, Chamarajanagar District, Karnataka on 10<sup>th</sup> February, 2022.
- ICAR-IISWC, RC-Vasad, organised Animal Health Camp in SCSP village- NavagamVanta, Dist- Anand, Gujarat, under Azadi ka Amrit Mahotsav (AKAM) on 11<sup>th</sup> February, 2022.
- ICAR-IISWC, RC, Koraput organised a training program on Sustainable use of crop residues and demonstration of portable vermin-bed under Azadi ka Amrit Mahotsav (AKAM) on 24<sup>th</sup> February, 2022.

## PUBLICATIONS

### Research Papers

Dubey, R.K., Mundra, S.L. and Dubey, S.K. 2021. Content & Stability of chlorophyll, growth and reproductive phase and productivity of Indian mustard (*Brassica juncea*) under nutrient and plant growth regulator treatments. Published Extended summaries Vol. IV Fifth international Agronomy Congress on Agri Innovations to combat food and nutrition Challenges during 23-27<sup>th</sup> November, 2021 PJTSAU, Hyderabad Telangana, pp1933-1936

Hota, S., Mishra, V., Mourya, K.K., Giri, K., Kumar, D.,

Jha, P.K., Saikia, U.S., Prasad, P.V. and Ray, S.K. 2022. Land Use, Land form, and Soil Management as Determinants of Soil Physicochemical Properties and Microbial Abundance of Lower Brahmaputra Valley, India" Sustainability 14, no. 4: 2241. <https://doi.org/10.3390/su14042241>

Biswas, H., Prabhavathi, M., Kumar, S., Patil, S.L., Morade, A.S., Kumar, M., Sheshardri, B.N. and Rao, K.S. 2021. Biochar Application and Soil Carbon Stocks in Semi-Arid Vertisols, Agropedology30 (02), pp 202-209

## AUDIO/VIDEO PREPARED

- Developed video film on Impact of soil and water conservation technologies demonstrated for Tribal Farmers.

- Developed video film on Grass vegetative barriers for soil and water conservation in Western Ghats Region.

## SALIENT RESEARCH FINDINGS

### Establishment and promotion of grasses for soil conservation and fodder production in hilly areas

Grass species - Hybrid Napier (Co5 & Co4), Guinea grass, Weeping love grass, Guatemala grass, Vettiver grass, Lemon grass and Congo signal grass were evaluated, under inter-institutional project, for the hilly temperate region to identify, establish and promote grasses for soil conservation, soil health, Carbon sequestration potential and forage production in the Nilgiris region. Higher soil conservation efficiency *viz.*, surface area protected by grass against rain drop (16733 cm<sup>2</sup>), volume of soil bound by root (195613cc) was observed in Hybrid Napier (Co5) and Hybrid Napier (Co4). Highest fodder production (303.7

t/ha) and crude protein (14%) was achieved with Hybrid Napier (Co5). Soil organic carbon stock after two years of establishment was higher in Vettiver grass (32.1 Mg/ha), Congo signal grass (31.4 Mg/ha) and hybrid Napier (29.6 Mg/ha). Net carbon flux of different grasses was found to be negative.

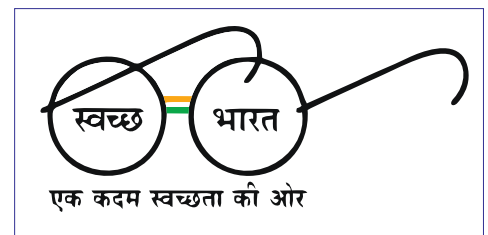
It is advocated to develop grassland system and preserve existing grasslands and develop varieties like Vetiver, lemon grass which are not only having good medicinal values, soil conservation biological barrier as well as very good sink for atmospheric CO<sub>2</sub>. Awareness created with training, publications and camps resulted in farmer's interest in using these grasses for soil conservation and fodder production.



Field demonstration in slopy land with hybrid napier grass for soil conservation and fodder production



Suitable Grasses for soil conservation and fodder production in Nilgiris



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