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Innovation systems for sustainability of technology commercialization in decentralized Kerala

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ABSTRACT: Decentralized planning is strongly entrenched in the Kerala society since late 1990's. With experience spread over a decade and half in this regard, the Kerala state has to its credit many innovative projects in the agricultural sector which have left a lasting impact on the community. When it comes to sustainability and scaling up of such innovative projects, a large number of factors come into play. There has been some model projects such as the "Samagra project" on banana cultivation initiated in 2007 by the Thiruvananthapuram District Panchayat with active participation of a host of institutional and individual stakeholders. This project follows multi-stakeholder participatory approach with 5Ps concept. The total cost of project is Rs.42 core envisaged to cover 2400ha under banana crop in 45 Gram Panchayat areas during 2007-2010 involving 2500 activity groups of the" Kudumbashree Mission" in Thiruvanathapuram district. But, the Project has actually achieved 1691 ha under banana spread over 34 Gram Panchayat involving 2915 activity groups. The Nationalized Banks have disbursed Rs.24 corer with a reported repayment of over 80 per cent. The enhanced banana productivity of 12 million tones coupled with a return of Rs. 2.28 lakh per ha through an attractive buyback system have made the project a commercial success.

Effect of nitrogen scheduling on productivity, profitability and nitrogen use efficiency in maize (*Zea mays* L.) under *Tarai* region of Uttarakhand

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ABSTRACT: A field experiment was carried out during two consecutive Kharif season of 2007 and 2008 to find out the optimum nitrogen schedule for higher maize productivity and profitability. The experiment consisted of four nitrogen schedules 1) T_1 33% basal, 33% at 4 leaf and 33% at 8 leaf stage; 2) T_2 10 % basal, 30% at 4 leaf, 30% at 8 leaf, 20% at tasseling and 10% at early grain filling stage; 3) T_3 5% basal, 30% at 4 leaf, 40% at 8 leaf, 15% at tasseling and 10% at early grain filling stage and 4) T_4 20% basal, 25% at 4 leaf , 30% at 8 leaf, 20% at tasseling and 5% at early grain filling stage was laid out in completely Randomized Block Design with four replications. The significant higher grain yield, fodder yield, economics, B:C ratio and nitrogen use efficiency were recorded when nitrogen was scheduled as T_4 in maize. The mean data revealed of 24.5% and 41.5% higher grain yield net returns respectively over conventional method of N scheduling (T_1).

Effect of subsoiling and differential rate placement of fertilizers on growth, productivity and juice quality of sugarcane (*Saccharum officinarum* L.)

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ABSTRACT: A field experiment was conducted during 2007-08 at the University to study the response of subsoiling and deep placement of fertilizers on performance of sugarcane crop. An experiment consisting of eight treatments, viz. Ploughing + 4 Harrowing + Furrow application of fertilizers (FAF), Ploughing + 2 Rotavator + FAF, Subsoiling + 4 Harrowing + FAF, Subsoiling + 2 Rotavator + FAF, Subsoiling + 4 Harrowing + Differential rate placement of fertilizers (DRPF), Subsoiling + 2 Rotavator + DRPF, Cross-subsoiling + 4 Harrowing + DRPF and Cross- subsoiling + 2 Rotavator + DRPF was laid out in RBD with four replications. The study revealed that subsoiling and cross-subsoiling prior to harrowing or rotavator with differential rate placement of fertilizer resulted in significantly higher bud emergence (56.8%), shoot population (147.6 thousand/ha), plant height (420 cm), yield attributes i.e. number of millable canes (112.8 thousand/ha), cane length (276 cm), cane girth (8 cm), number of internodes per cane

(22.5) and cane weight (995 g), and higher cane yield (98.8 t/ha). Cross-Subsoiling also resulted in superior juice quality in comparison to ploughing treatment (control).

Studies on genetic parameters for yield and quality traits in Soybean [*Glycine max* (L.) Merrill]

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ABSTRACT: Development of an effective breeding programme depends on existence of genetic variability for various characters. Selection may be carried out for several characters to get improved population. In this study an attempt was made to assess the genetic variably, heritability and expected genetic advance for 14 characters in 20 genotypes in soybean. The present investigation was carried out with 20 genotypes of soybean for fourteen characters. In general, phenotypic coefficient of variation (PCV) was higher than genotypic coefficient of variation (GCV) but in similar direction. Dry matter weight per plant exhibited highest PCV and GCV followed by seed yield per plant and number of pods per plant. Very high level of broad sense heritability (h2) estimate was observed for plant height followed by hundred seed weight and days to 50% flowering. Moderate estimates of heritability were recorded for harvest index, protein content and number of pods per plant, while low estimates of heritability were recorded for dry matter weight per plant. Plant height, number of pods per plant and dry matter weight per plant exhibited high level of expected genetic advance, whereas, it was low for days to flowering followed by harvest index and days to maturity. Very low expected genetic advance were observed for seed yield per plant, number of nodes per plant, primary branches per plant, number of seeds per pod and seed yield per plot. An inverse pattern between heritability and genetic advance was observed for most of the characters under study which indicated the non-additive gene effects. High expected genetic advance and heritability of a character is necessary for deciding the scope of yield enhancement in soybean.

In vitro multiplication of tuberose (*Polianthes tuberosa* L.) cv. Shringar

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ABSTRACT: The present investigation was conducted during 2012-2013 to standardize a protocol for large scale in vitro propagation of *Polianthes tuberosa* cv. Shringar. Bulb

and bulb scales were inoculated on MS medium supplemented with different concentrations of growth regulators. The findings indicate that bulblet explants cultured on MS medium supplemented with BAP (4 mg/l) and NAA (0.2 mg/l) resulted in maximum shoot initiation in minimum number of days. Higher shoot length was observed on MS media supplemented with BAP (6 mg/l) and NAA (0.5 mg/l). Best multiplication frequency was observed in MS medium supplemented with BAP (6 mg/l) + IAA (0.5 mg/l). Minimum days to root initiation and maximum number of roots were observed in half strength MS medium supplemented with IBA (1 mg/l) + NAA (1mg/l). Media mixture of sand + soil (1:1) showed 85 per cent survival of the micropropagated plants.

Standardization of planting systems for high density orcharding in mango (*Mangifera indica* L.) cv. Dashehari under *Tarai* region of Uttarakhand

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ABSTRACT: A field experiment was conducted during the years 2007 to 2011 to study the performance of mango cv. Dashehari under five systems of planting viz. Square (100 plants ha^{-1}), Hedgerow (167 plants ha^{-1}), Double Hedgerow (222 plants ha^{-1}), Paired (133 plants ha^{-1}) and Cluster: cluster of four plants (178 plants ha^{-1}). The mango blocks under different systems of planting were raised in a randomized block design with four replication in the year 1999. The performance of mango in terms in vegetative growth, yield and quality parameters was assessed during the year 2007 to 2011. On the basis of 5 years pooled data, it was noted that the vegetative growth in terms of tree height (3.53 m) was found lower under Double Hedgerow system, whereas its higher value (4.07 m) was observed under Paired system of planting. The higher fruit yield on ha^{-1} basis (3478.67 kg ha^{-1}) fruit weight (129.88 g) and length (100.5 mm) was recorded in those fruits which were obtained from the trees grown under Double Hedgerow system, whereas, the diameter (54.95 mm) was recorded under Square system of planting. The best quality fruits in terms of lower acidity (0.27 %), higher pulp: peel ratio (5.86), T.S.S (19.63^{o}B) and shelf life (8.13 days) were obtained from the trees subjected to Double Hedgerow system. Thus, it may be concluded from the present investigation that the Double Hedgerow system may be the efficient planting system for increasing the productivity and quality of mango fruits.

Response of bio-enhancers on growth and flowering in rose (*Rosa hybrida*) cv. Grand Gala

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ABSTRACT: The present investigation was carried out to study the effect of various bio-enhancers on growth and flowering in rose cv. Grand Gala. Different bio-enhancers i.e. *Panchgavya, Jivamrita* and vermiwash consisting of three levels of each treatment were used and replicated thrice. *Panchgavya* at 0%, 3% and 6% and *Jivamrita* at 0%, 20% and 30% were drenched while vermiwash was sprayed on the plants at 0, 1:5 and 1:10 times dilution. Results revealed that treatment 6% *Panchgavya* + 1:5 times dilution of vermiwash + 30% *Jivamrita* was found most superior than other treatments and resulted in higher plant height, larger leaf area, longer leaf length, higher number of leaves per plant and number of shoots per plant. This treatment also showed improved flowering traits like days to first bud initiation, flower bud length, number of flowers/plant, flower diameter, number of petals/flower and petal area, weight of petal, days to flowering, flower yield/m^2, flower stem length, duration of flowering and days taken for withering than rest of the treatments.

Growth and yield response of potato to irrigation levels and mulching methods

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ABSTRACT: The experiments were conducted in years 2010-11 and 2011-12 at the GBPUA & T, Pantnagar during rabi season to study the growth and yield response of potato to irrigation and mulching. Irrigation levels, mulches and their interaction did not record significant variation on plant emergence (%) and number of haulms per hill of potato and it ranged from 91-93 % among irrigation levels. The maximum plant emergence (%) was recorded with black polythene (25µm). Irrigation at 50 mm CPE responded well for plant height and number of haulms. Sugarcane leaves mulch (2.5 and 5.0 cm thickness) recorded maximum number of haulms per hill at 45 days after planting during both the years (2010-11 and 2011-12, respectively). The effects of irrigation levels and mulch treatments were significant for tuber yield of potato however, their interaction was non significant. Higher total tuber yield was recorded under sugarcane leaves mulch

(2.5cm thickness) and paddy straw mulch (2.5cm thickness) in the first and second year, respectively. The lowest total tuber yield was recorded in black polythene mulch (25 μm thickness) and without mulch treatment in first and second year, respectively. Maximum WUE was recorded when irrigation was given at 50mm CPE during both years. Higher WUE was recorded in organic mulches as compare to black polythene mulch (25 μm).

Diversity of wild legumes in Pantnagar

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ABSTRACT: The area of Pantnagar is intensively used for agricultural activities and thus devoid of undisturbed natural vegetation of Tarai. A floristic survey was conducted during 2010-2013 to assess the diversity of wild legumes in such a disturbed habitat. The results showed presence of 71 species under 36 genera, 17 tribes of the family: Fabaceae s.l. (Leguminosae) and most of them (38 species or 54 %) are herbs. On the basis of number of species and genera, the tribe Desmodieae is the largest (13/5) followed by Phaseoleae (12/9), though Phaseoleae outnumber Desmodieae in generic diversity. Four species, namely *Cullen corylifolium* (L.) Medik., *Dunbaria glandulosa* (Dalzell & A. Gibson) Prain, *Flemingia lineata* (L.) Aiton, and *Senna alata* (L.) Roxb. are new records to the flora of Uttarakhand wherevas, *Senna alata* (L.) Roxb. is a new record to invasive alien flora of Uttarakhand too. Most of the species recorded (54 species, 76.05%) are native taxa while 17 species (23.95%) are alien taxa. Source regions of alien species indicated that 10 are American, 2 European and one species each in SE Asia, China, Egypt and Syria, and Australia. Among alien species, 10 are invasive alien which are considered as a potential threat to native vegetation

Measures of competition and concentration of Indian banking industry

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ABSTRACT: The study was undertaken with the objective to examine the market structure and competition in Indian banking sector using total assets as data set and concentration ratio (CRk); Herfindahl - Hirschman index (HHI); Hall - Tideman index (HTI); Rosenbluth index (RI); Comprehensive Industrial Concentration Index (CCI); Hannah and Kay index (HKI); and the entropy measure (E) and Gini coefficient. The study included 101 banks in the year 2000 and 89 banks in the terminal year i.e. 2012-13

of study period. Strong evidence of change in market structure of banking in India as competition increases was observed. It was revealed that largest banks are not creating monopoly in Indian banking.

Research trends at G.B. Pant University of Agriculture and Technology, Pantnagar: An analytical study

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ABSTRACT: Established in 1960 as a first agriculture university of India, G. B. Pant University of Agriculture & Technology (GBPUAT), Pantnagar is one of premier agriculture university of India. The study is carried out to know the quality research output and research trends of GBPUAT in the form of articles. The data for the study is collected from Web of Sciences which is well known multidisciplinary international database. It was found that 2670 quality articles published from the scientists/academicians of the university during the period from 1972 to 2010. Statistical methods were used with the help of SPSS software to know the trends of research. In the year 1972, the total publications of the University were only 16 which have increased to 116 in the year 2010. The result showed that overall trend of the University publication is positive which is currently 2 publications increment every year. The incremental rate is significant at 1 % probability level (F=95.126). It was found that Agriculture subject (including Dairy and Animal Science) is the major contributor with 435 articles.

Potential of Sugarcane endophytes in wheat growth promotion

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ABSTRACT: Seven endophytic bacteria, isolated from different sugarcane cultivars were examined for their morphological, biochemical and plant growth promotory characters. Four isolates showed similarity with standard *Glucanoacetobacter diazotrophicus* in production of yellow pigment in nitrogen free LG1 medium and requirement of low pH and high sugar for growth. Two isolates (RSE-6 and RSE-7) inhibited the growth of *Colletotrichum falcatum* (causative agent of red rot of sugar cane) under *in vitro* conditions. Results of a pot experiment on wheat (*Triticum aestivum*) using RSE-1,RSE-

6, *G. diazotrophicus*, *Azospirillum lipoferum* and *Azospirillum brasilense* with vesicular Arbuscular Mycorrhizal spores revealed significant effect of bacterial inoculum on yield, chlophyll content and total N in wheat.

Effect of feeding different levels of proteins on carcass characteristics, nutrient utilization and blood biochemical parameters of growing Khaki Campbell ducks

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ABSTRACT: A feeding experiment was carried out to study the effect of feeding different levels of protein during growing (9-16 weeks) on carcass characteristics, nutrient utilization and blood biochemical parameters in Khaki Campbell ducks. Two hundred seven (207) Khaki Campbell grower ducks (8 weeks of age) of either sex were divided into three treatment groups viz. T_1 , T_2 and T_3 with three replicates in each group. There were 23 ducks (16 females and 7 males) in each replicate pen. During the growing period (9-16 weeks of age) the ducks in the three treatment groups were provided with an isocaloric diet having 14, 16 and 18 per cent crude protein with ad lib. provision of feed and water. The dressing per cent of carcass ranged from 77.86 to 78.99% and there was no significant difference in carcass traits with respect to dressing per centage or per centages of blood loss, feather weight, giblet, neck, wings, back, breast, thighs and drumsticks under different treatments. There was no significant difference ($p<0.05$) between the groups with respect to DM, CP and CF metabolizability of the experimental ducks while significant difference was recorded in EE metabolizability. The serum protein concentration reduced during 16th weeks of age in all treatment groups ranging from 2.79 ± 0.26 g/dl (T_1) to 3.66 ± 0.87 g/dl (T_2) compared to the values obtained on 9th weeks irrespective of treatments.

Anoestrus in buffaloes with special reference to blood biochemical profile and its treatment

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ABSTRACT: The present study was undertaken on anoestrus in buffalo with special reference to blood parameters along with its treatment. Non-significant variations were recorded in plasma calcium levels between anoestrus and normal cycling buffaloes. However, plasma inorganic phosphorus profiles were significantly lower ($P \leq 0.01$) in anoestrus buffaloes. Significantly wider ($P \leq 0.01$) Ca: P ratio was observed in anoestrus buffaloes in comparison to normal cycling buffaloes. Mean serum calcium level was increased non-significantly ($P \leq 0.01$) after treatment with mineral mixture coupled with Lugol's iodine cervical paint as well as with GnRH, while mean serum phosphorus level was increased significantly ($P \leq 0.01$) in both the groups. The geometrical mean serum Ca:P ratio decreased significantly after treatment in both the groups. The mean serum total protein in anoestrus buffaloes (5.54±0.10 gm/dl) was significantly lower ($P \leq 0.01$) in comparison to normal cycling buffaloes (7.34±0.12gm/dl). The level was found to be significantly lower ($P \leq 0.01$) in anoestrus buffaloes. The mean serum total cholesterol in anoestrus buffaloes was found to be 142.439±0.792 mg/dl while in normal cycling buffaloes; the level was 167.782±1.276 mg/dl. It can be concluded from the present study that the level of serum calcium, serum phosphorus, Ca:P ratio, serum protein and serum cholesterol play major role in animal reproduction.

Histological and histochemical studies on the Tunica Intima layer of femoral artery in Goat (*Capra hircus*)

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ABSTRACT: The present study was conducted on the tunica intima of femoral artery of 18 goats divided into three age groups viz. kid (up to 1 year), young (1-2 years) and adult (2-3 years) with six animals in each group. Endothelial cells were flat and squamous type with a slightly elevated central nuclear region. There were presences of epitheloid muscle cells in the intimal layer of the femoral artery particularly in young and adult animals. In kids, intense PAS activity was recorded in the endothelium of left and right femoral artery at proximal end, while very weak activity was observed in the endothelium of the left femoral artery at the middle and distal end. The deposition of lipids in the endothelium increased with the advancement of age. In kids, intense acid phosphatase

activity was recorded in the endothelium at its proximal and distal ends with moderate activity were observed at the middle in both the femoral arteries. Moderate alkaline phosphatase activity in adults at the proximal and distal ends of both the femoral artery.

Epidemiological status of brucellosis in animals and human of Uttar Pradesh and Uttarakhand

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ABSTRACT: The status of brucellosis in various species of animals in U.P./ Uttarakhand was investigated. The distribution pattern of the disease in relation to species, age, sex, lactation number and nature of herd organization was determined. A total of 627 blood serum samples obtained from animals and man were screened employing battery of tests that include Rose Bengal plate agglutination test (RBPT), standard tube agglutination test (STAT), plate-enzyme linked immunoabsorbent assay (plate-ELISA), dot- enzyme linked immunoabsorbent assay (dot-ELISA) for the purpose. The prevalence of brucellosis was found to be highest in cattle (29.61%). Females of the species (cattle, 33.90%; goat, 5.81% and humans, 13.88%) were generally more affected than the males (6.25%, 3.44% and 11.50% respectively). Of 138 crossbreds in a herd with history of brucellosis though maximum number of reactors (55.55%) were recorded in the 7th lactation, no definite pattern in this regard could be detected as 2nd lactation yielded 50% and 5th lactation showed 27% reactors. As compared to animals in rural areas, the prevalence in the organized herd was much higher.

Scientific livestock rearing knowledge: A study of dairy farmers in Narson Block of District Hardiwar, Uttarakhand

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ABSTRACT: The study was conducted in Narson Block of district Haridwar, Uttarakhand to ascertain the extent of scientific livestock rearing knowledge among dairy

farmers. The study revealed that 62 per cent livestock owners belonged to middle (39-58years), age group 41 per cent have medium holding (1-2 hac.), 49 per cent have secondary level of education and 87.50 per cent had news paper as information sources. About 92 per cent were depending on tube well for irrigation facility, 59 per cent were engaged with different district level social and agricultural organizations, 52 per cent dairy farmers had small family and 56 per cent dairy farmers family had one earning member in the family, 91.67 per cent were associated with integrated crops and animal husbandry practices additional services or business while 8.33 per cent had dairy farming as their sole livelihood source. Majority of farmers (39%) reared four milch animals. Plantation of trees increased with increase in ownership of land holdings of lager sizes. Green fodder production area was higher (8.5per cent) with medium land holding farmers. On an average 43.96, 28.74. and 27.29 per cent had medium ,low and high level of knowledge regarding different scientific livestock managemental parameters. Thus it was concluded that the dairy owners of Narson block of the district Haridwar possess medium level of knowledge regarding improved animal husbandry practices.

Effect of drip and surface irrigation on growth, yield and water use efficiency of Broccoli (*Brassica oleraces*) grown under mulch and non mulch conditions in Tarai condition in Uttarakhand

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ABSTRACT: A field experiment was conducted at experimental field of Department of Irrigation & Drainage Engineering, Pantnagar to evaluate the growth, yield and water use efficiency of Broccoli grown under drip and surface furrow irrigation with LLDPE plastic mulch and non mulch conditions. The experiment was laid out in randomized block design having eight treatments replicated thrice with a plot size of 6m x 4m. Effect of three irrigation levels viz v, 0.8v and 0.6v (where v = full irrigation volume with drip) in conjunction with plastic mulch and no mulch was studied on growth and yield response of Broccoli crop. The results of surface irrigation were compared with drip irrigation system with mulch and no mulch condition. The study revealed that plant height, number of leaves per plant, canopy length and crop yield are significantly superior in treatments T_5 (Drip irrigation based on 100% evaporation replenishment with 5LLDPE mulch) and T_6 (Drip irrigation based on 80% evaporation replenishment with LLDPE mulch) compared to rest of the treatments . The highest yield (30t/ha) was recorded under treatment T_6. The water use efficiency was highest 6 (4.50t/ha-cm) under drip irrigation at 80 % evaporation replenishment with mulch and lowest (0.41t/ha-cm) under conventional furrow irrigation.

Assessment of power requirement of a powered disc through soil bin study

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ABSTRACT: Experiment was carried out under controlled condition in the soil bin containing silty clay loam soil to study the effect of forward speed, disc angle, depth of cut and soil moisture content on the power requirement of a powered vertical disc and area (furrow x-section) of soil disturbed. The experiment was conducted with 3 levels of forward speed (2, 3 and 4 km/h), 3 levels of disc angle (25, 30 and 35°), 3 levels of depth of cut (100, 125 and 150 mm) and 3 levels of soil moisture content (8-10, 13-15 and 18-20%). The rotational speed of the disc was kept as 94 rpm. The experiment was conducted for all the combinations of given parameters and data regarding total power consumption and area of furrow cross-section was determined. The result showed that increase in disc angle and forward speed resulted in higher power requirement of the disc due to handling of increased soil volume. The power requirement was also influenced by increase in soil moisture content and depth of cut. Statistical analysis showed significant effect of forward speed, disc angle, depth of cut and soil moisture content on power requirement.

Status of textiles recycling and waste utilization in the Amroha district

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ABSTRACT: Textile waste can be defined as any textile product or substance that has no supplementary use or value for the person or organization that owns it. Recycling is the process of collecting and processing materials that would be discarded as trash. This discarded waste can be turned into new products, so it can benefit community and the environment. Therefore the present study has been conducted to acquire information about the textile recycling units present in the Amroha district of Uttar Pradesh. A survey was conducted and enquiries were made on the basis of general and specific information i.e. the type of textile waste recycled, mode of textile recycling and problems faced by respondents in textile recycling units etc. On the basis of observation and information gathered, data was analyzed. Waste management is a deriving urge to save environment by various means of recycling, reuse, reduce or recover. People indulge in recycling

process are not only working for their livelihood but also fulfilling a concealed means of environment protection.

Standardization of bast fibre extraction procedure from *Sterculia alata*- A non-conventional source of fibre

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ABSTRACT*: Sterculia alata* bast fibres were extracted from plant stem using water retting extraction procedure. Plant stem were cut and retted for 14, 21 and 28 days (SL_{14}, SL_{21}, SL_{28}) in water tank. After retting, fibres were combed and tested for strength, elongation and fineness and then further processed for better colour, lustre and overall appearance. The results obtained shows that stems retted for 21 days (SL_{21}) produced best quality bast fibres and only scouring was preferred for the further processing of extracted fibres to achieve better properties.

Assessment of nutritional status of adolescent girls in Udham Singh Nagar District of Uttarakhand

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ABSTRACT: A cross-sectional study of 567 adolescent girls of district Udham Singh Nagar, Uttarakhand was undertaken to assess the nutritional status of the adolescent girls. The subjects were classified into seven age groups with one-year intervals. Various anthropometric parameters were used to pinpoint nutritional status of adolescent girls. Anthropometric measurements were made by measuring height, weight, mid upper arm circumference, waist circumference, hip circumference and waist hip ratio. BMI Z-score was used to classify nutritional status of the adolescent girls. In the present study it was observed that the 72.49 per cent of adolescent girls were normal whereas the per cent of overweight was 2.47 among the sample group. The per cent of moderate and severe under nutrition was observed to be 19.05 and 5.99 per cent respectively. The mean BMI of the adolescent girls was 18.25±6.32 Kg/m2. Age was found to be positively correlated with

all the anthropometric parameters except for BMI and waist hip ratio at 1 per cent level ($p<0.01$) of significance. It was observed that all other anthropometric parameters were positively correlated with each other. Mean MUAC and waist hip ratio were found to be 23.19±3.73cm and 0.81±0.05, respectively. The present study revealed that different grades of malnutrition are prevalent among the girls in our study area. All these observations suggest that school going adolescent girls need better nutrition to combat the problem of under nutrition.

Impact of nutrition education on knowledge levels of adolescent girls in District Udham Singh Nagar, Uttarakhand

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ABSTRACT: The present research work was undertaken to study the knowledge of adolescent girls about nutritional awareness and health care. Also to evaluate knowledge increment of subjects due to nutrition education imparted to them. About 1015 adolescent girls, in the age group of 13 to 18 were selected of class 9th to 12th from a government school of district Udham Singh Nagar, Uttarakhand. The sample group was pretested on their level of general awareness which focused specifically on nutrition and health aspects. A nutrition programme was developed for a period of six months on the aspects including health, nutrition, healthy cooking methods, and personal hygiene etc. The intervention was given to the girls through lectures and discussions. Post testing was done on the girls after the period of intervention. Analysis of variance (one way ANOVA) was used for statistical analysis of data. Results showed that there was 44.23% increase in the knowledge level of girls regarding nutritional aspects that improved significantly after teaching sessions. Thus, informative and educable intervention seems to have a positive effect on awareness levels which would eventually encourage expansion of knowledge and positive nutrition and health habits.

Occurrence and prevalence of field pea rust (*Uromyces fabae*) in different localities of Uttarakhand

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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.