Attitude towards working farmer groups

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ABSTRACT

India is an agricultural economy. Over 70 per cent of India's population is supported by farm sector. However, in the long run, growth of other sectors is invariably linked to the fortunes of agriculture due to intricate forward and backward linkages. Hence, India's economic status continues to be determined by agriculture sector, and the situation is not likely to change in the foreseeable future. Participation in farmer groups shape up the farmer with farmer groups' relationship in farm sector. It was noticed by various research study revealed that, inhuman practices were disappeared. The experimental study was conducted in Tamil Nadu, India. Majority of them working in group basis as whole in agriculture sector.

Land use, land cover assessment and discrimination of wheat crop using remote sensing in *Tarai* region of Uttarakhand

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ABSTRACT

In the present study, wheat has been discriminated after land use or land cover mapping using multispectral LANDSAT-OLI data. Udham Singh Nagar district, the largest plain area of Uttarakhand with a geographical area of 3,055 km has been chosen for the research purpose. Maximum vegetation cover and visual image interpretation based techniques have been adopted in mapping heterogeneity of land cover classes. A satellite image of the peak vegetation period (*rabi season)* for wheat season was chosen for discrimination of wheat (*Triticum aestivum* L.) crop at US Nagar, Uttarakhand. The LANDSAT-OLI image of 21st February, 2015 was used to demonstrate the capability of remote sensing to discriminate crop from other spatial features. The image was acquired freely from the website (http://glovis.usgs.gov/) and processed using ENVI-4.8 software. QUAC technique was employed to accurately compensate the atmospheric noise in the image. For land use and land cover mapping, 11 different feature objects such as wheat, fallow land, wet land, forest, tree/orchard, weed, built-up land, barren land, floating weed, water body/river bed and other crops were classified via maximum likelihood algorithm. Out of the total geographical area of the district, wheat contributes for a major share (35.3 %) followed by forest (20.9 %) and other agricultural crops (19.6%). Wheat crop was discriminated by using both ground truth data and spectral property of different entities. Correspondingly, cloud free SPOT images were downloaded for the same year to generate the spectral library of wheat. For generating wheat growth profile, wheat areas were first selected by overlaying the wheat mask and secondly the curve was plotted using mean NDVI data obtained from SPOT images throughout the crop season.

Use of multispectral remote sensing data for site-specific soil fertility management

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ABSTRACT

This present study was conducted at agricultural farm of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. Thirty soil samples were collected from the different locations with the help of Global Positioning System (GPS). The samples were analyzed for soil organic carbon and available nitrogen. Various soil-related indices were calculated from LANDSAT-8 OLI/TIRS multispectral data, which included Saturation Index (SI), Hue Index (HI), Coloration Index (CI), Normalized Difference Vegetative Index (NDVI) and Ratio Vegetation Index (RVI). Variability of soil and spectral parameters were analyzed by estimating coefficient of variation (CV). The correlation analysis was carried out to study the relationship between soil and spectral parameters. Multiple regression models were generated, using stepwise regression technique, to estimate soil properties from LANDSAT-8 OLI/TIRS multispectral data. The results showed that, among soil parameters the variability was highest for organic carbon (CV=40.56%), followed by available N (CV=20.37%). Among the spectral parameters the CV was highest for CI (152.17%), followed NDVI (27.76%), SI (22.05%), HI (12.63%) and RVI (3.41%). The multiple regression equation between OC and spectral indices was significant with R = 0.65. Available N though individually had significant correlation with spectral parameters but did not form a significant multiple regression equation. These empirical equations were used to generate soil fertility variability plans.

Studies on seed economy and sett treatment in spring planted Sugarcane (*Saccharum officinarum* L.) in sub-tropical India

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ABSTRACT

A field experiment for three consecutive years *i.e*. 2008-09, 2009-10 and 2010-11 was conducted at Norman E. Borlaug Crop Research Center of Govind Ballabh Pant University of Agriculture & Technology, Pantnagar to explore the possibility of seed cane economy in sugarcane to be planted in subtropical condition. Eighteen treatments consisting of three sett size (one, two and three budded), two seed rates (90,000 and 1,20,000 buds/ha) and three sett treatment (carbendazim 0.1 %, carbendazim 0.1 % + gibberellic acid (100 ppm) along with no sett treatment) were laid out in Factorial Randomized block design (R.B.D.) with three replications. Except length of the cane, cane yield, girth of the cane, millable canes, shoot population, available sugar % and CCS yield were significantly higher in two budded sett over three or single bud. Cane yield was highest in 1,20,000 buds/ha seed rate but there was no significant difference between 1,20,000 or 90,000 buds/ha. Available sugar and CCS (commercial cane yield) were not influenced due to seed rate either 1,20,000 buds/ha or 90,000 buds/ha. Highest cane yield and other yield attributes (shoot population, NMC, cane length, cane girth were highest in carbendazim (0.1 %) treated seed material over carbendazim (0.1 %) + gibberellic acid (100 ppm) or no sett treatments. Germination % was not influenced due to sett size or seed rate but significantly higher germination was recorded in seed treated with carbendazim (0.1 %) over

GA_3 + carbendazim (0.1 %) or no sett treatment.

Influence of nutrient application on growth and productivity of spring planted sugarcane (*Saccharum officinarum* L.) in sub- tropical North India

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ABSTRACT

To study the effect of macro and micro nutrients application on sugarcane yield, an experiment was conducted in spring season for two consecutive years i.e. 2011-12 and 2012-13 at the Norman E. Borlaug Crop Research Centre of Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand. The experiment consisted of twelve treatment viz. control (no fertilizer), N, NP, NPK, NPKS, NPKZn, NPKFe, NPKMn, NPKSZn, NPKSZnFe, NPKSZnFeMn and FYM was laid out in Randomized Block Design with three replications. The experimental findings revealed that the crop fertilized with NPKSZn (120+60+40+40+25 kg/ha) recorded better growth and the highest cane yield (108.7 t/ha and 109.4 t/ha, respectively) during both the years but remained at par with NPKSZnFe and NPKSZnFeMn. The increase in cane yield under NPKSZn over control was 39.1 and 38.8 %, respectively during both the years. Yield attributes viz. number of millable canes, cane girth and cane length were also found higher under this treatment. Alone application of FYM was not effective in improving growth and cane yield.

Influence of weed management on growth and productivity of maize (*Zea mays* L.) and residual effect on succeeding wheat (*Triticum aestivum* L.)

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ABSTRACT

To study different weed control measures in maize and residual effect in succeeding wheat crop, experiment consisted of ten treatments *viz.*, Atrazine @ 1.0 kg ai/ha + 1 HW(hand weeding) (T_1), Metribuzine @ 0.25 kg ai/ha + 1 HW(T_2), Alachlor @ 0.5 kg ai/ha+ Atrazine @ 0.5 kg ai/ha + 1 HW (T_3), Glyphosate @ 1.0 kg *a.i.*/ha followed by Atrazine @ 375 g *a.i.*/ha + Alachlor @ 0.5 kg *a.i.*/ha, + 1 HW(T_4),Glyphosate @ 1.0 kg *a.i.*/ha + 2,4D EE @ 0.1 kg *a.i.*/ha, (T_5), Atrazine @ 0.5 kg *a.i.*/ha + 2,4D EE @ 0.4 kg *a.i.*/ha (T_6), maize + cowpea (T_7), maize + mungbean (T_8), weedy check (T_9) and weed free (T_{10}) was conducted in RBD with three replications at GBPUA&T, Pantnagar during 2010-11. Grain yield was significantly higher (5,740 kg/ha) under weed free treatment but remained at par with T_1, T_4, T_5, T_6 and T_7. Maize + cowpea showed the highest weed control efficiency (82.8%) whereas the lowest value was in Metribuzine @ 0.25 kg ai/ha + 1 HW. Maize + cowpea system also had maximum net return (Rs. 62,789/ha). None of the treatments carried residual left over effect in succeeding wheat crop.

DUS characterization of aromatic rice germplasm

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ABSTRACT

Characterization of 78 aromatic cultivars of rice was done using 29 traits following Distinctiveness, Uniformity and Stability test (DUS) during kharif season of 2013 and 2014 at Norman E. Borlaugh Crop Research Centre of G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, India. Out of 78 cultivars studied, 45 were found to be distinctive on the basis of 29 essential characters. This study will be

useful for breeders, researchers and farmers to identify and choose the restoration and conservation of beneficial genes for crop improvement and also to seek protection under Protection of Plant Varieties and Farmer's Rights Act.

Morphological studies and yield performance of promising genotypes of Jatropha under *Tarai* region of Uttarakhand

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ABSTRACT

Study to assess the morphological traits and seed yield of some of the new promising: genotypes and prevalent genotypes of Jatropha, a field experiment was conducted at Medicinal Research and Development Centre (MRDC) of G. B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar, Uttarakhand. The trial was replicated thrice in Randomized Complete Block Design (RBD) with nine new promising genotypes. *J. curcas* has a wide range of adaptation, and is able to endure drought and barren; as its root system is well developed, it can grow on the barren wasteland (cobbly soil, coarse soil, and limestone open ground etc.). *Jatropha curcas* L. grows as a large shrub or small tree and it has great potential as energy crop. Jatropha seed oil, nonedible oil and its methyl ester has been chosen to find out its suitability for use as fuel oil. Oil content in the seed is about 30-40%. Morphological studies and yield observation of jatropha genotypes were recorded and revealed that out of nine genotypes the new genotype ('Pant Jatropha H-1') gave the best performance on the basis of seed yield per plant and maximum 100 grain weight.

Micro mutational response of finger millet (*Eleusine coracana* Gaertn.) to gamma rays, EMS and NG

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ABSTRACT

The present investigation was undertaken to study the extent of micro mutational variability induced by gamma rays, EMS and NG in two morphologically distinct varieties of finger millet ('Indaf 5' and 'Mutant 18') for six polygenic traits. The mutagen treated populations showed increased population variance over the untreated control population for all six characters studied in M_2 generation. However the magnitude of increase in population variance varied with mutagens, their concentration, parental genotypes and the character under consideration. Increase in population variance in the treated populations was high for plant height, fingers/ ear head and finger length in 'Indaf 5', while in case of 'Mutant 18' all the characters were affected more or less in similar extent except yield/plant. Micro mutational response of 'Mutant 18' was more as compared to 'Indaf 5'. Among the mutagens, EMS treated populations induce more variability in
both the varieties.

Effect of bio-regulators on growth and flowering of gladiolus cv. 'Red Beauty' under different growth conditions

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ABSTRACT

Gladiolus corms were soaked with different growth regulators each at three levels *viz.*, ethrel (250, 500 and 750 ppm), gibberellic acid (75, 100 and 125 ppm) and thiourea (250, 500 and 1000 ppm) along with control used as treatment. Gibberellic acid was found better than other growth regulators in both the conditions. Soaking of corms with gibberellic acid hastened the corm sprouting, number of leaves per plant and spike length. Maximum plant height was recorded in high concentration of thiourea treatment at 45 days after planting (DAP) but at 60 days after planting, the maximum plant height was found in high concentration of gibberellic acid treatment. Application of ethrel @ 250

ppm was found significantly higher than other treatments in rachis length under shade net conditions. Soaking of corms with, gibberellic acid at higher levels resulted in the earliest sprouting of corm as well as plant height at 60 days after planting in both condition; maximum number of leaves, rachis length in open condition and spike length in both the conditions. All the parameters are recorded significantly improved over the control except plant height at 45 days after planting in open condition.

Effect of pruning levels on vegetative character, flowering behavior, fruit quality and yield of peach cv. Pratap

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ABSTRACT

The present investigation were comprised of T_0: Unpruned control (no pruning), T_1: Light pruning (removal of 1/3 portion of branch from apical end), T_2: Medium pruning (removal of 1/2 portion of branch from apical end) and T_3 Heavy pruning (removal of 2/3 portion of branch from apical end). Pruning was done in the month of January after leaf fall. Date of first leaf emergence slightly affected by pruning level; whereas date of first leaf senesce was remain unaffected. Flowering attributes like date of pink bud stage, date of start of flowering, date of end of flowering, duration of flowering, date of 50 % flowering and date of full bloom showed one to four days differences. Higher level of pruning was very effective for increasing the fruit length, fruit breadth, fruit weight, fruit volume, total sugars, non-reducing sugars, TSS and ascorbic acid; whereas reducing sugar percentage decreases slightly. Highest specific gravity was recorded in medium pruning. Fruit yield increase with lesser extent of pruning.

Effect of gibberellin and brassinosteroid on vegetative and reproductive growth of pear [*Pyrus pyrifolia* (Burm.) Nakai] cv. Gola

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ABSTRACT

The present study consists of seventeen year old pear trees subjected to seven treatments *viz.,* GA_3 (50 ppm,100 ppm), BR (0.5 ppm, 1.0 ppm), and GA_3 + BR (50 ppm + 0.5 ppm and 100 ppm + 1 ppm) and water as control, sprayed thrice at 15 days intervals starting from petal fall stage. Each treatment was replicated thrice with one tree served as a treatment unit. The experiment was conducted in RBD. The application of GA_3 had significant effect on tree spread when applied at 50 ppm (T_1), while tree volume, shoot growth, number of leaves and total chlorophyll content at 100 ppm (T_2). Spray of 100 ppm GA_3 + 1 ppm BR (T_6) was found effective in enhancing yield and yield attributing characters viz., fruit set (37.68%), fruit retention (62.25%) and yield (82.93 kg tree^{-1}). Thus, it can be concluded that the combined application of gibberellin and brassinosteroid either @ GA_3(100 ppm) + BR (1 ppm) or GA_3 (50 ppm) + BR (0.5 ppm) as pre- harvest sprays at 15 days interval starting from the petal fall stage may be recommended for improvement in fruit yield and quality of Gola pear in *tarai* region.

Effect of plant spacing and pruning intensity on yield and fruit quality of guava (*Psidium guajava* L.) cv. Pant Prabhat

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ABSTRACT

The present investigation entitled "Effect of plant spacing and pruning intensity on yield and fruit quality of guava (*Psidium guajava* L.) cv. Pant Prabhat" was conducted at G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand during the year 2011-12 and 2012-13. The treatments were consisted of two plant spacing (i.e. 2.0X1.0 m & 2.0X2.0 m) and three pruning intensities i.e., one fourth, half and three fourth shoot pruning with un-pruned treated as control. The treatment consisted of 2.0X2.0 m plant spacing and three fourth shoot pruning was found superior in this regard, significantly

higher fruit set (68.42%) was recorded with treatment combination of 2.0X2.0 m plant spacing and three fourth shoot pruning for winter season crop. Reverse trend was observed in case of per cent flower/fruit drop during both the years. Number of fruits and yield per plant increased with increase in plant spacing. However, yield on the basis of per hectare was found higher with closer spacing (2.0X1.0 m). Treatment combination of 2.0X1.0 m plant spacing and three fourth shoot pruning gave maximum yield (238.75 q/ha) during winter season. Physico-chemical qualities of the fruits were found better at wider spacing (2.0X2.0 m), while, there were affected adversely at closer spacing (2.0X1.0 m). The higher fruit weight, size, T.S.S., ascorbic acid, sugars and pectin content were recorded with treatment combination of 2.0X2.0 m plant spacing and three fourth shoot pruning in winter season crop of guava.

Response of different leaf cushioning on post harvest behaviour of mango (*Mangifera indica* L.) cv. Dashehari

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ABSTRACT

The experiment was conducted during 2010-11 and 2011-12 with the objective of determining suitable cushioning treatment for better shelf life and quality of mango (*Mangifera indica*) fruits. The experiment was laid out in factorial completely Randomized Design with six treatments and four replications. Fresh leaves of plants known to possess anti- microbial properties were collected during the fruiting season 2010-11 and 2011-12. Cushioning treatments with fresh leaves reduced the physiological loss in weight significantly as compared to control with lowest significant mean value of PLW (8.43%) observed in T_2 (Mentha leaves) followed by T_1, neem leaves (8.44%) and T_3, Eucalyptus leaves (8.82%) which were at par to each other and were significantly lower to other treatments. Minimum spoilage (21.24%) was recorded in treatment T_1 (Neem leaves) which was found significantly lower than other treatment mean values including control, while, maximum spoilage (34.76 %) was noticed in T_6 (control). The longest shelf life (12.03 days) was observed with the treatment T_1 (Neem leaves) followed by fruits under T_2 (11.47 days), T_3 (10.94 days) and T4 (10.56 days). Maximum TSS content (18.21 ºB) was recorded in the treatment T_1 (Neem leaves) and T_2 (Mentha leaves) which was significantly higher than other treatment means, while, the minimum TSS content (16.58 ºB) was observed in T_6 (control) which was significantly lower than other treatments. Maximum titratable acidity (1.163%) was found in treatment T_6 on 0 day of storage which was at par with T_4 (1.159%), T_5 (1.158%) and T_3 (1.148%) on same

day. Therefore, neem leaves followed by mentha leaves can be recommended to enhance the shelf life and quality characters of mango fruits under ambient storage conditions.

Field evaluation of urdbean germplasm against *Mungbean Yellow Mosaic India Virus* in Northwestern *Tarai* region of India

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ABSTRACT

A total number of 70 genotypes of urdbean were evaluated for source of resistance against *Mungbean Yellow Mosaic India Virus* (MYMIV) during the year 2012 and 2013. Yellow mosaic disease (YMD) in urdbean genotype ranged from 1.3% (IPU-2-43) to 100% (Palampur 93 and Kullu-4) during 2012 and 0.4 % (IPU-10-23) to 100% (Palampur 93) during 2013. The maximum AUDPC ('A') and ARI ('r') value for pooled data was recorded in the genotype Palampur 93 (4807.2 and 0.080) and minimum was recorded in IPU-2-43 (64.64 and 0.010) conditions. Only two genotypes, IPU-10-23 and IPU-2-43 were found to be resistant showing < than1% YMD incidence. Maximum numbers of urdbean genotypes were found to be highly susceptible and others were moderately resistant to susceptible.

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.

Productivity enhancement through probiotic and zeolite in fish culture practices in *Tarai* region of Uttarakhand

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ABSTRACT

Water quality is the fore most important limiting factor in pond fish production, so zeolites are used in aquaculture with the aim to provide pollution control, remove N-compounds, increase oxygen level and an ideal means of managing ammonia levels in aquaculture system. As far as feed of fish is concern, to maintain feed quality, probiotics are used. These probiotics increase the population of fish food organisms, improve the nutrition level and improve immunity of cultured animals to pathogenic microorganisms. Considering the importance of zeolite and probiotics to enhance the water quality and feed quality respectively for fish culture, field trials were conducted on farmer's field in 5

different locations of district Udham Singh Nagar (Uttarakhand) for consecutive two years on an average 1.0 acre ponds. The parameters related to fish feed and water quality were studied during the course of investigations. Treatment of zeolite @ 50 kg/acre at the time of pond preparation and 20 kg/acre after three month interval were applied for improvement of water quality, while use of probiotic (*Lactobacillus sporogenes*)@ 1 kg/ton were applied in feed to enhance the feed quality. These treatments were compared with farmer practice i.e. use of lime @ 250 kg/ha and ordinary feed. The analysis of data indicated that there was not only a significant difference in fish yield (i.e.19.04 %) as compared to lime and ordinary feed but also in term of vigorous growth with high benefit cost ratio. The higher benefit cost ratio (i.e. 7.37) was achieved in treated ponds in comparison to local practices (i.e.
6.65 B: C ratio).

Effect of rumen liquor inoculation on the onset of rumination and body weight gain in cattle calves

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ABSTRACT

Oral inoculation of rumen liquor, collected from fistulated bullock, was attempted in a total of 32 calves (20 crossbred and 12 Sahiwal cattle) following three different protocols, viz. beginning from 6, 11 and 16 days. Inoculum's amount began from 5 ml/day, with periodic increment of 5 ml/ day, till onset of rumination was observed. There was a significant advancement in the onset of rumination (AOR) as evinced by onset of regurgitation. AOR was advanced by 13 days in crossbred cattle calves (27.80 ±1.58 *vs.* 40.50 ± 0.54 days) and 15 days in Sahiwal calves (25.50 ± 1.65 *vs.* 41.50 ± 0.43 days). There was no significant effect of protocol followed, indicating that inoculation of rumen liquor could be practiced as late as 16 day age of the calves to achieve similar results. Inoculated calved also had significantly (P<0.01) more gain in body weight at 90 day age in both the breeds than control groups.

Optimization of bio-composite material constituents for developing yak saddle

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ABSTRACT

The design of traditional implements fulfilled the farming purpose with long exposure and understanding. However, there is plenty of scope to amend the design predicated on animal-machine-environment interaction so as to have more output, incremented efficiency and preserving the environment by avoiding deforestation without endangering the animal health. Superseding of wooden component with bio-composite materials is the better option. The optimization of bio-composite material has been done to ascertain the strength, durability and cost efficacy of the equipment. The density of the bio-composite material was observed as 1.02 g/cm3 whereas, maximum flexural, tensile, and compressive strength of bio-composite saddle were obtained as 47 N/mm^2, 24.62 N/mm^2 and 28.58 N/mm^2 which is 262 %, 37 % and 30 % higher than the wooden saddle respectively. Field testing of bio-composite yak saddle showed that the animal could take 30 % more pack load as compared to the traditional wooden saddle. The bio-composite yak saddle costs 50% less compared to traditional saddle. The developed composite material yak saddle covers all the advantages which consummate the desideratum of the farmer.

Application of *Justicia adhatoda* L. leaf extract as antibacterial finish on cotton fabric

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ABSTRACT

Number of synthetic antimicrobial finishes are available commercially which adversely affect the environment. The present study considers the possibilities of anti-bacterial finish by using plant extracts. The methanolic extract of *Justicia adhatoda* L. leaf was

prepared through soxhlet apparatus. Earlier *Justicia adhatoda* L. was named as *Adhatoda vasica* L. Prepared extract was used as finish with citric acid to increase the absorbency of fabric. Finish was applied on organic cotton fabric by pad-dry-cure method in different concentrations through padding mangle. All treated and control samples were subjected to check the antibacterial activity against most representative class of human pathogens. Lyophilized bacterial culture (*Staphylococcus aureus* and *Escherichia coli*) were procured from MTCC IMTECH (Chandigarh). The results indicated that *Justicia adhatoda* L. had the good antibacterial activity against gram positive bacterial strain as compare to gram negative bacteria.

Effect of scouring on properties of *dhaincha* fibres

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ABSTRACT

Natural fibres have wide scope of application in textile field, particularly due to recent tilt towards ecofriendly textiles. Uttarakhand, located in the northern part of India, is an incredible abode for sourcing of underutilized fibres owing to large forest cover. S*esbania aculeata* locally known as *dhaincha* yields harsh, coarse and shiny fibres that has potential to find use in the different sectors. The stems of *S. aculeate* (*dhaincha*) plants were collected at three different intervals viz.,2½,3½ and 4½ months for extraction of fibres. Then the extracted fibres were scoured with one enzyme, pectinase and four different scouring agents viz., ammonium oxalate, EDTA, sodium hydroxide and sodium carbonate for removing impuritires. The *S. aculeate* (*dhaincha*) fibres procured at all three stages exhibited good physical properties when treated with ammonium oxalate as compared to other scouring agents. The fibres obtained after I stage (2½ months) scoured with ammonium oxalate exhibited better moisture regain, fineness and whiteness index than the fibres of II (3½months) and III (4½months) stages. However the fibres of II stage had maximum elongation as compared to fibres of I and III stages. *S. aculeate* (*dhaincha*) fibre of III stage possessed excellent tenacity as compared to I and II stages.

Comparison of adaptive behavioural skills of mentally challenged children across their degree of mental challenge

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ABSTRACT

The present study assessed and compared the adaptive behaviour skills of 150 mentally challenged children from 3 RCI (Rehabilitation Council of India) recognised special schools of Delhi across their degree of mental retardation. Sample was drawn randomly in equal proportions from three categories of mental challenge viz. mild, moderate and severe mental challenge, belonged to low and middle income families. The adaptive behavioural skills of mentally challenged children were assessed using standardised Behavioural Assessment Scales for Indian Children with Mental Retardation Part A developed by NIMH. The study revealed that among both LIG & MIG, mildly challenged children had better motor skills, activities of daily living; more adaptivity of language, reading writing and domestic social skills; skills related to number time and pre vocational money was also found better among mildly challenged children. Interestingly, the predominant reason was better cognitive ability of mildly challenged children as compared to moderately and severely challenged children.

Bio-efficacy of low volume herbicide molecules on weeds and pigeon pea [*Cajanus cajan* (L.) Millspaugh]

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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.

Response of tomato (*Solanum lycopersicum* L.) to non-selective herbicides in respect to weed control and yield attributing traits

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