



AGRICULTURAL SCIENCES FORUM KODAGU

Regd., No. SOC/28/99-2000 College of Forestry, Ponnampet 571216,
Kodagu, Karnataka

NEWS LETTER

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From the Editors desk..... 

The A. S. F. K. is completing yet another successful year, moving forward with a deluge of activities. Since from the beginning of the year 2020, the entire world is suffering due to the Covid 19 pandemic, the disease has drastically changed our daily routines. Each one of us had to get changed to the new situation. As a result no more outreach activities could be taken up by ASFK since March 2020. In spite of this major barrier for successful conduct of the activities, the EC was able to prepare DPR and enrolled members for formation of Kodagu Buzzing Bee Cluster an ambitious project of ASFK to be implemented in association with College of Forestry, Ponnampet with financial assistance from Khadi and Village Industries Commission, Govt. of India. An article on bee forage resources of Kodagu district had been given in this issue as part of creation of awareness on bee forage plants which is essential for successful beekeeping.

Due to the Covid-19 many of the youths have returned to their villages and developing interest in farm and farm based activities. At this juncture it is the prime duty of the developmental departments and organisations like ASFK, to cater to their needs, provide them with required technical know how to make the farming activity as a profitable venture, so that all them will remain in the farming activity giving a new fillip to the farm productivity. Hence, the ASFK is planning for a series of outreach activities in the days to come.

The EC wishes all its members a happier, healthier and safer life filled with prosperity

With warm regards

R. N. Kencharaddi

Editor

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Annual report of Agricultural Sciences Forum of Kodagu for the year 201718

Good evening ladies and gentlemen,

At the outset I wish to place on record that our forum has successfully completed twenty years. Currently the forum consists of 236 members, of which 21 are patrons.

I take this opportunity to present before you the annual report of the forum for the year 2018-19.

During 2018-19, seven executive committee meetings were held.

- ❖ The first combined EC meeting was held on 25-07-2018 at College of Forestry, Ponnampet to discuss about the commercial venture of ASFK and the sub-committee was formed to look into the feasibility of the commercial venture.
- ❖ The second EC meeting was held on 04-09-2018 at College of Forestry, Ponnampet. The main agenda was to discuss about the relief activities for the rain damaged areas. A sub committee was formed to make multidisciplinary study on the rain damaged areas and plan activities for these areas. The committee consisting of EC members and resource persons from among the ASFK members and College of Forestry, Ponnampet visited the rain devastated areas on 14-08-2018. This was followed by several visits and a detailed report was prepared. This report was later presented to the EC members and then a copy was submitted to the Hon. Deputy Commissioner of Kodagu. A press meeting was also conducted at the Press Club, Madikeri to highlight the important findings of the study. As per the study, the major reason for such damage due to heavy rains was a mild earth quake followed by heavy rain fall and also mismanagement of water release in Harangi dam.
- ❖ Third EC meeting was held on 22-10-2018 at College of Forestry, Ponnampet. The main agenda was to discuss on the distribution of the amount contributed by the Menasinakai Foundation, Dharwad towards relief activities in Kodagu for the rain devastated areas. This amount brought in to



the organization by Mr. MA Kuttanna, Past President of ASFK. It was decided to provide scholarships to the students studying in Cauvery College, Gonicoppal and Coorg Institute of Technology, Halligattu.

- ❖ The foundation day was organized on 20-11-2018 at Palm Valley Resort, Pollibetta Road, Gonikkoal. **Dr. K.J. Joseph, Ph. D**, Ministry of Commerce Chair, Centre for Developmental Studies, Thiruvananthapuram, Kerala was the chief guest for the programme.
- ❖ The fourth EC meeting was held on 14-12-2018 at AHRS, Madikeri. It was decided to organize a two days seminar on Marketing of Coffee. It was also decided to develop a Coffee Racking machine designed by Dr. Jangadi, UAHS, Shivamogga.
- ❖ The Fifth EC meeting was held on 27-04-2019 at College of Forestry, Ponnampet. The main agenda of the programme was to discuss about a seminar on Clonal propagation in Coffee.
- ❖ The Sixth EC meeting was held on 28-05-2019 at Anugraha, Lions Seva Bhavan, Polibetta, to finalize the event on Clonal Propagation in Coffee.
- ❖ The Seventh EC meeting was held on 27-06-2019 at Sixth Element The Harvester, Rangasamudra, Somwarpet Taluk to finalise the audited accounts statement and also decide about the issues to be discussed at the AGM 2019. It was decided to put the following a) transferring of interest earned from FD to SB account for meeting the day to day financial requirements requirements of the organization. b) to propose a annual contribution of Rs. 500 each from members to meet the AGM and Foundation expenses.

A seminar on Clonal Propagation in Coffee:

A one day seminar on Clonal Propagation of Coffee was organized on 18th June 2019 at Lions Seva Bhavan, Pollibetta. Around 40 planters consisting of heads from CPA, KPA, TATA Coffee, UPASI, College of Forestry, Ponnampet, Coffee Board and planters participated in the seminar. The programme consisted of talk by .

1. Dr. Ramakrishna Hegde, Professor and Head, Dept. of Silviculture and Agroforestry, College of Forestry, Ponnampet talked about the basics of Clonal propagation.



2. Dr. Suryaprakash Rao, Joint Director (Research), CCRS, Balahonnur spoke on the activities pertaining to the clonal propagation by Coffee Board.

3. Dr. P Kurien Raphael, Member KPA (Scientific committee) and Head R & D, TATA Coffee spoke about the clonal propagation initiatives by TATA Coffee Ltd.

4. Dr. Shivalingaiah, Research Assistant, Plant Breeding and Genetic CCRS, Chettalli demonstrated the process of Clonal multiplication in coffee.

As a final outcome, it was decided to take up a long-term research oriented project on Clonal Propagation in coffee to release best clones for the benefit of farming community. It was also highlighted that during the selection of clones a higher heterogeneity has to be maintained. It was decided that organizations like ASFK, CPA, KPA, TATA Coffee, UPASI, Coffee Board and College of Forestry, Ponnampet will be involved and ASFK will lead and act as a facilitator of the programme/ interactions till a definite project mode is formulated.

ASFK Gold medal:

The forum has been awarding a Gold medal to the topper in B.Sc.(Forestry) degree programme at College of Forestry, Ponnampet since 2000. The gold medal for the year 2017-18 was sponsored by the Dr. Kumada Kushalappa, ASFK member currently working with Pioneer Seeds in Canada. Mr. Chandan Shetty was the student who received the





Assessment of Landslides in Kodagu District Using Remote Sensing and GIS Technique.

Ravikumar D, Shoba S, Devagiri G. M. and Babu K.R. College of Forestry, Ponnampet

I. Introduction

Kodagu district is located in the South-West part of Karnataka State which lies between the latitudes 11°56'00" to 12°50'00" N and longitudes 75°22'00" to 76°11'00" E. This region is mainly covered by pristine forest, interspersed with coffee plantations and paddy fields in valley region. During August 2018, Kodagu district witnessed multiple landslides due to varied reasons. Landslide is defined as the movement of a mass of rock, debris or earth down the slope, when the shear stress exceeds the shear strength of the material (Cruden, 1991). The Causes of landslides can be broadly classified as intrinsic and extrinsic factor. The probability of landslide occurrence depends on both the intrinsic and extrinsic factors. Geology, slope gradient, slope aspect, elevation, soil textural properties, vegetation cover, and long-term drainage patterns are some of the intrinsic factors that contribute to landslide. The extrinsic factors such as heavy rainfall, glacier outburst, seismic activity, etc initiate slope failures in susceptible areas. Therefore, the present study was undertaken to identify the casual factors using remote sensing and GIS techniques.

II. Methodology

The following methodology was adopted for the present study:

- 1. Pre Fieldwork:** Review of literature; Collection of secondary data; Collection of SOI topo-sheets on 1:50,000 scales.
- 2. Field investigation:** Identification of landslides in the study area and collection of their coordinates using GPS. Collection of attribute data. Documentation of affected areas with the feedback from local people etc.,
- 3. Post Fieldwork:** Creation of Digital database of secondary data and toposheets etc. Geo-referencing of maps and images, generating Digital elevation model (DEM), slope and aspect maps of study area preparation of final map tables and diagrams.



III. Results and discussions

1. Spatial mapping of landslide prone zones

The satellite imagery from Sentinel-2 MultiSpectral Instrument (MSI) for the landslide prone area before the incidence of landslide is shown in Fig. 1. The satellite imagery from Sentinel-2 MultiSpectral Instrument (MSI) used to assess the effect of casual factors on landslides as shown in Fig. 2. The satellite data was processed in Geographical Information System (GIS). The final outputs were validated by field surveys.

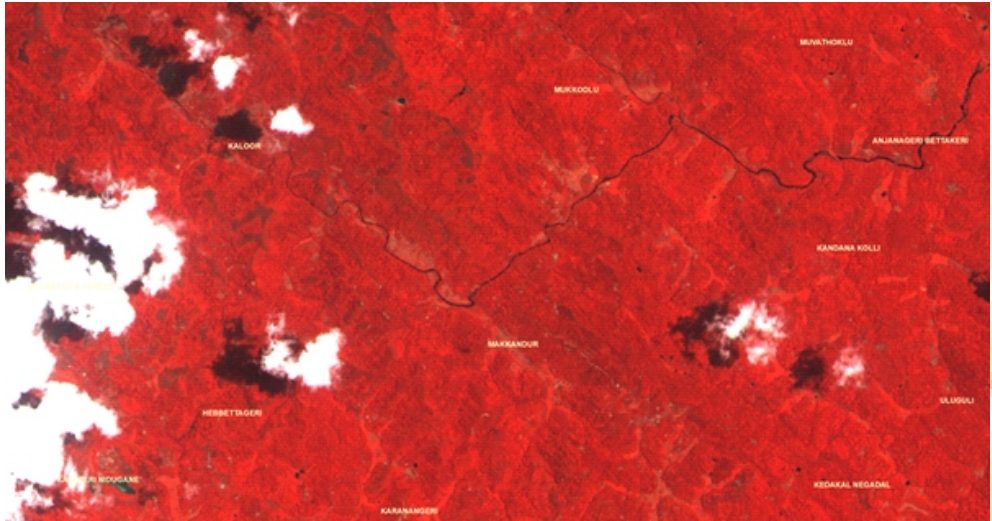


Fig. 1 Before Landslide (April 27th 2018)

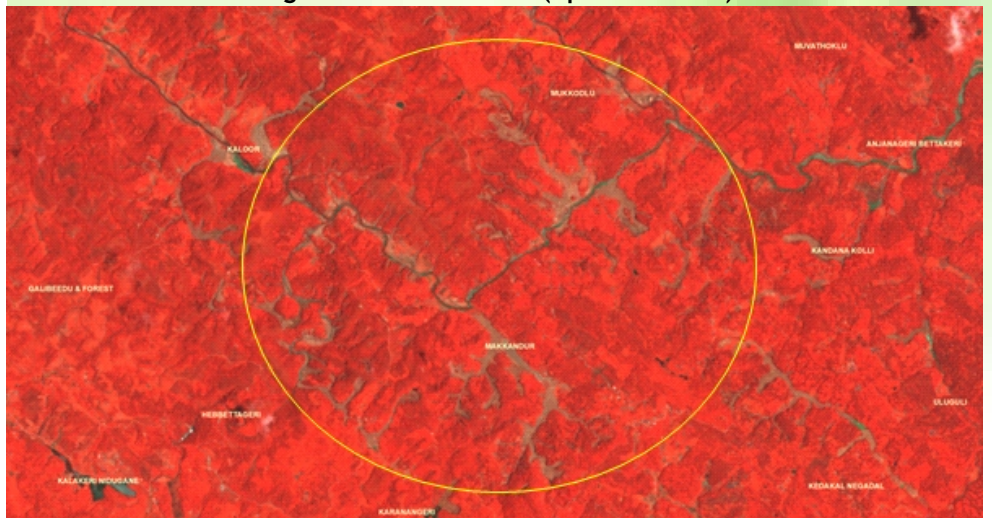


Fig. 2. After Landslide (September 9th 2018)



It was observed from the satellite images that a total of 629.158 ha of land was affected in Kaloor, Mukkodlu, Makkandur, Hebbettageri, Kandanakolli, Monnangeri, Muvathoklu, Madikeri, Subraya Devarkanad made & Forest, Kedakal Negadal, Katakari, Kalakeri Nedugane, Hammiyala, Galibeedu and Forest, Anjanageri Bettageri and Uluguli villages. It was observed from DEM that majority of area under landslide had slope percentage of 10 to 15% (85.165 ha). Further between 15 to 35% of slope 80.964 ha of land was affected. It was also observed that an area under valley regions having slope of 0 to 1% (76.597 ha) and 1 to 3% (23.655 ha) was adversely affected due to the deposition of the landslide materials and debris from the higher altitudes in Kaloor, Mukkadlu and Makkandur villages

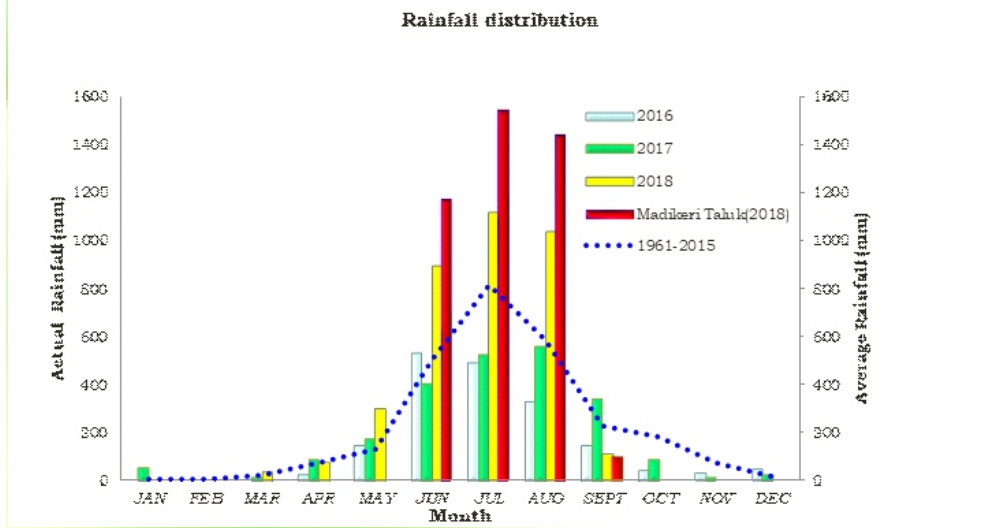
2. To identify causal factors of landslides using information collected from fieldwork, government agencies and remote sensing.

A. Earthquake

An earthquake is the shaking of the surface of the earth, resulting from the sudden release of energy in the earth's lithosphere that creates seismic waves. It was observed that on 9th July 2018 a tremor of 3.4 intensity was recorded in Madikeri (NCS, MoES).

B. Rainfall

It was observed that during the South-West monsoon period i.e., from June to September 2018 the District as a whole recorded an actual amount of 3463.7 mm of rainfall as against the normal rainfall of 2181.9 mm with percentage departure from normal being (+)59 % as shown in Fig.3. Therefore, rainfall is one of the major cause for landslide occurrence.



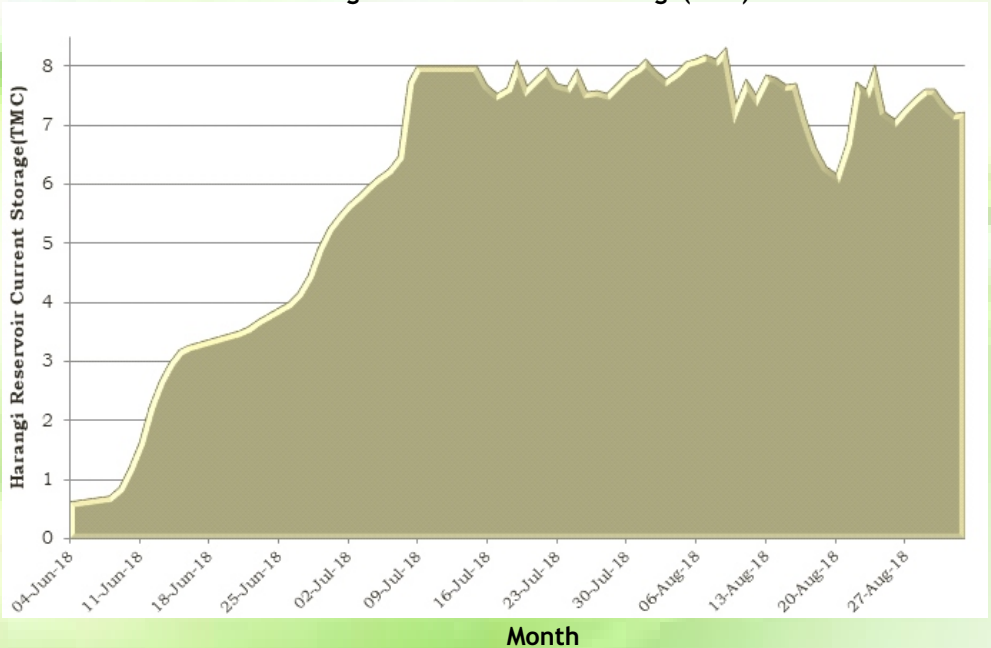


c. Draw-down of Harangi Reservoir

The reservoir is formed by a masonry dam with central spillway built across the river Harangi, a tributary of the Kaveri with a storage capacity of 8.5 TMC. The dam is located about 9 km away from the heart of Kushalnagar town. The Harangi originates in the Pushpagiri Hills of Western Ghats in Kodagu, Karnataka.

The rapid draw down of water in the reservoir from 8th to 20th August 2018, the insufficient stability may occur in the upstream slope as soon as the water is lower than the drawdown level of 1/3 of the dam height. The water load has disappeared during rapid drawdown and the hydrodynamic pressure creates the tensile-downward forces, resulting in a decrease of the shear resistance of the upstream slope. Further, there is no supporting pressure to resist against mobilizing of the upstream slope.

Harangi Reservoir Current Storage(TMC)

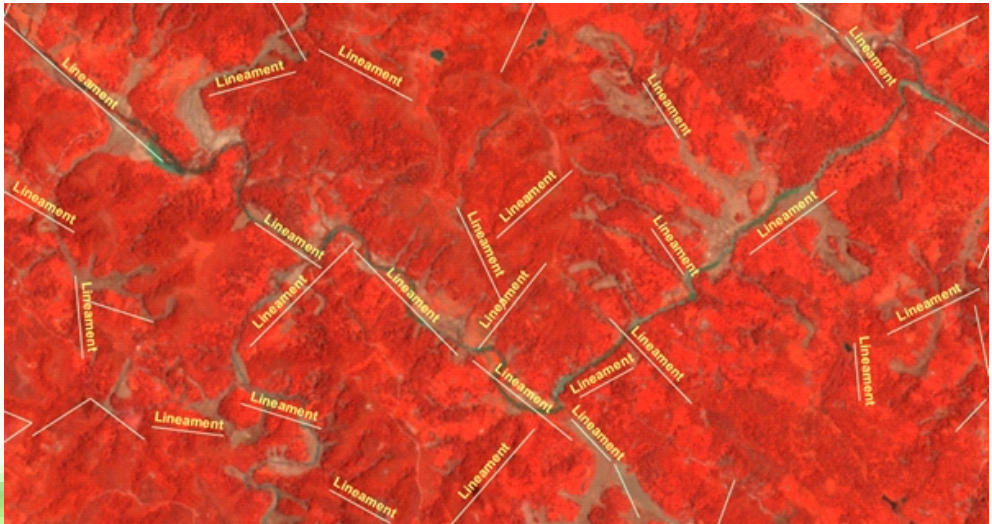


D. Structure

Structural discontinuities such as joints, faults, foliation and bedding planes form the pre-existing lines of weakness in a rock body. These lines of weakness, often in a fractured zone, are likely to be areas where moisture accumulates and vegetation grows. In addition to indicating lineaments, they affect surface material structures and have a significant influence on terrain permeability and slope stability. The presence of moisture will also increase the rate of weathering, further exacerbating the problem of instability. The weak areas commonly are opened up and enlarged by erosion and some may even become small valleys.



Structural Geology Map of the affected area



As per the observations from the above lineaments map, it could be concluded that, the occurrence of landslides is concentrated near/at sites closer to lineaments

IV. Control measures The following control measures can be adopted to mitigate the landslide damages are;

- ❖ Mapping of landslide affected areas and accordingly plan the future development activities.
- ❖ Protection and preservation of the natural vegetation cover preventing earth movements in the identified sensitive areas.
- ❖ Reduce the slope gradient by constructing slope terraces.
- ❖ Reduce the load on the slope (rock, soil or artificial structures) i.e., along the vulnerable lineaments.
- ❖ Stabilize near-surface soil by preferably fast growing plants with strong root system.
- ❖ Improving the fertility of the soil wherever possible to plant fast growing species of grass (vetiver grass), leguminous plants, trees and creepers.
- ❖ Promote terrace cultivation with proper drainage facilities.
- ❖ Desilting the streams in the landslide affected areas.
- ❖ Construction of strong retaining walls at the toe of the slope.
- ❖ Drainage correction
- ❖ Proper planning and management of water levels in the reservoir.

V. Summary

The following are outcome of the present investigation

- ❖ A total of **629.158 Ha** of area is affected due to landslides.



- ❖ **High intensity Rainfall** is the major cause for landslide in the study area. The moisture present in soils exerted a pore water pressure, making the hill slopes vulnerable to landslides.
- ❖ The occurrence of Earthquake on **9th July 2018** in Madikeri, followed by heavy rains could have possibly triggered the landslides.
- ❖ It could be Draw-down effect of water from upstream, when downstream storage level is suddenly reduced.
- ❖ Large area under landslide was observed in locations having higher slope percentage.
- ❖ Most of the affected areas are concentrated nearby lineaments, where Faults and joints provide scope for easy percolation of rainwater enhancing the instability.
- ❖ Majority of the soil in landslide affected areas had sandy loam texture.
- ❖ Poor soil nutritional status was recorded in affected areas.
- ❖ Slope stabilisation and erosion control measures to be adopted to control sedimentation and avoid similar incidents in future.
- ❖ Forest logging & cultivation on hill slopes are considered as one of the most important factor in triggering shallow landslides.
- ❖ Existing tension cracks indicate future landslide occurrence, if appropriate control measures are not initiated.
- ❖ Possibility of downstream sedimentation will be high, if the exposed land mass is left unprotected.

Importance of Melliponiculture

Dr. R.N. Kencharaddi and Mr. Basavaraju, S.

Stingless bees are distributed in most of the tropical and subtropical regions of the world such as Australia, Africa, Southeast Asia, and in some parts of South America, Malaysia and South East Nigeria. Stingless bees are amongst the longest evolved bees, and have been found preserved inside pieces of amber 80 million years old. Stingless bees developed before the continents drifted apart from each other. Therefore, they are present in all tropical parts of the world. It is estimated that 400 to 500 different species of stingless bees are known, but new species are identified every year. Stingless bees are widely known in the Indian subcontinent as “dammer bees” or “dammar bees” (dammar = resin formed among dipterocarp trees). Many local names are applied with reference to the pattern of storage of pollen and honey as “Cherutheneecha” and “Arakki” in Kerala. “Tenetigalu” in Andhra Pradesh; and “Mulijenu” (Kodagu), “Mujanatejenu”, “Misrijenu”, “Nasarujenu”, “Kirujenu” in Karnataka.




Meliponiculture, the rearing of sting less bee colonies is gaining importance all over the world. There are certain advantages in meliponiculture, compared with beekeeping with *Apis* species of bees. They have lesser swarming and absconding tendency, capability to survive and yield honey even under lower forage resources and they can be easily maintained by people who are allergic to bee venom. Though the honey yield from these species is less(ranging from 250-400 gm/colony/annum) the value of honey is very high owing to its medicinal value.

The stingless bees have evolved a wide range of nesting and feeding behaviours that allow them to share habitats and to occur in high densities. Stingless bees usually build their nests in the crevices of building walls made from mud and cement bricks, stone pillars, underneath the metallic and cement sheaths, crevices and staircases and heavy rocks; water pipes made from iron, plastic cement materials intended for supply of water channels and passages of waste water drainages; electric poles made from iron, plastic, cement materials meant for communication wires of telephones and lamp post; hallow iron rods used as a support for construction of buildings; crevices of wooden rim meant for door and window of the houses; crevices of wooden electric meter board; inside the hollow spaces of very old fragile mud. Stingless bees usually have the small entrance to their nests to protect the colony from the other bee species, Phorid flies and ants.

Pollination is an essential ecosystem service that results in the increase in food security and improvement of livelihoods. Many animals including bees are the main pollinators providing this service. Bees play a very important role in the pollination of flowering plants resulting in quantity and quality of fruits and seeds. They are known to pollinate about 70 -80% of flowering plants. Stingless bee species communicate locations of forage sources by secreting chemical scents (pheromones) and through the use of the sun's direction. When the foraging workers encounter any forage, they will collect and return to their nest to recruit other workers to the forage source. During the trip, workers stop and mark specific spots with pheromones in order to direct the other workers to the forage source. Workers begin foraging activities as early as dawn and end by dusk depending upon weather conditions and availability of forage. Peak foraging times coincide with the dry season when forage is in abundance. Depending on the species, stingless bees will forage within 1 kilometer from their nests. Foragers may be found on flowers of various plants, on grasses and also near water bodies. Some bees collect resins from tree trunks and branches as well as on buds of flowers and leaves.





OBITUARY

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BOOK POST

To,
Mr/Mrs/Dr

VISION OF THE FORUM

To be a leading organization of excellence and to serve the farming community of the district by pooling the knowledge and experience of graduates in agriculture and allied sciences (like, horticulture, marketing, fisheries, animal husbandry, dairy technology, sericulture and forestry) who hail from Kodagu and live across the country and world.