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Farmers' Perception about Climate Change and their Knowledge of Adaptation Strategies

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ABSTRACT

Farmers' perceptions about climate change strongly affect how they deal with climate induced risks and uncertainties, and undertake specific adaptation measures to mitigate the adverse impact of climate on agriculture. In order to understand this dynamics, the present study was undertaken to find out the perceptions of farmers about climate change and their knowledge of adaptation strategies to deal with climate vulnerability and variability. The study was conducted in four purposively selected blocks spread over two districts in the state of Uttar Pradesh (India); and from each block, two villages were selected. The study sample comprised 120 farmers, selected randomly 30 farmers from each of the four selected villages. Analytical research design was followed; and a structured pre-tested interview schedule was used for data collection; and the data was analysis using SPSS version 17. The study findings revealed that majority of farmers had high level of perceptions towards climate change but majority of them (69%) has 'low' knowledge of adaptation strategies'. Among the various adaptation strategies followed included 'change in the date and time of sowing, changes in cropping pattern, use of mulching for water conservation, and practicing zero tillage technology'. Further, farmers' age, education level, occupation, farming experience, mass media ownership & exposure, and knowledge of adaptation strategies were found to be positively (and significantly) related with their perceptions about climate change.

Effect of Lime and FYM on growth, yield and quality of soybean (*Glycine* max L. Merrill)

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ABSTRACT

A field experiment was conducted during the *kharif* season of 2016 to study the impact of lime and FYM on growth, yield and quality of soybean. The experiment was laid out in Randomized Block Design (RBD). The treatment comprised of five levels of lime *viz.*, L_0- 0 kg ha^{-1}, L_1-lime @ 200 kg ha^{-1}, L_2-lime @ 400 kg ha^{-1}, L_3-lime @ 600 kg ha^{-1}, L_4-lime @ 800 kg ha^{-1} combined with two levels of organic manures *viz.*, F0- without FYM and F1- FYM @ 2.5 t ha^{-1}. The study showed that application of lime enhanced the growth characters which increased the grain yield and stover yield by 79.42 % and 38.37 %, respectively over control. Increase in pH from 4.68 to 5.20 was also observed due to lime application. Application of FYM was found superior than without FYM in terms of growth and yield attributes and grain yield were increased by 32.86 % and stover by 14.97 %, respectively over control. The combined application of lime @ 800 kg ha^{-1} with FYM @ 2.5 kg ha^{-1} recorded significant increase in grain yield by 100.57 %, available nitrogen in soil by 24 % and potassium by 65.34 %.

Meticulous analysis of sinker and floater seeds in different accessions of freshly harvested *Jatropha curcas* seeds assembled from fifteen states of India representing variable climatic conditions & their relation with seed viability

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ABSTRACT

Through detailed statistical analysis, significant positive correlation of sinker seeds percentage with seed weight & seed viability has been observed i.e. larger is the sinker seeds percentage, larger will be the seed weight & seed viability. However, in present study noteworthy negative correlation of sinker seeds percentage with floater seeds percentage has been observed i.e. larger is the sinker seeds percentage smaller will be the floater seeds percentage in a given seed lot . This clearly testified a fine correlation between percentage of sinker seeds and viability, where seeds with high viability are majorly found to be having higher percentage of sinker seed & lower percentage of floater seeds.

Combining ability for yield and yield contributing traits in intraspecific hybrids of Ratoon Upland Cotton

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ABSTRACT

The combining ability effects were estimated in 28 novel upland cotton hybrids for identification of best general combiners and specific combiners for yield and yield contributing traits. The results from line x tester analysis revealed the presence of considerable genetic variation with respect to various yield contributing traits and significant differences for all the traits except for number of monopodia, boll weight and lint index in both first crop and ratoon crop and the SCA variances were found to be higher than the GCA variances for the all the traits. The ratio of σ^2 GCA/ σ^2 SCA was less than one for all the traits indicating the preponderance of dominant gene action, which plays an important role in the exploitation of heterosis through hybrid breeding. The parents TSH 0499, SVPR 4, ARBC 19 and TSH 0250 were found to be good general combiners based on significant GCA effects for yield and yield contributing traits in both first crop and ratoon crop. The SCA effects were revealed the combinations *viz.,* (i) TSH 0499 x TCH 1819, TSH 0499 x TSH 0250, TSH 04/115 x SURABHI and TSH 04/115 x TCH 1777 as good specific combiners for days to first flowering, plant height, number of monopodia, number of bolls, seed cotton yield, seed index and ginning outturn; (ii) BGDS 1063 x SVPR 4 and BGDS 1063 x TCH 1777 as good specific combiners for plant height, lint index and seed index in both first crop and ratoon crop.

Screening of soybean genotypes against Yellow mosaic virus, Rhizoctonia aerial blight and Bacterial Pustule

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ABSTRACT

The present study was conducted at N.E. Borlaug Crop Research Center, GBPUA&T, Pantnagar. In the investigation 165 genotypes of soybean grown in Augmented Design, were screened against three important diseases of soybean prevalent in the *tarai* region of Uttarakhand i.e. YMV (Yellow Mosaic Virus), RAB (*Rhizoctonia* Aerial Blight) and BP (Bacterial Pustule). The results obtained from the present study revealed none of the genotypes to be immune against any of the three diseases, however, two genotypes PS 1225 and PS 1480 were found to be highly resistant against all the three diseases i.e., YMV, RAB and BP. Also, it has been observed that 33 genotypes were identified as highly resistant to YMV and BP among the 165 genotypes evaluated. The rest all genotypes showed varied reaction for the concerned diseases which ranged from moderately resistant to highly susceptible.

Wide-hybridization in rice and confirmation of hybridity by SSR and HvSSR

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ABSTRACT

Grain yield can be potentially increased by identification and introgression of alleles for yield related genes from diverse germplasm of a species and even from wild germplasm. In this study, inter-specific hybridization was employed as a tool to increase grain yield. Wide hybridization was performed between 6 varieties of *Oryza sativa* as female parents and two accessions of *O. nivara* as pollen parents to transfer functionally useful alleles for yield related grain traits. Four hybrids were confirmed with SSR 288 primer, out of which two plants were obtained. These hybrids can be used for back crossing in future breeding programmes.

Comparative efficacy of dietary supplementation of herbal methionine vis-à-vis synthetic DL-methionine for growth performance and nutrient utilization in broiler chickens during winter season

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ABSTRACT

A feeding trail was conducted to discern the comparative effects of dietary supplementation of herbal methionine in relation to synthetic DL-methionine on growth performance and nutrient utilization in broiler chicks. A total of 180, day-old commercial broiler chicks were divided randomly into 6 treatment groups with 3 replicates each and 10 broiler chicks per replicate. There were 6 dietary treatments viz., treatments T_1 (control, basal diet without methionine supplementation), T_2 (basal diet supplemented with 0.2 % synthetic DL-methionine), T_3 (basal diet supplemented with 0.15 % synthetic DL-methionine + 0.05 % herbal methionine), T_4(basal diet supplemented with 0.1% synthetic DL-methionine + 0.1% herbal methionine), T_5(0.05% synthetic DL-methionine + 0.15 % herbal methionine) and T_6 (basal diet supplemented with 0.2% herbal methionine). The feeding trial lasted for 42 days viz., 0-21 days (starter phase) and 21-42 days (finisher phase). Weekly body weight and feed intakes were recorded for each treatment group of broiler chicks. A metabolism trial was also conducted during the 6th week of feeding trial. During starter phase (0-21 days) the body weight gains were 669.70, 664.13, 681.07, 691.87, 686.60 and 671.67 g in broiler chicks of treatment groups T_1, T_2, T_3, T_4, $T_5$and T_6, and did not differ significantly from each other, whereas during finisher phase (21-42 days) the body weight gain in treatment groups T_2(1516.83 g), T_3(1628.57 g), T_4(1520.67 g), T_5(1525.40 g) and T6(1490.60 g) were significantly ($P<0.01$) higher than T1 (1428.60 g), however, there was no significant difference in the body weight gains in broiler chicks fed diets supplemented with herbal methionine and synthetic DL-methionine. The feed intake, feed conversion ratio, performance index were also comparable in broiler chicks fed diets supplemented with herbal or synthetic DL-methionine and improved due to supplementation of both the sources of methionine. The overall cumulative body weight gain (0-42 days) and feed intake were significantly higher in broiler chicks fed diets supplemented with herbal and synthetic DL-methionine than broiler chicks fed basal control diet. The nutrient utilization in terms of dry matter, crude protein, ether extract and gross energy improved

significantly ($P<0.01$) in broiler chicks fed diets supplemented with both the sources of methionine as compared to broiler chicks fed basal diet alone and there was no significant difference among the broiler chicks fed basal starter and finisher diets supplemented with herbal methionine and synthetic DL-methionine. It was inferred that herbal methionine can replace synthetic DL-methionine in the diet of commercial broiler chicks as both the sources of methionine exerted similar efficacy in growth performance and nutrient utilization.

Functionality improvement of refined wheat flour cookies with incorporation of carabeef powder and pigeon pea flour

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ABSTRACT

The present study was carried out to enhance the functionality of baked traditional cookies with incorporation of dehulled pigeon pea flour (DPPF) and carabeef powder. Incorporation of 50% carabeef powder in pre-standardized formulation was found optimum on the basis of sensory evaluation. Further functionality of carabeef cookies was tried to improve by incorporation of 5, 10 and 10% of dehulled pigeon pea flour (DPPF) as natural fiber source. The incorporation of dehulled pigeon pea flour resulted into significantly ($P<0.05$) increased pH and cooking yield in cookies at higher level (10 and 15) of DPPF incorporation. Mean IDF, SDF and TDF content increased significantly ($P<0.05$) with DPPF incorporation. The thickness of cookies increased significantly ($P<0.05$) whereas diameter and spread ratio values decreased significantly ($P<0.05$) with increased level of DPPF. The overall acceptability scores of cookies with 5% DPPF were comparable with control but scores decreased significantly ($P<0.05$) at 10 and 15% level. The hardness, shear force values and adhesiveness increased significantly ($P<0.05$) at higher level of DPPF incorporation. There was no significant difference for color parameters (L^*, a^* and b^*) of control and treatment cookies. Thus functional cookies incorporated with 5% DPPF were highly acceptable accepted as high protein and dietary fiber enriched carabeef cookies.

Optimization of soil parameters and cost effective way of growing *Arabidopsis thaliana* from an Indian perspective

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ABSTRACT

Arabidopsis Biological Resource Centre (ABRC) has prescribed standard procedure for healthy growth of *Arabidopsis* in growth chambers and green house. However, standard growth of *Arabidopsis thaliana* in local conditions of Bhubaneswar, Odisha is found to be dependent on the type of soil mixture used. In the present study, we have tested 5 different types of soil combinations available (i.e. clay, red soil, garden soil, soilrite and mixed soil) and recorded different plant growth parameters such as root length, leaf area, chlorophyll, carotenoid, anthocyanin content, number of leaves at bolting, pod length, pod weight, seeds / pod and biomass to access healthy plant growth condition. We could observe the best plant growth on mixed soil (soil mixture of soilrite, red soil and garden soil) determined by us. Mixed soil grown plants show optimal vegetative growth as well as reproductive potential. Finally, we have fixed the soil mixture composition as soilrite, red soil and garden soil in 5:4:1 proportion for optimum plant growth of *Arabidopsis* in growth chambers. This proportion of mixed soil could be taken as the bench mark for the researchers in Indian conditions for *Arabidopsis* research.

Changes in microbiological and physicochemical properties of minced meat of *Labeo rohita* during frozen storage

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ABSTRACT

Microbiological, physicochemical and sensory characteristics of raw minced meat prepared from freshwater fish rohu *(Labeo rohita)* were determined during its storage at -20ºC up to a period of three months. Total bacterial count and moisture percent of the minced meat declined gradually. Minor increase in pH and change in color of the mince were reported during storage. Presence of *E. coli* and *Micrococci (*7.0-5.0 × 10-2 g-1 mince) was observed initially which declined with storage period. *Vibrio cholerae* and *Salmonella* were absent in the stored mince. Texture, odour, taste and appearance of mince meat did not change significantly during the storage period of 90 days.

Performance evaluation of surface drip irrigation system

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ABSTRACT

This study is carried out to evaluate the hydraulic performance of Drip Irrigation System at the orchard field of Budha Khera village, district Hisar (Haryana). The performance of the drip irrigation system was studied by various uniformity parameters like emission Uniformity, Christiansen's coefficient of uniformity and coefficient for emitter flow variation. The field was fitted with 16 mm lateral line and sub main line with 75 mm. Each plant was irrigated with two drippers of 2 lph discharge. The emitter discharge was measured for 15 minutes in different part of field with the help of catch cans. The average emitter discharge/plant was calculated to determine the emission uniformity (EU). The discharge of drippers varied from 0.88 to 1.98 lph in I field and from 1.00 to 1.99 lph in IInd field. The average drippers discharge on plant basis varied between 1.20 to 1.94 l/h and 1.10 to 1.96 l/h in Ist and IInd fields respectively. Further, the average discharge decreases toward end of lateral line which shows the effect of head variation due to friction losses. Further, EU of Ist field was observed 82% and 86% on dripper and plant basis respectively, whereas for IInd field it was 87% and 89% respectively.

Assessment of Physico- chemical properties of Himalayan nettle fibres

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ABSTRACT

The present investigation concerns with the potential utilization of underutilized non- conventional Himalayan nettle fibres (*Girardinia diversifolia*). The focus of the study was on extraction of Himalayan nettle fibres using different retting methods and assessment of their physico-chemical properties. Different retting methods used were tank water retting (Control sample), tank water retting along with 2% urea, retting with 1% NaOH and 0.5% EDTA (Chelating agent), retting with 5% NaOH, retting with 5% NaOH and 0.5% EDTA and retting with 7% NaOH. Extracted fibres were tested for count, tenacity, elongation and breaking force. Post doc tukey test was used for assessing the significant difference in mean values of count, tenacity, elongation and breaking force.

Mechanical properties of hand-woven fabrics developed using cover spun yarn of Flax and Lyocell

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ABSTRACT

Flax was probably the first plant fiber to be used by man for making of textiles as supported by biblical writings which show that the spinning and weaving of flax fibers were highly developed thousand years ago. Fabric developed from flax fibers are known as linen. Linen fabric is used in apparels and upholstery however poor wrinkle recovery and high cost of linen fabrics limited its consumption among elite classes. Many researches have been conducted to improve the properties of linen fabric by blending in fiber stage or yarn stage. In the present study, researcher compared mechanical properties of pure linen fabric with fabrics developed from cover spun yarns. Cover spun yarn hadlyocell yarn as core and flax yarn as sheath. Results of the study showed that fabrics developed from cover spun yarns possessed better mechanical properties like tensile strength, elongation, bending length, flexural rigidity, pilling and abrasion resistance than pure linen fabric.

Physical properties of Oak tasar silk waste/acrylic blended fabrics

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ABSTRACT

Oak tasar silk waste and acrylic blended plain weave fabrics with different blend proportion (60:40, 50:50, 40:60 and 0:100 oak tasar/acrylic) were developed and tested for their physical properties viz. fabric weight, fabric thickness and cloth factor breaking load, elongation at break, drape coefficient and flexural rigidity were evaluated. Results revealed that addition of oak tasar fibre in the blend increased the weight, thickness and cloth cover of fabric as well as also increased the drape coefficient of fabric. Among all the blend proportions 50:50 blended fabric gave better results compared to other blend composition.

Effect of different extraction methods on physical properties of Agave species fibers

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ABSTRACT

Plant fiber can be termed as god's one of the most precious gift to mankind. Today fiber yielding plants are regarded as most important crop after cereals. In fact, plant fibers are the raw material for many industries sustaining the economy of our nation. Unconventional fibrous plants are one of the largely neglected resources of the Uttarakhand and of them is Rambans (*Agave*), currently being utilized for the construction of handicraft articles only. The limited uses of these fibers are because of its coarse nature as they are mainly extracted by decorticator. These fibers can be utilized in apparels after blending with other conventional fibers for which it is necessary that extracted fibers should have spinnable qualities. Therefore different retting methods were tried on three commonly available species of *Agave* plant in order to produce a soft and pliable fiber which can be further utilized in garment and household articles. Results of different extraction methods on physical properties of three species of *Agave* indicates that *Agave cantala* fibers posses superior properties followed by *Agave sisalana* species. While *Agave americana* species posses inferior properties as compared to other two species.

Nutritional kitchen garden for mitigating malnutrition: A case study of Bahgpat district

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ABSTRACT

Adequate nutrition is very important during all the stages of life as life cannot be sustained without adequate nourishment. Deficiency diseases caused by micronutrients are one of the serious problems. Micronutrients deficiencies are most prevalent in rural areas where the habitual diet lacks variety and people cannot afford to diversify their diets or unable to include fruits and vegetables in their diet. The sustainable solution to this problem lies in the improvement and diversification of household diets by growing kitchen garden. By imparting nutrition education , rural families were convinced and finally five families agreed for trial at front yard/ backyard of their house and thus present study was planned for an OFT (On Farm Trial titled enhancing household food security through nutritional kitchen garden with the treatment growing cucurbits and few green leafy vegetables as T1[women farmer's practice]in addition to growing seasonal fruits and vegetables as T2, and was conducted in five locations two in Sankraud, two in Sunheda and one in Katha villages during 2014-15 by home science unit of district Baghpat. Results revealed that the T2 was found better than T1as there was 310.52% increase in production in T2 over women farmer's practice T1 coupled with CB ratio1:1.79 and 1:4.73 in T1 and T2 respectively, Apart from that improvement in general health & comparatively less incidence of diseases like common cold , anaemia were reported with annual reduction of Rs 8050/ on family expenses on fruits & vegetables.

Suitability of barnyard millet (*jeera jhangora*) as compared to rice (*jeera rice*) in control of diabetes

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ABSTRACT

In the present study PRJ-1 variety of barnyard millet was analyzed for various quality parameters as a substitute of rice in diabetes. Proximate composition results indicate that crude protein, crude fat, crude fibre and total ash content of barnyard millet was 9.39, 2.0, 6.3, 2.23 per cent, respectively significantly higher than rice. Minerals *viz;* calcium (24.16 mg%), iron (6.53 mg%), zinc (2.61 mg%), magnesium (78.40 mg%), chromium (0.019 mg%) and phosphorus (228 mg%) content of barnyard millet were significantly higher than rice. The total dietary fibre (11.4%), resistant starch (12.81 %), tannin (67.8%) and total antioxidant activity (59.23%) of barnyard millet was also significantly higher than rice. There was non-significant difference between *jeera jhangora* and *jeera* rice for sensory characteristics. The glycemic index of *jeera jhangora* was 39.5 significantly lower than *jeera* rice (73.9). The study concludes, barnyard millet as a best substitute of rice for people suffering from diabetics.

Establishment of nutrition garden and nutrition education: An approach towards household nutritional security among tribal and non tribal women of District Udham Singh Nagar, Uttarakhand

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ABSTRACT

Present study is an attempt to assess the production, consumption pattern and post-harvest management of the vegetables produced in the nutrition garden of village families. It was undertaken for ten months each year in two villages of district U.S. Nagar, Uttarakhand. Three treatments were conducted viz., T1: Practicing farm women (non-scientific and poorly managed seasonal kitchen garden), T2: Nutrition garden+ under-weight farm women, T3: Nutrition garden + normal-weight farm women in both tribal and non-tribal villages. Ten selected farm women (05 each from T2 and T3) were given seasonal vegetables seeds. The selected families consumed their produce. Impact of technologies on knowledge of farm women (nutritionally rich vegetables and value addition, yield of seasonal vegetables and BMI) was evaluated by pre and post surveys. For both villages, average yield, average per head availability of the seasonal vegetables and average percent increase in knowledge was 69.1q/ha, 82.50 q/ha and 89.39 q/ha; 248.75 g/day, 403.74 g/day and 456.41 g/day and 62.5, 68.45 and 75.7 percent for T1, T2 and T3 respectively. Awareness on nutritionally rich vegetables and value addition was maximum with T3. Average percent increase in BMI of farm women was 6.15, 7.87 and 8.5 percent for T1, T2 and T3, respectively.