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Temperature bias correction techniques for regional climate applications in Hisar and Karnal districts, Haryana

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ABSTRACT

In many climate change impact studies on agriculture, water resource, pest & disease and energy etc, the simulation models are forced with climate change projection data with little attempt to assess the quality of these forcing data. The objective of this study is to apply techniques for bias removal in CORDEX temperature dataset and compare bias corrected data with observed temperature. The bias-corrected temperature dataset was utilized further as input to climate change impact studies in two agroclimatological zones in Haryana. Observed temperature data for selected study region were available for 36 years from the India Meteorological Department (IMD). CORDEX temperature data were analyzed and corrected by fitting the mean of the observations. Analysis indicates that uncorrected temperature data exhibited cool bias for both selected regions viz., Hisar and Karnal. The bias

correction leads to satisfactory improvement in the results, and temperature difference decreased significantly. Besides this, various statistical test performance during the validation period show to improve the correlation between bias corrected CORDEX projections and observation data for the selected study region

Effect of ready mix herbicides for weed control in Soybean under Vindhyan Plateau of Madhya Pradesh

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ABSTRACT

Soybean is one of the most important oil-yielding rainy-season *kharif* crop of Madhya Pradesh having multiple uses. Being a *kharif* season crop, soybean is heavily infested by different weed flora, which is responsible for poor yield in soybean crop. The control of weeds during critical period is very important to reduce the yield loss. Keeping this in view, the present experiment was conducted on farmer's field during *kharif* season of 2014, 2015 and 2016 in villages Chainpura, Mainpani, Baroda and Paatan of district Sagar, Madhya Pradesh. Under this experiment, ready mix application of three weed control treatment executed *viz.* T₁-farmers practices, T₂-spray of Fenoxaprop-p-ethyl 1000 ml+ Chlorimuron ethyl 37gm/ha at 20-25 days after sowing as post emergence and T₃-spray of Imazethapyr + Imazamox @ 1000 ml/ha at 20-25 days after sowing as post emergence were used at ten farmers field during three crop seasons for control of broad and narrow leaved weeds. The highest weed control efficiency and the lowest weed biomass were recorded with the ready-mix application of Imazethapyr + Imazamox followed by Fenoxprop-p-ethyl + Chlorimuron ethyl for effectively control the grassy and non-grassy weeds in soybean crop.

Response of *rabi* castor (*Ricinus communis* L.) to different intercrops pertaining to growth, yield and economics

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ABSTRACT

An experiment on feasibility of intercropping in *rabi* castor was conducted at Agronomy Instruction Farm, C. P. College of Agriculture, Sardarkrushinagar on loamy sand soil using randomized block design with three replications during *rabi* session of 2013-14. *Rabi* castor intercropped with lucerne, carrot, fenugreek and chicory at 1:2 row ratio. Plant height of castor was recorded highest in sole crop than in intercrop. Seed index (30.7g), seed yield/green forage yield (2315 kg/ha) and stalk yield/dry fodder yield (2616 kg/ha) of castor were highest in sole crop over intercrop and harvest index (46.95%) of castor was lowest in sole crop over grown in intercrops. Maximum oil content (48.70%) was recorded in sole crop of castor and minimum under castor + carrot (1:2)(47.32%) and the intercropping of lucerne (18.13) and chicory (20.22) with castor at 1:2 row ratio recorded the lowest crude protein content as compared to sole lucerne and chicory. Castor intercropped with lucerne, carrot, fenugreek and chicory at 1:2 row ratio produced significantly higher castor equivalent yield as compared to sole castor and other intercrops as sole. While intercropping of castor + fenugreek and castor + lucerne at 1:2 row ratio recorded significantly higher LER (land equivalent ratio) value than sole crops and other intercropping systems. The maximum net return (Rs. 75,492/ha) was obtained when castor was intercropped with lucerne followed by castor + carrot (Rs. 73342/ha) and castor + chicory at 1:2 row ratio (Rs. 66,297/ha). In case of benefit cost ratio (BCR) value it was recorded the highest in castor + lucerne (2.33) followed by castor + fenugreek (2.24) and castor + carrot at 1:2 row ratio (2.16).

Impact of community based waste management effort in the socio-economic upliftment of a rural tourism village in Kerala

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ABSTRACT

This paper outlines the importance of community based initiatives in managing the waste generated in the rural as well as urban areas of India. The study was carried out in Thiruvananthapuram district of Kerala to analyze how the lifestyle of people residing in a small village changed because of farming using the compost prepared from biodegradable waste generated in *Kovalam* rural tourism area. Fifty beneficiary farmers of the initiative were selected as respondents of the study. Results showed motivation and support of a non-government organization working in the locality as the major factor behind the waste management move. They created awareness about the need of composting to keep their surroundings clean and localization of chemical free food to stay healthy. It was observed that farmers adopted bio-pesticides and biodynamic preparations along with compost in their small home garden. The low cost farming not only provided chemical free food for the family and society but also improved the net income of the farmers' families. The effort taken by the promoting agency to popularize composting along with farming among the members of the society in the right time to a group of appropriate beneficiaries made the difference here.

Employment generation through fish farming in Kumaon hills of Uttarakhand

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ABSTRACT

The study was conducted in the hills of Kumaon division of Uttarakhand with the sample size of 30 fish farmers. The study pertained to the year 2009-10. The study aimed to examine the employment generation through different operations performed in fish farming in the study area. Simple descriptive statistical tools were used to accomplish the objective of the study. The findings show that the employment generation from excavation of an average fish pond of 0.014 ha was 103.42 mandays. The annual employment generated, on an average size of 0.014 ha water area and one unit i.e., 0.010 ha water area was 31.90 mandays and 22.78 mandays respectively. Fish farming is a potent source which can generate an additional employment for all the fish farmers in the hills of Kumaon division of Uttarakhand. This calls for enhancement of promotional activities regarding fish farming in the Kumaon hills for generation of more employment and to check the migration of youths from the hills.

Impact of various pruning intensities on fruit yield and quality of peach [*Prunus persica* (L.)] cultivars undermid hill condition of Uttarakhand

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ABSTRACT

In peach, proper pruning is quite instrumental in regulating the tree vigour, fruit quality and productivity potential. To study the responses of various pruning intensities on yield and quality five pruning intensities viz., Control (no pruning), 10%, 25%, 50% and 75% pruning of current season's growth were exercised with three replications on three cultivars i.e. 'Red June', 'Elberta' and 'Early White Giant' in randomized block design. Pruning operation was carried out during dormant season during January. Severe pruning @ 75% level exhibited maximum values of fruit weight, volume, size, TSS, ascorbic acid and sugar while the fruit yield and acidity found maximum under control (no pruning)

Evaluation of potential biological control agents for the management of sheath blight of rice

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ABSTRACT

Rice is a staple food crop for most of the world population and Asia is the hub with 90% of world aggregate rice production. Among the various pathogens, *Rhizoctonia solani* is the most devastating pathogen causing sheath blight of rice. It causes 10-50% yield losses worldwide. It is therefore very important to control this disease. The evaluation of potential biocontrol agents for the management of the sheath blight disease has been studied in the present investigation. It was found that all the biocontrol agents are effective in reducing the disease. Among the various treatments TCMS-36 and carbendazim are found to be best in reducing the disease severity in both the cropping seasons (2015-16 and 2016-17). Biocontrol agents apart from reducing the disease severity also increase the yield of crop. Maximum yield was obtained with biocontrol agents Th 14 and PBAT 3 in both the cropping seasons. It was also found that the population of bioagents started to increase with the application of foliar spray at 45 DAT, but after certain time of interval the inoculum density gradually decreased in soil up to 90 DAT. This finding could widen up the scenario of utilizing bio control agents for the management of disease.

Comparative evaluation for sources of resistance to leaf thrips (*Sericothrips occipitalis* Hood) in cowpea (*Vigna unguiculata* L. Walp)

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ABSTRACT

Forty-nine breeding lines of cowpea (*Vigna unguiculata* (L.) Walp) were evaluated for resistance to leaf thrips (*Sericothrips occipitalis* Hood) under field conditions. Selections were based on the ability of cowpea lines showing less thrips damage and having a good plant stand along with a good phenotype. Attempt was made to select the lines possessing high yield potential which could be considered as moderately resistant to leaf thrips. The observations were recorded for plant height, fresh weight, and dry weight at 40 days after sowing. Plot yield was also observed. Based on the evaluation, six lines viz. CST-103, CST- 111, CST-6, CST-7, CST-8 and PGCP-28 were identified to show good resistance to thrips attack. These lines showed very less symptoms of damage caused by thrips and recovered well as compared to others, after the thrips outbreak. These lines can be used in future breeding programme as a donor for resistance against thrips in high yielding varieties of cowpea as well as promising varieties for the farmers in the thrips prone area.

Investigations on the ratooning ability of cotton interspecific hybrids (*G. hirsutum* L. x *G. abarbadense* L.) and their Parents

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ABSTRACT

The development of cotton hybrids which can offer the great yields and quality fibre is the current research area in the field of plant breeding and genetics. For the first time, here we investigated the mean performance and ratooning ability of eleven parents and thirty promising interspecific cotton hybrids for yield component traits and fibre quality traits. The significant range of variability was observed in all the traits except in boll weight and elongation percentage in parents and hybrids. Based on mean performance, the evaluated parents and hybrids varied significantly ($p \leq 0.05$) in main crop and ratoon crop for all the investigated traits and differed significantly in their ratooning ability for the all the studied traits. The current study demonstrates that the hybrids are superior to the parents for all the investigated traits. Among the parents, lines AFRICAN I-2 and MCU 7 and the testers TCB 37 and TCB 209 exhibited a fair performance for yield contributing traits and fibre quality traits and also good ratooning ability. Therefore, these parents have a potential to be exploited for the development of the efficient cotton hybrids. Among the tested F1 hybrids, MCU 7 x TCB 209 hybrid expressed higher yield of bolls per plant in main crop and ratoon crop and has shown highest ratoon crop yield and ratooning ability for the yield component and fibre quality traits. The results of this study would provide insights into the understanding of genetic variance present in various interspecific cotton hybrids.

Histopathological alterations induced by black soybean feeding in layers

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ABSTRACT

Black soybean, also known as kalabhat or bhatt is favourite of Uttarakhand people as it is highly nutritious. Feeding trial of 12 weeks was conducted on hundred twenty week old poultry layers to discern the effect of feeding black soybean on body organs in poultry layers. The experimental birds were divided into five treatment group's viz T₁: control; T₂: 0.2% raw black soybean; T₃:0.2% germinated black soybean; T₄:0.2% roasted black soybean and T₅: 0.2% cow urine treated black soybean. Raw and germinated black soybean feeding resulted in congestion in blood vessels and degenerative changes in liver, spleen, lung, pancreas and kidney. It was concluded that processed (heat treated/cow urine treated) black soybean @) 0.2% can be used for feeding of poultry layer.

Virulence genes detection and antibiotic resistance study on the *Campylobacter* isolates obtained from poultry, domestic animals and humans

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ABSTRACT

A total of 730 samples (poultry caeca (n=210), poultry meat (n=111), poultry droppings (n=180), goat (n=26), sheep (n=23), pigs (n=78), calves (n=20) and human(n=82) faeces) were collected for isolation of thermophilic campylobacters. Molecular identification revealed a total of 39 isolates of which 21 were *C. jejuni* and 18 were *C. coli*. The virulence genes, *wlaN*, *iam*, *ciaB* and *dnaj* were revealed in 25%, 46.15%, 53.84% and 74.36% isolates, respectively. The isolates of poultry caeca and droppings showed the presence of all the four genes with *dnaj* gene being the most prominent among all. The genes *iam*, *ciaB* and *dnaj* were more prevalent among *C. coli* isolates than *C. jejuni* isolates of poultry samples. Antibiotic susceptibility tests against a panel of 10 antibiotics (chloramphenicol, ciprofloxacin, gentamicin, amoxicilin, cephalixin, levofloxacin, kanamycin, penicillin G, amoxyclav and ampicillin) revealed maximum resistance (86.95%) against Penicillin G (93.75% *C.jejuni* and 71.43% *C.coli*). All the *C. jejuni* isolates (100%) were found to be sensitive to Amoxyclav while only 5 *C. coli* isolates (71.43%, 5/7) showed sensitivity towards Amoxyclav and Ampicillin. Most of the isolates were intermediately sensitive to all the antibiotics.

Effect of *Spirulina platensis* administration on growth performance in cadmium treated chickens_a

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ABSTRACT

One hundred chickens of one day age were divided randomly into five groups of 20 birds each. After two weeks of adaptation period, group I was kept as control, group II was fed with 0.2 % *Spirulina platensis* powder till 90th day post treatment (DPT). Group III was administered 1.61 ppm cadmium as cadmium chloride monohydrate ($\text{CdCl}_2 \cdot \text{H}_2\text{O}$) in triple glass distilled water. Groups IV and V were administered 1.61 ppm cadmium in triple glass distilled water along with *Spirulina platensis* powder orally in standard recommended feed at the rate of 0.2% concentration. However, in Group V *Spirulina platensis* powder was given after 60th day post treatment (DPT) till 90th day post treatment (DPT). Recording of body weight of chickens was done at 15 days interval and body weight gain was also calculated. A significant treatment dependent decrease in body weight, body weight gain was observed in cadmium treated groups III and V as compared to group I. However, significantly lower decrease in body weight and body weight gain was observed in group IV as compared to groups III and V. Group II had the highest body weight and body weight gain. It is concluded from the present study that administration of 0.2 % *Spirulina platensis* in feed has been found to have ameliorative effects on growth parameters in cadmium intoxicated chickens, administered cadmium at the rate of 1.61 ppm.

Study on fish diversity and catch composition at Harike wetland- A Ramsar site in India

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ABSTRACT

The present study was carried out to evaluate the fish biodiversity and catch composition in Harike Wetland, Punjab. Total 30 fish species belongs to 14 families and 21 genera were recorded from Harike wetland. Maximum number of species (12) recorded under family Cyprinidae followed by Bagridae (3 species) and Siluridae (3 species). Maximum number of species was recorded in the month of September and minimum in the month of January. Shannon's index revealed light polluted nature of Harike wetland during post-monsoon whereas, during the winter moderate polluted nature of Harike wetland has been observed. Pielou's evenness index revealed moderate evenness of the abundance of the fish population in Harike wetland. Margalef Richness Index revealed richness in fish biodiversity of this wetland. It can be concluded that despite of different natural and anthropogenic disturbances the wetland is still supporting a good number of fish species which is to be conserved.

Screen printing of silk fabric with natural dye *Arjuna terminelia* using *cassia tora* as eco friendly thickener

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ABSTRACT

The study was under taken to optimize the concentration of eco-friendly printing paste prepared by using *cassia tora* gum as thickening agent. The extract of natural dye *Arjuna terminelia* was added as colourant for screen printing khadi silk fabric. Optimization of *cassia tora* gum was done at two different concentrations i.e 2.5 per cent and 5 per cent of gum. Two mordants, 5% aluminium phosphate and 2% ferrous sulphate were selected for obtaining change in shade and improvement of colour fastness properties. The screen printed samples were evaluated for colour fastness properties and CIE Lab values. The screen printed silk samples with both the mordants exhibited excellent (5) to very good (4) fastness rating for light, washing, rubbing and perspiration. The evaluation of the results concluded that khadi silk fabric can be successfully printed by using 2.5% gum concentration with 2% of ferrous sulphate as natural thickening agent.

Antioxidant properties of traditional spices of Uttarakhand

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ABSTRACT

Five traditional spices and condiments namely Hemp seeds (*Cannabis sativa*), Jakhya (*Polanisia viscosa*), Jamboo (*Allium strachey*), Bhanjira (*Perilla frutescens*) and Coriander seeds (*Coriandrum sativum*) in raw form were analyzed for bioactive components such as total phenolics content, total flavonoid content, total antioxidant activity by FRAP (Ferric reducing antioxidant power) reagent and DPPH (2,2- Diphenyl-1-picryl hydrazyl) reagent. The results showed that that Jamboo (*Allium strachey*) contained the highest total phenolics content (643.93 mg GAE/100gm) as well as total antioxidant activity by FRAP (3064.52mgT.E./100gm) and total antioxidant activity by DPPH (201.55mg T.E./100gm). Bhanjira (*Perilla frutescens*) showed the highest total flavonoids content (1233.76 mg R.E./100gm).The present study revealed that these traditional spices have good antioxidant potential. Therefore there consumption would be beneficial in preventing oxidative damage which acts as a major cause of various degenerative chronic diseases.

Breastfeeding and its benefits: Promotion through play way method

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ABSTRACT

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants as well as protection from infection, allergy and some chronic diseases. Besides this, breastfeeding also improves cognition of the child and immensely influences mother-child bond. Not only this, breastfeeding has positive impact on mother too. It significantly contributes to good physical and emotional health of mother. Mothers' usually breastfeed their babies since it's the most natural, convenient and cost effective method of feeding a baby. But in today's scenario the practice of breastfeeding is diminishing day by day due to many reasons like insufficient breast milk production, mothers working outside the home and belief that breast milk alone is insufficient for a growing baby. So, the research team of AICRP-CD, GBPUAT, Pantnagar has redesigned age old games for promoting breastfeeding among today's generation by sharing its benefits for both mother and child and thereby laying foundation for better next generation and better tomorrow.

