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Analysis of mushroom production training for below poverty line beneficiaries conducted by Mushroom Research and Training Centre, Pantnagar

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ABSTRACT: Any training programme irrespective of subject matter has a definite sequences of event that takes place before, during and after of training. It is also fact that if fidelity of training programme is high, it will be more effective in terms of its process as well its outcome. Like other institutions Mushroom Research and Training Centre of G.B. Pant University of Agriculture and Technology Pantnagar also conducts various training programmes for different segments of population including BPL people (Below Poverty Line). The present research study was undertaken to have an insight of various aspects of mushroom training conducted for BPL people such as training methodology used, trainees' opinion and usefulness of content etc. The ex- post- facto research design was used to meet out the objectives set forth for the study. Census method was used to collect relevant data from 48 respondents trained by MRTC, Pantnagar from three villages. The study revealed that that methodology used and content covered in the training programme were chosen keeping in view the profile characteristics of the trainees and trainers made considerable effort for making training a success. The study pointed out the need for support to training with variety of audiovisual aids.

Evaluation of soil nutrient index through geo-spatial technique over Nainital district

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ABSTRACT: A study was conducted to explore the spatial distribution of organic carbon and available nitrogen in soil over Nainital district of Uttarakhand state using geo spatial technique. To analyze soil variability, one eighty soil samples (90 villages) were collected by stratified multistage random sampling method from medium farmer's category using GPS, covering the whole district. The soil chemical properties *i.e* pH, EC, organic carbon and available nitrogen were measured in laboratory adopting the standard methods. Soil nutrient index was calculated by categorizing the samples into low, medium and high category. Spatial variability of soil chemical properties and soil nutrient index were computed. Results shows that the overall quality of the soil were found to be fertile. Overall soil pH varies from 5.0-8.56 with the mean value 6.58 while EC values varied from 0.001-1.30 dS m⁻¹ with mean value 0.205 dS m⁻¹. The per cent organic carbon content varied from 0.08-2.96 recorded as high in all the blocks over study area. Majority of the surface soil were medium to high in available N except few points. The overall available nitrogen status in the surface soils ranged from 125.65-1122.54 kg ha⁻¹. Hence, high status of organic carbon were observed at Nainital in comparison to available N.

The Shannon-Weaver diversity index: Assessment of the diversity for qualitative characters in *Brassica rapa* var. yellow sarson

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ABSTRACT: Thirty one germplasm lines of *Brassica rapa* var. yellow sarson along with the two commercial variety as a check in two different environmental conditions were evaluated and characterized for status of diversity for qualitative characters. The phenotypic diversity can be estimated by using Shannon-Weaver diversity index. The Shannon-Weaver's diversity index (H') was used to calculate the genetic diversity for the discrete morphological characters following Jain *et al.* (1975). All the characters showed significant results towards discrete phenotypic diversity for qualitative traits. The computed diversity indices ranged from 0.250 (petal length) to 0.986 (leaf width) in E₁ whereas in E₂ condition it ranged from to 0.345 (petal width) to 0.981 (leaf length). The proportion of non-hairiness was found to be more than hairiness under both the environmental condition. Only two genotypes *viz.*; PYSC-11-24 and PYSC-11-41 showed

typical hairiness pattern on leaf and in late sown condition this character did not show any variation for leaf hairiness. Leaf colour showed a wide variation E_1 condition whereas in E_2 this character showed variation of low magnitude. Leaf lobes were present under both the environmental conditions and were found in more proportion than absence of leaf lobes. Number of lobes was a variable character, ranging from few to many lobes. Leaf length and leaf width also showed significant phenotypic diversity under both E_1 and E_2 conditions. Under timely sown condition proportion of medium leaf size was highest whereas under late sown condition maximum germplasm lines were having small leaf size. Petal width also varied under both the conditions, medium petal size was of maximum proportion in E_1 whereas narrow petal size was highest under E_2 condition. Beak length showed maximum proportion of medium sizes under both the environmental conditions. Collected germplasm showed significant variation for type of siliqua locule and bearing habit of siliqua.

Effect of shoot pruning on growth, flowering and yield in meadow orchard of guava cv Pant Prabhat

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ABSTRACT: A field experiment was conducted during 2010-11 to assess the effect of time of shoot pruning with different combinations on vegetative growth, flowering and yield attributes in meadow orchard of guava cv Pant Prabhat. The study of one (year) indicates that half shoot (50%) pruning significantly influenced cropping pattern of guava. Half shoot pruning in April and July have positive effect towards vegetative growth *viz.*, plant height, plant spread, plant volume, emergence of new shoots and similar yield in each rainy and winter season crop. Half shoot pruning in April results in lowered rainy season yield and more number of emergence of new shoots/ plant, flower buds/ plant and increased fruit weight during winter season. Lowest yield (1.24 kg/plant) recorded in unpruned control in winter (season).

Flowering behaviour of mango genotypes under Tarai conditions of Uttarakhand

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ABSTRACT: The present study was done to evaluate the mango varieties for flowering behaviour in tarai region of Uttarakhand. The experiment was carried out with forty three mango varieties in Randomized Block Design with three replications each at

H.R.C., Patharchatta during the years 2012 and 2013. The varieties were found to differ significantly for the flowering traits investigated. Time of panicle emergence varied from 8 Feb in 'Duddha Peda' to 14 Mar in 'Sensation', while time of full bloom varied from 11 Mar in 'Bara Malda' to 1 April in 'Amrapali' varieties in year 2012 and 2013, respectively. The panicle length ranged from 32.85 cm in K.O.-07 to 16.82 cm in 'Safeda Lucknow', panicle breadth varied from 22.05 cm in 'Amrapali' to 8.07 cm in 'Zardalu', per cent male flowers ranged from 87.05 % in 'Bada Malda' to 27.09 % in 'Pulgoa Darbhanga', per cent hermaphrodite flowers varied from 72.94 % in 'Pulgoa Darbhanga' to 12.95 % in 'Bara Malda' and the sex ratio varied from 6.77 in 'Banarasi Betali' to 0.37 in 'Pulgoa Darbhanga'.

Effect of cultivars and picking dates on physico-chemical characteristics of Karonda (*Carissa carandas* L.)

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ABSTRACT: The experiment was carried out during 2008-10 in Department of Horticulture, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, district Udham Singh Nagar, Uttarakhand to see the effect of cultivars and picking dates on physico-chemical characteristics of Karonda. The treatments comprised of three cultivars *viz.*, Pant Manohar, Pant Sudarshan and Pant Suvarna and three picking dates of berries (40, 60 and 80 days after fruit set). All the 9 treatment combinations were laid out in a 3x3 factorial randomized block design with 3 replications. Observations were recorded at three different picking dates. The treatment combination, Pant Suvarna and picking of fruits at 80 days after fruit set (C₃D₃) was found better in terms of moisture, total soluble solids (TSS) , reducing sugar ,non reducing sugar, total sugar, titrable acidity, ascorbic acid, phosphorus ,calcium and iron content i.e. maximum moisture content (89.41 %), highest TSS (8.530 Brix), highest iron (6.74 mg/100g), maximum ascorbic acid(12.06 mg/100g) and lowest titrable acidity(1.74%) followed by Pant Manohar and picking at 80 days after fruit set (C₂ D₃).The treatment combination of Pant Suvarna and picking of fruits at 60 days after fruit set (C₃ D₂) recorded maximum pectin content.

Effect of pulsing treatments on the postharvest attributes of Rose CV. Naranja

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ABSTRACT: The present investigation was carried out under the laboratory conditions of the Model floriculture centre of the university to investigate the effect of various pulsing treatments on quality and longevity of cut rose cv. Naranja. The experiment comprised of three different chemicals (STS, 8-HQC and chlorine) which were tested alone in different concentrations and in combination with sucrose 3% and 5% along with distilled water as control. The flowers were pulsed for 12 and 24 hours duration. After pulsing the flowers were kept in distilled water and various observations like water uptake, water loss, flower diameter, sugar contents, vase life and other were taken. Studies revealed that pulsing the flowers with Sucrose (5%) + 8-HQC (200 ppm) for 24 hour duration helped the stems to maintain better water relation in terms of water uptake and water loss which consequence the maximum vase life of 10.50 as compared to control (4.08 days).

Effect of different high density planting on growth and yield of guava (*Psidium guajava* L.) cv. Pant Prabhat

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ABSTRACT: The present investigation was carried out to observe the effect of different high density planting on growth, flowering, fruiting and yield of guava during the year 2012-13 and 2013-14. Treatments were consisted of four plant spacings i.e. 1.0X1.0 m (S₁), 2.0X1.0m (S₂), 2.0X1.5m (S₃) and 1.5X1.5m (S₄), replicated six times in randomized block design. Findings revealed that plant spacing 1.0x1.0m (S₁) gave higher increase in plant height (0.74 and 0.60m). Whereas, plant spacing 2.0x1.5m (S₃) gave significantly higher annual increase in plant spread (54.04 and 56.15 cm) and stem diameter (2.14 and 2.24 cm) respectively during both the years. Significantly higher yield per plant was obtained with plants spaced at 2.0X1.5m (S₃). While, significantly higher yield per hectare was obtained with plant spacing 1.0X1.0 m (S₁) during both the years.

Studies on growth, yield and quality of Karonda (*Carissa carandas* L.) cultivars

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ABSTRACT: A study was conducted to evaluate three karonda cultivars *viz.*, Pant Suvarna, Pant Manohar and Pant Sudarshan for their growth and fruit characters. Cultivar Pant Suvarna recorded the highest tree height, canopy spread, stem girth, cross trunk sectional area (CTSA), tree volume, leaf area, leaf chlorophyll, fruit length, fruit breadth, moisture content and total soluble solids (TSS). The maximum number of fruits per 100 g yield of fruits per bush, titratable acidity and ascorbic acid were recorded in the cultivar Pant Sudarshan while number of seeds per fruit was highest in the fruits of Pant Manohar.

Efficacy of fungicides for the management of web blight of mungbean (*Vigna radiata* (L.) Wilczek)

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ABSTRACT: The five fungicides were evaluated *in vitro* and field condition against *Rhizoctonia solani* causing web blight disease of mungbean. *In vitro* screening of fungicides exhibited that propiconazole (0.05% and 0.1%), hexaconazole (0.1%), carbendazim (0.1%) and mancozeb (0.2%) were found most effective by inhibiting 100% mycelial growth of the pathogen. In case of prophylactic spray of fungicides propiconazole (0.1%) resulted minimum disease severity (33.3%) and the maximum grain yield (1027.33 kg/ ha) followed by carbendazim and hexaconazole.

Effect of fertilizer, FYM and micronutrients on yield and quality of cabbage and soil fertility in Mollisol of Uttarakhand

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ABSTRACT: In the intensive agriculture system, integrated nutrient management (INM) based on soil test value is the most appropriate approach to solve various issues related to sustainability, productivity, quality and conserving natural resources in efficient and economical way. Cabbage is well known for its nutritive value and health benefits. Field

experiments were conducted to study the effect of fertilizers, FYM and micronutrients on yield and quality of cabbage and nutrient availability under intensive cultivation during Rabi season 2008-09 and 2009-10. Results indicate that yield and various yield components of cabbage were found to be highest and significant in the treatments where boron and molybdenum doses were applied along with recommended dose of N, P and K (RDF=NPK::120:80:40). Head yield of cabbage was significantly correlated with various yield components, uptake of N, P and K, protein and ascorbic acid content. Nitrogen, phosphorus and potassium uptake was highest in the treatments where RDF was applied with boron or molybdenum. Protein and Ascorbic acid contents in cabbage were highest with the application of 2 kg ha⁻¹ Na-molybdate along with RDF. After harvest of crop, maximum available N was recorded in treatment where RDF applied while available P and K values were higher where 20 t ha⁻¹ FYM was applied.

Efficiency of selection procedures for improvement in yield and its attributes in vegetable pea (*Pisum sativum* L.)

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ABSTRACT: Efficiency of selection procedure *viz.*, pedigree, random bulk and single seed descent method for yield and its attributes in pea was studied in F₃ generation involving sixteen crosses. Significant differences were observed among the breeding methods for all the traits in all the crosses except for days to flowering. The pedigree selection method was found effective for improvement of characters *viz.*, early flowering, 100-seed weight, pod length, number of pods per plant, green pod weight per plant and short plant height. Random bulk method was better for improvement of 100 green pod weight and number of pods per plant while, all the three selection methods were equally effective for improvement in number of seeds per pod.

Genetic variability, correlation and sequential path analysis of yield related traits in potato (*Solanum tuberosum* L.) genotypes

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ABSTRACT: Correlation and path coefficient analysis among forty-eight potato genotypes including four checks was studied and evaluated for nine quantitative traits in

an augmented block design during winter season of 2012-13. All the characters studied showed highly significant difference among check varieties which indicates the existence of sufficient variability for various traits. Significant and positive correlation of total tuber yield was recorded with plant height ($r= 0.411$), number of shoots ($r= 0.449$), tuber yield per plant ($r= 0.757$), marketable yield per plot ($r= 0.995$) and average tuber weight ($r=0.594$) and non significant correlation with emergence per cent ($r= 0.284$) and number of tuber per plant ($r= 0.153$). Path analysis revealed that marketable yield per plot, number of tuber per plant, plant height and tuber yield per plant had highest positive direct effect on total tuber yield. This analysis showed that plant height, number of tuber per plant, tuber yield per plant and marketable yield per plot were main characters for tuber yield. Therefore, these characters should be preferred while making selection for improvement of tuber yield.

Effect of fibroblast cell in full thickness skin wound healing in rat model

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ABSTRACT: The present study was conducted in eighteen wistar rats of either sex divided into two equal groups (n=9) to evaluate the healing potential of fibroblast cell. Full thickness skin wound (20X20 mm²) was created on dorsal region of thorax of adult wistar rats. Topical application of paraffin gauze over the wound acted as control (Group-A). In second group (Group-B) animals were treated with fibroblast cells locally. Early granulation tissue formation with reduced exudation and peripheral swelling was observed in treatment group-B. In group-B, complete wound healing was observed on day 22-23, whereas in group-A on day 27-28.

Studies on anestrus in buffaloes with special reference to blood mineral profile and its treatment

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ABSTRACT: The present study was undertaken on anestrus in buffaloes with special reference to blood mineral profile along with its treatment. Non-significant variations were recorded in serum zinc levels between anestrus and normal cycling buffaloes. However, serum copper and cobalt levels were significantly lower ($P < 0.01$) in anestrus buffaloes. Significantly higher ($P < 0.01$) level of serum manganese was observed in anestrus buffaloes in comparison to normal cycling buffaloes. Mean serum copper level increased significantly ($P < 0.01$) after treatment with mineral mixture coupled with Lugol's iodine cervical paint while level increased non-significantly ($P < 0.01$) after treatment with GnRH. Mean serum cobalt level increased non-significantly ($P < 0.01$) after treatment with mineral mixture coupled with Lugol's iodine cervical paint while the administration of GnRH did not have any influence on the concentration of serum cobalt.

Gross and Biometrical Studies on the Tarsal Bones of Indian Blackbuck (*Antilope cervicapra*)

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ABSTRACT: The present study was carried out on the tarsal bones of blackbuck. The tarsus consisted of five bones i.e., tibial tarsal, fibular tarsal, fused central and fourth tarsal, first tarsal and second and fused third tarsal. The tibial tarsal was the medial bone of the proximal row. The average maximum height and breadth for tibial tarsal was 2.81 ± 0.005 cm and 1.82 ± 0.004 cm, respectively. The fibular tarsal was the largest bone of the tarsus and elongated, flattened from side to side. The average maximum height and breadth for fibular tarsal was 5.99 ± 0.007 cm and 1.71 ± 0.006 cm, respectively. The central and the fourth tarsals, were fused together to form a large single bone. The average maximum height and breadth for central and fourth fused tarsal was 0.83 ± 0.006 cm and 2.10 ± 0.006 cm, respectively. The first tarsal was a quadrilateral piece of bone placed at the postero-internal part of the tarsus. The greatest length and maximum breadth of first tarsal was 1.13 ± 0.006 cm and 1.23 ± 0.007 cm, respectively. The second and third

fused tarsal was a small plate of bone. The greatest length and maximum breadth of second and third fused tarsal was 0.59 ± 0.007 cm and 1.20 ± 0.006 cm, respectively.

Morphometrical Studies on the Carpal Bones of Indian Blackbuck (*Antilope cervicapra*)

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ABSTRACT: The present study has been carried out on the carpal bones of Indian blackbuck. The carpal bones consisted of six short bones arranged in two transverse rows one above the other. The bones of the proximal row from medial to lateral were: radial carpal or scaphoid, intermediate carpal or semilunar, ulnar carpal or cuneiform and accessory carpal or pisiform. The bones of the distal row were second and third fused carpal or os magnum and fourth carpal or unciform. The radial carpal bone was the medialmost of the proximal row and presented six surfaces. The intermediate carpal bone was wedge shaped, being constricted in middle and wide in front. The ulnar carpal was outermost irregular bone situated lateral to the intermediate carpal. The accessory carpal was a short, medially curved bone. It was placed behind the ulnar carpal. In the distal row, the fused second and third carpal bone was situated medially and was larger than fourth carpal. The fourth carpal bone was smaller of the two bones of the distal row. It was roughly quadrilateral in outline and decreased in thickness cranio-caudally.

Electroencephalography (EEG) of rumination state and during managerial distress in goat

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ABSTRACT: Animal welfare is concerned in providing a comfortable environment to farm animals so as to enhance its production. Eight adult (8 to 12 months, 10 ± 2 Kg body wt. crossbred (local and Jamunapari) does were selected for study electroencephalographic (EEG) pattern of rumination state and during managerial distress by using portable Student Physiograph. The bipolar scalp electrodes were placed at the occipital region whereas the earth electrode at the tip of the nostril. Visual observation on rumination pattern provide an average duration of rumination cycle as 39.75 ± 0.16 ,

number of mastication per cycle as 57.5 ± 1.09 , frequency of rumination as 6.83 ± 0.02 per 5 min and inter-rumination period as 5.38 ± 0.18 s. EEG frequency of rumination state was of alpha (α) band and spiky waves discharge indicating mastication. The feed and water deprivation for 48h, EEG recorded at 24h and 48h showed significantly ($P < 0.05$) lower in EEG frequencies and amplitudes. EEG of 48h of feed and water deprivation along with feed temptation showed a significant elevation in frequency (44.00 ± 2.09 Hz) and amplitudes (11.66 ± 0.89 μ V). The frequency band was of beta (β) band type. There were significant ($P < 0.05$) increased in Hb (g %) and PCV (%), while glucose concentration was significantly ($P < 0.05$) lowered during deprivation. EEG found to be a sensitive tool for investigating various animal distresses encountered in daily farm managerial practices and behavioural studies in goats.

Disaggregation of monsoon season runoff into shorter time periods for a hilly watershed by artificial neural network

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ABSTRACT: Present study represents application of artificial neural network for disaggregation of monsoon season runoff series in short time interval divided into duration of 7/ 8 days and is illustrated by an application to model the river flow of Naula watershed of Ramganga river in Uttarakhand state, India. For, this purpose different models are developed and the best two is selected according to desired condition, in the first ANN model training is done for durations of 7/ 8 days of June, July, August, September month's runoff as output. For this calibration, best results are obtained in ANN architecture of 1-1-4 for both training and testing. In second model, active monsoon months (July and August) total runoff and less active months (June and September) total runoff was used as input and runoff of 7/ 8 days of July and August; June and September runoff respectively as output. Best result in training and testing was found in ANN architecture 1-3-3-3-2 for June and September total runoff and 1-1-2 for July – August total runoff. To arrive at the best model, lower value of ARRE and ISE and higher value of r was obtained for all months for selected architecture. However, correlation coefficient between measured and simulated data series are 0.87 and 0.59 for training and testing respectively for model 1, 0.90 and 0.59 in July –August and 0.93 and 0.61 in June –September for model 2. The result of both the models are found to be comparable though model 2 performed better for the months of July and August sub periods.

Evaluation of nutritional and functional characteristics of apple pomace powder

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ABSTRACT: The present study aimed to investigate the functional and nutritional composition of apple pomace powder alongwith antioxidant activity. Apple pomace powder showed high values of hydration properties such as water absorption capacity (11.36), bulk density (0.53g/cc), true density (0.56g/cc) and per cent porosity (1.23 per cent). Moisture content in apple pomace powder was 7.86 g/100g whereas total ash and crude fat were 3.60 and 5.64 g/100g. It was characterized by its higher amount of crude fiber (16.48 per cent) and dietary fibre (63.38 per cent). The soluble and insoluble dietary fibre was 8 and 55.38 per cent, respectively. Apple pomace powder contained higher amount of calcium (0.06 mg/100g) and iron (3.35 mg/100g). The same trend was observed in total antioxidant activity and β -carotene which were 39.23 per cent and 150 μ g/100g, respectively.

Effect of roasting on the nutritional composition of flaxseeds (*Linum usitatissimum*)

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ABSTRACT: Present study was designed to evaluate effect of roasting technique on nutrient and antinutrient content of flaxseeds. The optimum duration of heat roasting was found to be 4 minutes in open pan. Moisture content of the raw and roasted flaxseeds was found to be 6.65 and 2.72 per cent respectively, while the protein content was 23.69 and 23.4 per cent respectively. Fat content of raw flaxseeds was found to be 37.77 per cent while that of roasted flaxseeds was 35.85 per cent. Crude fiber content was 5.4 and 6.03 per cent for raw and heat roasted flaxseeds respectively. Total ash and calcium content of roasted flaxseeds was found to be 2.54 per cent and 229 mg per 100g respectively. The roasting of the flaxseeds significantly increased the in-vitro protein digestibility (IVPD) ($p < 0.05$) as 29.66 per cent in roasted flaxseeds against 12.94 per cent in raw flaxseeds. Total dietary fiber content of raw and heat roasted flaxseeds was found to be 31.66 and 30.10 per cent and the soluble fiber content was 11.96 and 12.05 per cent respectively. Raw flaxseeds had the highest phytate content as 2.03 g per 100 g which decreased significantly on roasting to 1.51 g. The tannin content of raw flaxseeds was found to be

7.26 mg/100 g, which decreased significantly to 7.05 mg/ 100 g with roasting. The cyanide content of raw flaxseeds (167.70 ppm) decreased significantly with roasting (12.00 ppm).

Exploring the consumer acceptance for display packaging of dried flowers in shadow box

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ABSTRACT: Fresh flowers can not be stored for life time, but gifts in the form of dry flowers are the most precious gift memories of which always remain in the heart of the person forever. In this study dried flowers were arranged in five shadow boxes made out of different packaging materials i.e. wooden fiber-board, glass, acrylic, plastic (PVC) and thermocol. The products were evaluated by consumers in respect of visual appearance, size, weight, cost, ease of maintenance, durability and overall acceptability by 5- point scale. It can be concluded that most of the consumers preferred wooden fiber-board display packaging material for shadow box. It might be due to consumer's familiarity with the wooden packaging and its appealing visual appearance, light weight, durability and remarkable cost.

Dynamics and performance of women Self Help Groups

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ABSTRACT: Present study was conducted to know the dynamics and performance of women Self Help Groups in two districts viz. Nainital and Udham Singh Nagar district of Uttarakhand state. Data was collected from one office bearer and two members of each SHG thus total data was collected from 100 SHG's and 300 SHG members. Findings reveals that out of the total groups studied 39.00 per cent groups were active, 19.00 per cent were dormant and 42.00 per cent were discontinued. Active groups had undertaken income generating activities at individual level. Dairy was the main activity undertaken by SHG members and on an average each member was earning Rs. 27,165 annually. Majority of the SHG members had availed loan from bank for starting income generating activity. Out of the total groups, who availed loan 41.02 per cent groups had returned the complete loan amount to the bank and 58.98 per cent groups had to return the balance amount. Level of empowerment of the Self Help Group members was found to be of medium level.

Phosphate solubilising potential of fungal isolates from Bamboo rhizosphere

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Note: This is a short communication and as such, does not have an abstract. For details, see the print journal or contact the authors at above address.