



## हिन्दी सप्ताह (14-20 सितम्बर, 2016)

हिन्दी सप्ताह का शुभारम्भ दिनांक 14.09.2016 को किया गया। कार्यक्रम की मुख्य अतिथि डा. नीति शास्त्री, शिक्षाविद एवं समाजसेवी और अध्यक्षता संस्थान के निदेशक डा. ओ.पी. चतुर्वेदी ने की। कार्यक्रम के प्रारम्भ में माननीय कृषि मंत्री, भारत सरकार का हिन्दी दिवस पर संदेश तथा भारतीय कृषि अनुसंधान परिषद के महानिदेशक महोदय की अपील पढ़कर सभी को उनके बहुमूल्य विचारों से अवगत कराया। हिन्दी को बढ़ावा देने के लिए हिन्दी सप्ताह के दौरान सप्ताह भर चलने वाली विभिन्न प्रतियोगिताओं का आयोजन किया गया। प्रतिभागियों को प्रोत्साहित करने के लिए प्रत्येक प्रतियोगिता में प्रथम, द्वितीय एवं तृतीय पुरस्कारों का वितरण किया गया। इसके साथ ही साथ सरकारी कामकाज में राजभाषा को बढ़ावा देने हेतु प्रशासनिक, तकनीकी एवं वैज्ञानिक वर्ग से जिन अधिकारियों एवं कर्मचारियों द्वारा पिछले एक साल के कार्यकाल में 20,000 या उससे अधिक शब्द हिन्दी में लिखा गया हो उनको प्रथम, द्वितीय तथा तृतीय पुरस्कार दिया गया।

दिनांक 20.09.2016 को हिन्दी सप्ताह का समापन संस्थान के निदेशक की अध्यक्षता में सम्पन्न हुआ। समापन समारोह के मुख्य अतिथि डॉ. के.आर. आर्य, निदेशक, कृषि विज्ञान संस्थान, बुन्देलखण्ड विश्वविद्यालय, झांसी थे। इस अवसर पर मुख्य अतिथि महोदय द्वारा प्रतियोगिताओं में विजयी प्रतिभागियों को पुरस्कार वितरित किये गये। कार्यक्रम में वार्षिक राजभाषा पत्रिका "कृषिवानिकी आलोक-2016" दशम् अंक का विमोचन भी मुख्य अतिथि महोदय द्वारा किया गया। मुख्य अतिथि ने राजभाषा अधिनियम 1963 की धारा 3 (3) एवं राजभाषा नियमों, 1976 का उल्लेख करते हुए सभी से अपने दैनिक कार्यों में इसके अनुपालन करने की अपील की। कार्यक्रम की अध्यक्षता करते हुए निदेशक महोदय ने पुरस्कृत प्रतिभागियों को बधाई देते हुए वैज्ञानिकों से अपील की कि वे संस्थान में विकसित तकनीकियों को किसानों तक हिन्दी भाषा में पहुँचाने हेतु और अधिक प्रयास करें।



### हिन्दी कार्यशाला

दिनांक 14.09.2016 को हिन्दी कार्यशाला का आयोजन किया गया जिसका शीर्षक था "हिन्दी का सहज एवं सरल प्रयोग" और मुख्य वक्ता शिक्षाविद और समाजसेवी डॉ. नीति शास्त्री थी। डॉ. शास्त्री ने अपने उद्बोधन में हिन्दी भाषा नीति, विधा और प्रयोग के बारे में विस्तार से बताते हुए सरकारी काम-काज में राजभाषा का व्यवहारिक प्रयोग के विधि को विस्तार से समझाया। इस दौरान उपस्थित अधिकारियों एवं कर्मचारियों ने हिन्दी की वर्तनी और वर्तनी प्रयोग संबन्धी अपनी जिज्ञासाओं का समाधान भी किया।



## Analysis of soil health attributes of selected farmer's fields in Bundelkhand region

Soil samples from 6 villages (Parasai, Chhatpur, Bachhauni, Ganesh Garh, Nayakhhera and Veerpura) of Jhansi district (U.P.) and 3 villages (Shivrampur, Garhkundar and Dabar) of Tikamgarh district (M.P) were collected with GPS points representing 250 farmers as per the soil health card (SHC) scheme guidelines of the government of India. The samples were collected from (0-15) cm soil depth with auger in grid fashion, following the standard protocols.



These samples were subsequently sent to the laboratory for processing and further chemical analysis such as pH, EC, Organic C, Available N, P, K, S, B, Zn, Cu, Fe and Mn. From the fertility analysis, it was very clear that pH value ranges from 6.07 to 8.54 and EC from 0.01 to 0.26 dS m<sup>-1</sup>.

Table 1 depicts the number of farmers falling under low, medium and high category status for organic C, available N, P and K. We had provided information of farmer's detail, sample number, date of sampling, GPS points, type of land, status of above mentioned nutrients and most importantly, the recommendations of S, B, Zn, Cu, Fe, Mn and FYM to be applied for attaining the target yield in the soil health card. Along with these information on soil health card, there is mention of amount of inorganic fertilizers like urea, DAP and MOP required to be applied for reasonable yield for the major crops of the region. Farmers have been distributed SHC on the occasion of "World Soil Day" on 5<sup>th</sup> of Dec, 2015 at our ICAR-CAFRI institute premises. The SHC meant for 3 years of validity from the date of sampling.

**Table 1: Percentage of farmers falling under low, medium and high soil fertility category for organic C, available N, P and K. (Total no. of farmers studied 250)**

Serial no.	Parameters	% of farmers falling under		
		Low	Medium	High
1	Organic Carbon	35.6	30.4	34
2	Available N	89.2	10.8	0
3	Available P	42.4	50.4	7.2
4	Available K	64.8	35.2	0

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## Effect of depth of cuts on stem-bark and yield of exuded gum from *Butea monosperma* L.

*Butea monosperma* L (Palash) is a native of tropical South Asia, especially the regions of India (Indo-Gangetic plains). It is a medium-sized deciduous tree and belongs to the family Leguminosae-Papilionaceae (family Fabaceae). It is an important multipurpose tree for the rural population providing fodder, fibre, fuel wood, gum, medicine and shade. In Bundelkhand, it is most widespread species and mainly found in open woodlands, degraded/ pasture lands and forest and farmers lands. It is adapted to



survive under harsh environmental conditions such as low and erratic rainfall, and intense solar radiation.

Gums and resins are almost ubiquitous in plant Kingdom and many of them continue to play an important role in our daily lives. Numerous plants produce some kind of gums and resins, but only a few are commercially important. They have been used as adhesives, emulsifiers, thickening agents, added to varnishes, paint and ink; for aromas added to perfumes and cosmetics and even play a role in pharmacy and medicine (Fernandes, 1964). India is the producer of different gums in international market. Gum-butea is a minor gum. Traditionally, tapping of gum-butea (known as *kamarkas*) is one of the key livelihood option for tribes particularly the Saharia community in Central India. The gum is collected by Saharia tribe by making incisions or cuts on stem-bark of butea trees (Prasad *et al.*, 2016). They collect the gum and sell it at very nominal price in local market. Traditionally, tribal collects gum during November to February, once in a year. The selection of trees for gum collection is done judiciously and only those trees which have at least 25-30 cm girth are marked for gum tapping. For inducing gum oozing, tribal first remove over bark or dead bark from the stem. Thereafter, with the help of a special designed bill hook (having three side sharp edges) incision or cuts are made. After two days of tapping, trees are visited again for collecting gum. The juice or tears are removed from bark with hand or with the help of small knife. However, much information is not available about the tapping possibilities of *B. monosperma* for gum production. Therefore, study was conducted at Central Agroforestry Research Institute, Jhansi to investigate the effect of different depths (0.5 cm, 1.0 cm and 1.5 cm) of incision or cuts made on stem-bark on yield of exuded gum from *B. monosperma*.

The field trial was conducted on naturally occurring 15-20 years old trees of *B. monosperma*. To regulate depth of cuts, a bill hook was purposely designed and got fabricated locally. The trial consisted of three depths of cuts *viz.* 0.5, 1.0 and 1.5 cm, and each replicated on three trees. The experimental design adopted was randomised complete block design. It was conducted in the month of February, 2015 and exuded gum yield was evaluated.

The findings revealed that incisions of different depths had a great influence on the amount of gum yield (Fig.1). The gum yield from incision depths of 0.5, 1.0 and 1.5 cm was 53.32, 260.96 and 176.93 g/m<sup>2</sup> stem area, respectively. Maximum gum yield obtained with the 1.0 cm deep cut in the stem-bark suggests that gum-butea exudes from the stem-bark and not the stem-wood (Prasad *et al.*, 2016). The thickness of the bark varies from 1.0 to 1.5 cm. The second fact revealed is that the gum-butea can be achieved only after making artificial injury to the plant in the form of incisions or cuts. This revelation contradicts the most accepted theory of gummosis which says that gums and resins are formed as a natural phenomenon of the plant in which internal plant tissues disintegrate and form cavities, and transformed carbohydrates is exuded in the form of gums. However, it holds true with the second theory which opines that gum is caused as a result of injury to the bark or stem (RCDC 2006). From these results it is concluded that the value addition in total productivity can be done by adopting proper gum tapping techniques for tapping gum-butea from *B. monosperma* trees naturally occurring in rangelands, degraded lands and pasturelands.



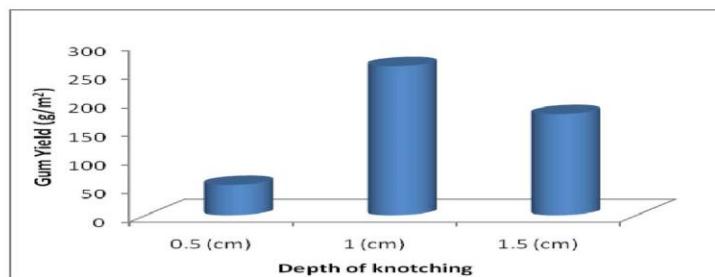


Fig. 1. Effect of depths of knotching on gum yield of *B. monosperma*

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## गाजर घास जागरूकता सप्ताह

भा. कृ. अनु. प.–केन्द्रीय कृषिवानिकी अनुसंधान संस्थान, झांसी में गाजर घास (पार्थेनियम) जागरूकता सप्ताह का आयोजन दिनांक 16 से 22 अगस्त, 2016 के दौरान आयोजित किया गया। कार्यक्रम का शुभारम्भ दिनांक 16 अगस्त को निदेशक डॉ. ओ. पी. चतुर्वेदी की अध्यक्षता एवं निर्देशन में परिसर के आस-पास गाजर घास उन्मूलन से किया गया। दिनांक 17 अगस्त को शोध प्रक्षेत्र में गाजर घास का उन्मूलन कार्यक्रम चलाया गया। डा. बद्रे आलम ने गाजर घास उखाड़ते समय बरती जाने वाली सावधानियों के बारे में जानकारी दी। दिनांक 18 अगस्त को संस्थान परिसर में उग रही गाजर घास का उन्मूलन किया गया। दिनांक 19 अगस्त को सिमरधा गाँव में, ग्रामीणों को गाजर घास की समस्या एवं इसके उन्मूलन के तरीकों के बारे में जागरूक किया गया। डॉ. वीरेश कुमार ने मैक्सिकन वीटल के द्वारा इसकी रोकथाम में योगदान पर प्रकाश डाला। दिनांक 20 अगस्त को जागरूकता सप्ताह का आयोजन ग्राम करारी में किया गया। डॉ. राजेन्द्र प्रसाद ने गाजर घास से कम्पोस्ट बनाने की विधि की जानकारी किसानों को दी। डॉ. रमेश सिंह ने इससे होने वाले फसल तथा मानव शरीर के नुकसान की जानकारी दी।



कार्यक्रम का समापन दिनांक 22 अगस्त को संस्थान के निदेशक डॉ. ओ. पी. चतुर्वेदी की अध्यक्षता में संस्थान के सभागार में सम्पन्न हुआ। संस्थान के निदेशक डॉ. ओ. पी. चतुर्वेदी ने जोर देकर कहा कि गाजर घास उन्मूलन के लिए सभी लोगों को वर्ष भर सतत प्रयास करना चाहिए क्योंकि यह घास वर्ष भर फूलती-फलती है और बीज छोटे होने के कारण विभिन्न माध्यमों से आसानी से आस-पास तथा दूर दराज के क्षेत्रों तक पहुँच जाते हैं। डॉ. चतुर्वेदी ने आह्वाहन किया कि हमें गाजर घास से होने वाले नुकसान के बारे में किसानों को जागरूक करना है तथा इसका समय पर उन्मूलन हो इस पर ध्यान आर्कषित करना है। उन्होंने आयोजन की सराहना की और विश्वास व्यक्त किया कि सभी के संकल्प से इस महाखरपतवार का जल्दी नाश होगा। डा. आर. के.



तिवारी द्वारा सप्ताह भर की गतिविधियों का विवरण प्रस्तुत किया गया। डा. इन्द्र देव ने गाजर घास उन्मूलन के बारे में विचार व्यक्त किये। कार्यक्रम में संस्थान के वैज्ञानिक, अधिकारी एवं कर्मचारी गणों ने भाग लिया।

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## **First time report: Occurrence of root rot of *Ganoderma* spp. in kumat (*Acacia senegal*) - A new host plant**

*Acacia senegal* (Linn.) is a member of Mimosaceae family, grows 3-6 m in height with umbrella-shaped crown. It spread widely in tropical Africa (Mozambique, Zambia to Somalia, Sudan, Ethiopia, Kenya, Tanzania and Nigeria) and South Asia (India and Pakistan). In India it is a typical tree of arid regions with a low rainfall of 100-250mm. It is drought resistant and tolerates prolonged dry period of 10-11 months, with maximum temperature reaching 50<sup>0</sup> C with strong winds. World's 90% gum arabic is produced from *Acacia senegal* and it is main economic produce. In India, the productivity is varying from 175 to 550g tree<sup>-1</sup> year<sup>-1</sup>.

Gum arabic finds application in various important industries besides, its uses in medicines and pharmaceuticals. It is principally used in confectionary as an emulsifier, for preserving flavors of soft drinks, spray dried instant food, and also in the manufacture of chewing gums. It is also used in paper, textile, adhesive, minerals, cosmetics, soaps, ceramics and beverage industries. Besides, its leaves and pods are good browse material for goats and camel. The leaves contain 22% crude protein and highly digestible. They are, also, rich in minerals. The seed is an important constituent of high value traditional vegetable mix *panchkuta* and pickles in Thar Desert. The seed fetches Rs. 60 to 100 kg<sup>-1</sup> in market. The wood is a good fuel and annual production varies from 0.5 to 5 m<sup>3</sup> ha<sup>-1</sup>, with an energy value of 3,500 k cal kg<sup>-1</sup>.

There are several constraints for growing *Acacia* sp. as tree component in agroforestry system. According to survey reports, among the different constraints, fungal diseases like heart rot, root rot and basal stem rot caused by basidiomycete's fungi are the main. There is the report of root rot disease caused by *Ganoderma* spp. in *Acacia senegal* planted as a tree component of agri-silvi-horticulture model of agroforestry at farm of Central Agroforestry Research Institute (CAFRI), Jhansi as a part of research activities of ICAR-network project on harvesting, post-harvesting and value addition of natural resins and gums. Planting of *Acacia senegal* was done in July, 2009.

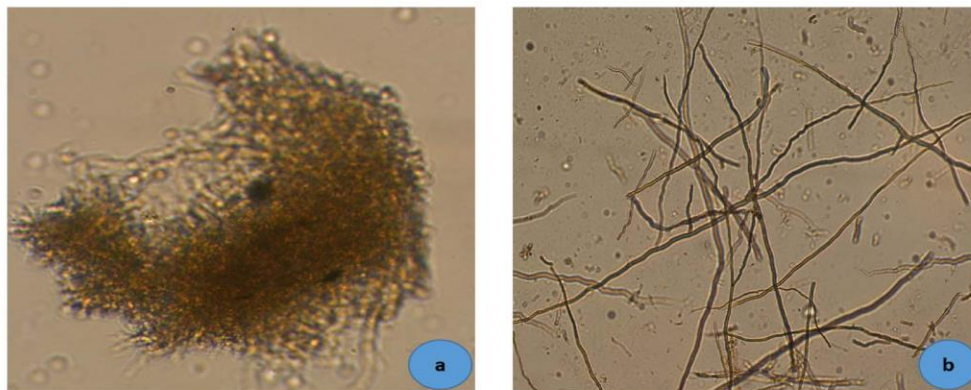
The wilting off of seven year old *Acacia senegal* tree was observed in *Acacia* plantation due to fungus, *Ganoderma* spp. infection. The infected plant showed symptoms with wilting, stem blackening, defoliation (Fig. 1a) and production of fruiting bodies (basidiocarps) at the base of the tree (Fig. 1b). The corrective measures to reverse the process of drying the tree (trenching around the tree roots and application of Captan and Carbendazim fungicides) did not work. It took almost two months' time from first sign of wilting (mid July, 2016) to complete death (mid-September, 2016) of tree. Further, morphological characters of basidiocarp were recorded through visual and microscopic observations. The basidiocarps were 9–12 × 11-14.5 × 1.4cm diameter in size, woody surface, sub sessile to laterally stipitate with 2-3.5cm in length and kidney shaped. Upper



surface was waxy shining, dark reddish, yellowish towards margin, brittle and soft (Fig. 1c). Pore surface creamish to milky. Cutis is light brown colour, thick walled claviform type (Fig.2a). Skeletal hyphae, brown colored, thick walled and aseptate (Fig.2b). Till date, *Acacia* species such as *A. mangium*, *A. aulococarpa*, *A. auriculiformis* and *A. crassicarpa* have been reported to be attacked by *Ganoderma* spp. causing root rot disease but as per our knowledge concern, there was no report of *Ganoderma* spp. attack in *A. senegal*. Thus, our findings suggest that this is the first report on *Acacia senegal* as a new host for *Ganoderma* spp.



**Fig.1: Symptoms produced by infected tree; wilting, stem blackening, defoliation (a&b); production of fruiting bodies(basidiocarps) at the base of the tree (c)**



**Fig. 2: Basidiocarp morphological characters; cutis is light brown, thick walled claviform type (a); Skeletal hyphae, brown colored, thick walled and aseptate (b)**

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### **Canopy structure of *Dalbergia sissoo* genotypes modulates microclimatic dynamics**

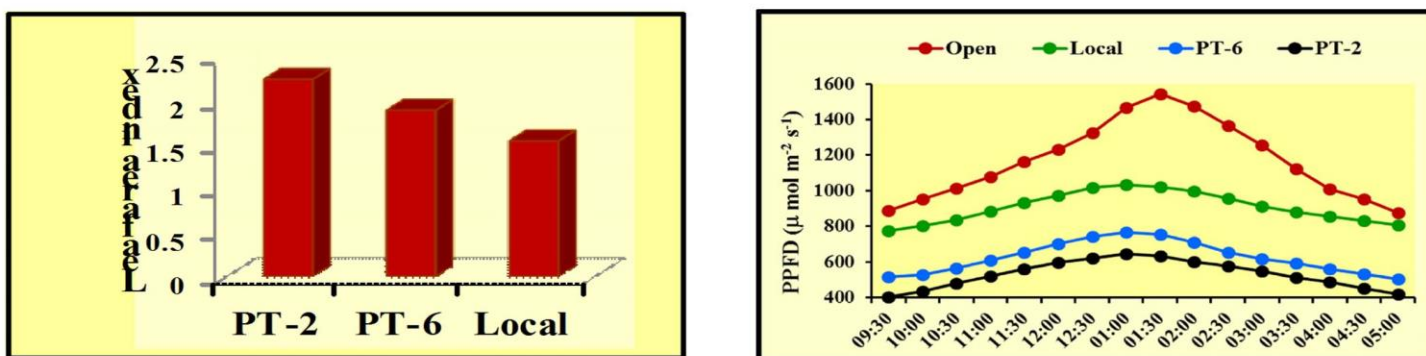
*Dalbergia sissoo* Roxb. commonly named as shisham being an indigenous, large deciduous and multipurpose tree species of India is widely distributed in sub-Himalayan tract from Indus to Assam and Himalayan valleys. Several features of this tree species such as nitrogen fixation, growth in hardy condition, quality wood, good fodder and fuel value, nutrient-rich and fast-decomposing leaves, make it fit for agroforestry system, social forestry, biomass production and timber plantations.

Trees are well known for their moderating effect on below canopy local climate, generally allowing changes in microclimate variables as solar radiation, temperature and humidity. Tree canopy intercepts solar radiation and results in tree-climate interaction. A

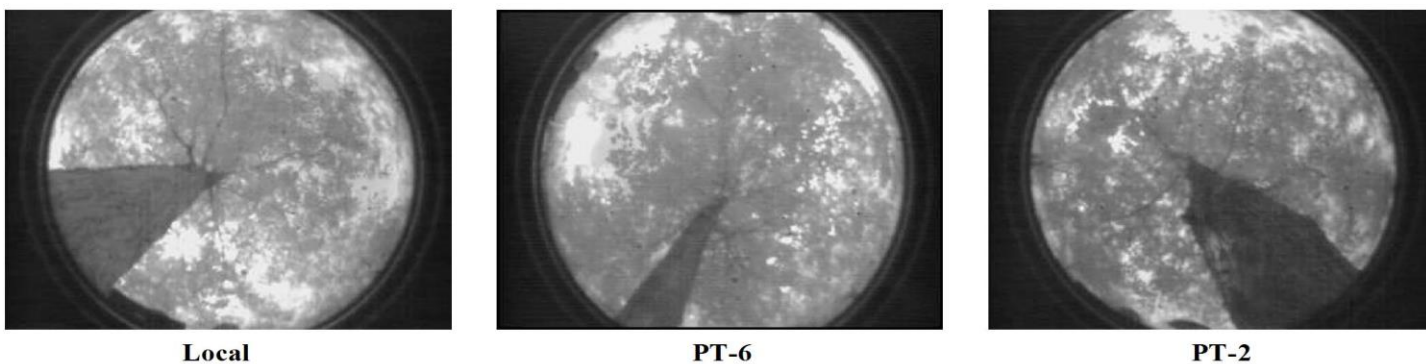


better understanding of the tree-climate interaction is particularly important in the context of canopy structure of tree which influences understory microclimate. Knowledge of canopy structure of different tree types will enable to select the better tree species whose impact is significant on the agricultural crops in agroforestry practices. Whether naturally regenerated or planted, tree species depending on their canopy crown will influence the alteration in their microclimate dynamics. In this background, we have determined the differential trends in microclimate dynamics under the three *Dalbergia sissoo* varieties (genotypes) namely Bundel-2 (PT-2), Bundel-6 (PT-6) and one local check in agroforestry system at ICAR-Central Agroforestry Research Institute, Jhansi under ICAR-Extramural Research project.

Leaf area index (LAI) is the ratio of total leaf area per unit ground area, and is widely used to characterize the canopy light microenvironment. LAI of local genotype of *Dalbergia sissoo* was lower as compared with other genotypes (PT-6 and PT-2) throughout the experimental period (Fig.1 a). This allowed more incident photosynthetically photon flux density (PPFD) under the canopy of local genotype in comparison to PT-6 and PT-2 (Fig.1 b). Differences in light interception among the varying genotypes of *Dalbergia sissoo* were evidently related to differential LAI development by the respective canopies (Fig.2). Thus PPFD being one of the major determinants of microclimate dynamics is closely controlled by the LAI and differential canopy development.



**Fig.1: Differential trends in (a) Leaf area index (LAI) and (b) diurnal intercepted PPFD by three *Dalbergia* genotypes in agroforestry system**



**Fig. 2: Canopy image analysis in different genotypes of *Dalbergia sissoo* trees**

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## Institute Research Council

Institute Research Council (IRC) meeting was held on 1<sup>st</sup> & 2<sup>nd</sup> July, 2016. All the Scientists of the Institute participated in the meeting and presented the progress and significant findings of their projects. New Project Proposals were also discussed and approved.

## Mera Gaon Mera Gaurav (MGMG) Programme

Under the Mera Gaon Mera Gaurav (MGMG) programme Institute identified five clusters of village, i.e., Block Niwari (Distt. Tikamgarh, M.P.), Baragaon, Babina and two village clusters of Jhansi districts. During July-August, 2016. Planted approx. 2130 plants of different species (Teak, bamboo, bael and aonla) on different farmer's field.

## राजभाषा कार्यान्वयन समिति की बैठक

दिनांक 14.09.2016 को संस्थान की राजभाषा कार्यान्वयन समिति की बैठक संस्थान निदेशक डॉ. ओ.पी. चतुर्वेदी की अध्यक्षता में सम्पन्न हुई। बैठक में सर्वसम्मति से निर्णय लिया गया कि संस्थान में 14-20 सितम्बर, 2016 के मध्य हिन्दी सप्ताह का आयोजन सुनिश्चित किया जाये इसके साथ ही हिन्दी को बढ़ावा देने के लिए विभिन्न प्रतियोगिताओं का आयोजन किये जाने के संबन्ध में विस्तार से चर्चा की गयी। हिन्दी सप्ताह के दौरान सप्ताह भर चलने वाली विभिन्न प्रतियोगिताओं की रूप-रेखा तैयार की गयी। प्रतिभागियों को प्रोत्साहित करने के लिए प्रत्येक प्रतियोगिता में प्रथम, द्वितीय एवं तृतीय पुरस्कारों का भी प्रावधान रखा गया। इसके साथ ही साथ यह भी निर्णय लिया गया कि सरकारी कामकाज में राजभाषा को बढ़ावा देने हेतु प्रशासनिक, तकनीकी एवं वैज्ञानिक वर्ग से जिन अधिकारियों एवं कर्मचारियों द्वारा पिछले एक साल के कार्यकाल में 20,000 या उससे अधिक शब्द हिन्दी में लिखा गया हो उनको प्रथम पुरस्कार रु. 1000/-, द्वितीय पुरस्कार रु. 600/- तथा तृतीय पुरस्कार रु. 300/- दिया जाये।

## Human Resource Development

- Dr. A. K. Handa and Dr. Inder Dev, Pr. Scientists attended the Monitoring Committee meeting of the NMSHE Task Force on Himalayan Agriculture (TF 6) on 26<sup>th</sup> July, 2016 at NASC Complex, New Delhi to review the progress of work in the TF6 as envisaged and to discuss the work plan for the year 2016-17.
- Dr. Dhiraj Kumar, Scientist attended 21 days Summer School on "Livelihood and Climate Change Mitigation and Adaptation through Agroforestry" during 3<sup>rd</sup> August to 23<sup>rd</sup> August, 2016 held at ICAR- Central Arid Zone Research Institute, Jodhpur, Rajasthan.
- Dr. A. K. Handa, Pr. Scientist participated in 24<sup>th</sup> meeting of Regional Committee-VII during 8<sup>th</sup> to 9<sup>th</sup> September, 2016 held at Goa.

## Retirement

Sh. Tulsi Das, SSS retired on 31<sup>st</sup> August, 2016.



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