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## **Effect of date of nursery sowing and planting geometry on growth and dried herb yield of kalmegh (*Andrographis paniculata* Nees.)**

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### **ABSTRACT**

The field experiment conducted during kharif season of 2010 consisted 15 treatment combinations of different dates of nursery sowing (15th March, 15th April, 15th May, 15th June and 15th July) and planting geometry (40x25 cm, 50x35 cm and 60x45 cm); laid out in split plot design with three replications. The seedlings were transplanted at 4-5 leaf stage in main field. It was found that plant growth and yield varied significantly with the effect of planting geometry and date of nursery sowing. The maximum dried herb yield (1.8 ton/ha) was recorded with 40x25cm planting and 15 May nursery sowing (2.0 ton/ha). The interaction effect was also significant with highest dry herb yield of P1 x D3 (2.80 ton/ha). Thus it was concluded that 15 May of nursery sowing with 40x25 cm planting geometry in *Andrographis paniculata* Nees. is the most ideal to get maximum growth and dried herb yield.

## **Effect of NPK, vermicompost and vermiwash on growth and yield of Okra**

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### **ABSTRACT**

The experiment was carried out to see the effect of NPK, vermicompost and various sprays of vermiwash on growth, yield and economics of okra var. Kashi Pragati. The treatment combination vermicompost @ 5 t/ha + vermiwash 5 sprays at 10 days interval after 30 DAS showed maximum plant height (128.09 cm), nodes per plant (40.80), internodal length (8.03 cm), days taken to 50% flowering (46 days) and nodes to first flowering (8.20). Among the fruit characters, number of fruits per plant (21.36), fruit length (13.31 cm), fruit girth (17.01 mm), fruit weight (14.33 g), fruiting span (48.66 days), fruit yield per plant (134.48 g) and yield per hectare (74.62 q) were observed maximum by the application of vermicompost @ 5 t/ha + vermiwash 5 sprays at 10 days interval after 30 DAS. However, the maximum C:B ratio of 1:1.94 was obtained by application of Recommended dose of NPK + vermiwash as soil treatment + vermiwash 3 sprays at 10 days interval after 30 DAS followed by the treatment vermicompost @ 5 t/ha + vermiwash 5 sprays at 10 days interval after 30 DAS.

### **Substratum and temperature requirement for germination of satawar (*Asparagus racemosus*) seed**

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#### **ABSTRACT**

*Asparagus racemosus* is an important medicinal herb, can be propagated through seed as well as crowns (roots) but propagation through crowns is not recommended as roots are the economic part. Seed testing protocols are also not available for satawar seeds so present investigation was carried out to work out suitable substratum and optimum temperature requirement for *Asparagus racemosus*. Among five substrata, 'top of the paper' and 'between the paper' were at par with each other and significantly superior to 'between rolled towel papers', 'soil' and 'sand' for conducting standard germination test. Final germination percentage was non-significantly influenced by temperature but seedling vigour parameters were significantly higher at 20<sup>0</sup>C. At 20<sup>0</sup>C temperature, germination value, speed of germination, mean germination time and days taken to initiate germination and fifty per cent (T50) germination were significantly higher than that at 25<sup>0</sup>, 30<sup>0</sup> and 35<sup>0</sup>C temperatures.

### **SHGs promoting better marketing behaviour among marginal vegetable farmers**

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#### **ABSTRACT**

Agricultural marketing is one area where the Indian farmer is still handicapped and calls for interventions from development professionals of all kinds. Marketing strategy for a marginal

farmer is almost non-existent, and the marketing channels used by them remain largely traditional even after many efforts to change them. The SHG movement that gained momentum during the current decade is said to have brought some changes to the situation but still the rural farmer remains downtrodden and getting disenchanted with agriculture. To look into the real situation of marketing, a study was undertaken among the marginal vegetable farmers of Kerala state. It helped understand the difference in marketing behaviour of farmers who belonged to SHG groups and who did not belong to SHG groups. The study revealed that the SHG group of farmers mostly resorted to the farmer markets and secondarily to retail shops/ direct marketing which fetched them reasonable prices. The non-SHG groups heavily relied on commission agents who more or less leave the producer at disadvantage. The study pointed to the positive and appreciable effect, the SHG are generating in the rural scenario.

### **Assessment of genetic divergence for nitrogen fixation, yield and yield contributing traits in fieldpea (*Pisum sativum* L.)**

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#### **ABSTRACT**

The present experiment comprised of 31 genotypes of fieldpea. Data was recorded on seventeen quantitative characters viz. nodule volume, nodule number, root nodule dry weight, shoot length, root length, shoot dry weight, plant height, number of primary branches, number of pods per plant, number of seeds per pod, chlorophyll content, seed protein, straw protein, 100 seed weight, nitrogen fixed, days to maturity and grain yield from ten randomly selected plants for each genotype to study genetic diversity. On the basis of non-hierarchical Euclidean cluster analysis, all the thirty-one genotypes were grouped into thirteen non-overlapping clusters. The maximum inter-cluster distance of 36.71 was observed between clusters IX and XII while minimum distance of 18.31 was obtained between clusters I and V. Shoot length contributed maximum towards genetic divergence followed by days to maturity, grain yield, nodule volume and number of pods per plant. In the present investigation genotypes with highest mean value as well as highest genetic divergence were selected from different clusters because it is not possible that genotypes with all the desirable characters will be present in the same cluster. It is quite obvious that genotypes selected from these clusters may serve as potential donors in future hybridization programmes for the development of high yielding varieties.

### **A comparative study of extract of *Curcuma longa* L. from different places in Meghalaya, India**

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### ABSTRACT

*Curcuma* species contain turmerin, essential oils and curcuminoids. Curcumin has been shown to possess a wide range of pharmacological activities including anti-inflammatory, anticancer, antioxidant, wound healing, hypoglycemic, anticoagulant, antifertility and antimicrobial. Preparation of extract from *Curcuma* species samples viz. *C. longa*, *C. longa* var. lakdong and *C. aromatica*, collected from different places of Meghalaya was done by stirring and stationary extraction technique. TLC was performed to confirm the presence of active components in the extract with reference to the powdered sample. Separation of the fractions was done by silica gel column chromatography. The presence of active components in different fractions was estimated by measuring absorbance in the UV and Visible range. A variation in the curcuminoid content was observed among the samples studied and a high percentage was observed in *C. longa* var. lakdong. In the present study, the existence of variation in curcuminoid content of *Curcuma* species of Meghalaya was established. The findings can help in selecting and multiplying those *Curcuma* cultivars having curcuminoid content and also extracting curcumin on a commercial scale.

### Characterization of exotic germplasm of Oats (*Avena sativa* L.) against major diseases

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### ABSTRACT

Ninety six exotic germplasm of oats (*Avena sativa* L.) obtained from ICARDA, Syria were evaluated for major diseases in an Augmented Block Design having 3 checks. Evaluation of disease was done for rust, powdery mildew, bacterial blight and strip mosaic virus. The data on major diseases was recorded in 1-5 scale. An attempt was also made to compare the incidence of disease with the prevailing weather conditions during *rabi* season 2009-10. Disease severity in oats germplasm is probably related to the temperature and humidity conditions and the exotic oats germplasm in the present study was found to be very less affected by rust, bacterial blight and stripe mosaic virus while it was completely resistant to powdery mildew. On the basis of present investigation some superior donors for disease resistance were selected.

### Estimation of components of variances for yield and its components in an open pollinated maize composite, DQPMC-4(W)

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### **ABSTRACT**

The present investigation was conducted during *Kharif* 2010 with the objective to investigate genetic architecture of grain yield and other quantitative characters in an open-pollinated composite, DQPMC-4(W) and utilize this information to make decision as to which breeding system is the most likely to be successful in achieving population improvement. Fourteen quantitative traits were measured in 128 full-sibs and 32 S1 randomly developed families derived from DQPMC-4(W) maize population which grown in randomized block design at normal and high plant densities. Components of variance and components of genetic variance due to males and females were estimated for each trait. Results obtained from the present investigation revealed that sources of variations differed significantly for most of the traits at both normal and high plant densities as well as in combined analysis. Estimates of variance due to males ( $\sigma^2_m$ ) and variances due to females ( $\sigma^2_f$ ) were calculated based upon expectation of mean squares along with their standard errors which showed that variances due to males and females were found to be significant for most of the traits at normal and high plant densities. The magnitude of variance due to females were higher as compared to variances due to males for most of the traits at both the plant densities which indicated that both additive as well as dominance variances made the contribution towards genetic variability.

### **Genetic divergence study in advance breeding lines of soybean [*Glycine max* (L.) Merrill.]**

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### **ABSTRACT**

Sixty-two genotypes of soybean [*Glycine max* (L.) Merrill.], derived from 23 diverse crosses were studied for their genetic diversity. Mahalanobis D<sub>2</sub> analysis was utilized to assess the genetic diversity and also to estimate the contribution of each character to the total diversity. Based on twelve quantitative characters led to their grouping into seventeen clusters out of which five were monogenotypic. Maximum number of genotypes (11) grouped into cluster I. Highest divergence was observed between cluster pair IX (3) and XIII (1), followed by cluster pairs I (11) and XIII (1), VIII (4) and XIII (1) and X (2) and XIII (1) which may serve as potential parents for hybridization programme. Among twelve characters, dry matter weight contributed maximum towards genetic divergence followed by number of pods per plant and days to maturity. These combinations can also be used for getting further variability for these characters. These advanced generation lines showing higher performance for

different traits included in the analysis can be used for making biparental crosses for getting better segregants or selection can be practised.

## **General and specific combining ability studies in Maize (*Zea mays* L.) using diallel mating design**

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### **ABSTRACT**

Combining ability analysis is one of the most powerful tool for identification of best combiner that may be used in crosses. Combining ability analysis for grain yield and its contributing characters in maize were carried out in 9×9 diallel cross. The significant estimates of GCA and SCA variances suggested the importance of both additive and non-additive gene actions for the expression of studied traits. The characters, days to 50% tasselling, days to 50 % silking, plant height, number of leaves, ear height, ear diameter, kernel rows/ ear, number of kernels/row, 100- kernel weight and grain yield showed that the SCA variance was greater than GCA variance which revealed that there is preponderance of non-additive gene action (dominance and epistasis), and therefore, heterosis breeding will be rewarding. GCA effects were significant for all traits except days to 50% tasselling. Data were recorded on thirteen characters. The parents Tarun, Kanchan, D765 and Surya were good combiners for grain yield. The hybrids Tarun × Kanchan, Tarun × D765, Tarun × Surya, Tarun × Gaurav, Tarun × Amar, Navin × D765, Navin × Surya, Navin × Gaurav, Navin × Amar, Kanchan × Surya, Kanchan × Pragati, D765 × Surya, Gaurav × Pragati and Amar × Pragati were identified to superior in terms of yield.

## **Evaluation of tomato (*Solanum lycopersicum* L.) under foot hills of Arunachal Pradesh**

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### **ABSTRACT**

Evaluation of thirty genotypes for various traits indicated that CHFTOM-9 (31.67) was earliest to first flowering. Days to 50 % flowering were lower in CHFTOM-22 (40.67). Maximum number of clusters per plant in CHFTOM-29 (13.13). Maximum number

of fruits per cluster in CHFTOM-4 (7.80). Maximum number of primary branch per plant (14.47) was recorded in CHFTOM-7 and CHFTOM-8 followed by CHFTOM-3 (14.13). Days to 50 % fruit ripening was significantly lower in CHFTOM-20(109.33).Maximum polar diameter was recorded in CHFTOM-12 (7.06). Highest equatorial diameter among the genotypes was recorded in CHFTOM-11 (6.74). Maximum average fruit weight (118.9g) was observed in CHFTOM-2. CHFTOM-30 had maximum pericarp thickness (0.75). Maximum fruit volume was recorded in CHFTOM-2 (131.67).Highest mean value for number of locules per fruit was found in CHFTOM-14 (5.33).The lowest number of locules per fruit was recorded in CHFTOM-4 (2.27). Maximum number of fruit per plant in CHFTOM-1 (56.81).Maximum number of seeds per fruit in CHFTOM-18 (288.60). CHFTOM-18 had the highest value of fruit acidity 0.82.Maximum total soluble solids (5.27) was recorded in CHFTOM-17. CHFTOM-8 had the highest ascorbic acid (65.33).CHFTOM-1 had maximum lycopene content (2.36). Maximum pH value was observed in CHFTOM-19 (5.09). The genotype CHFTOM-2 recorded highest fruit yield per plant (3.27).Maximum fruit yield was recorded in CHFTOM-2 (453.24).

## **Inoculation effect of *Mesorhizobium ciceri* and rhizospheric bacteria on nodulation and productivity of chickpea (*Cicer arietinum* L.) and soil health**

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### **ABSTRACT**

A field experiment was carried out at Pantnagar during 2005-06 to examine the interaction between 10 rhizospheric bacteria isolates with *Mesorhizobium ciceri* on nodulation, growth, yields and nutrient uptake by chickpea (*Cicer arietinum* L.). The experimental soil was sandy loam of pH 7.2 having 5.2 mg/kg Organic C, 140.2 kg/ha available N, 16.1 kg/ha available P and 282.5 kg/ha available K. The test crop variety was Pant G-186. Inoculated *Mesorhizobium* sp. alone, irrespective of rhizobacteria, increased the number and dry weight of root nodules numerically, by 23.2 and 23.1 % and plant dry weight significantly, by 3.2 % over uninoculated control at 60 DAS. It also gave numerical increases of 11.2 % and 13.0 % in grain and straw yields, 26.1 and 29.8 % in N uptake and 21.2 and 30.3 % in P uptake by grain and straw, respectively. Different rhizobacteria, irrespective of *Mesorhizobium* sp., gave increases of 77.2 to 58.7 % in nodule number and 13.3 to 65. % in nodule dry weight at 60 DAS, 20.0 to 57.7 % in grain yield, 12.9 to 44.1 % in straw yield, 17.8 to 85.4 % in N uptake by grain, 15.0 to 46.6 % in N uptake by straw, 5.5 to 63.8 % in P uptake by grain and 14.8 to 61.9 % in P uptake by straw over no rhizobacteria inoculation. All rhizospheric bacteria, except LK-754, LK-786, PUK-791 and KB-133 improved the grain and straw yields significantly. All rhizospheric bacteria, except LK-754, also recorded significantly more microbial biomass C, dehydrogenases activity and acid phosphatase activity in soil over no rhizobacteria inoculation. Interaction between the *Mesorhizobium* sp. and rhizobacteria was not significant. PUK-171 was found to be the best for most plant growth, yield and soil health parameters.

## **Targeted yield approach for optimizing the fertilizer prescriptions for chickpea**

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### **ABSTRACT**

To establish the relationship between soil tests and response of chickpea to applied fertilizers, a field experiment was conducted during 2003-2004 following Ramamoorthy's targeted yield approach on *Aquic Hapludoll* soils of Uttarakhand .Using the data on grain yield, initial soil test values, applied fertilizer doses and nutrient uptake, the basic parameters viz., nutrient requirement, contribution from soil and fertilizers were computed. It was found that nutrient requirement for production of one quintal of chickpea was 4.91, 0.63 and 3.27 kg N, P and K , respectively. Efficiency of soil nutrient was 25.54, 41.73 and 19.71 % while that of fertilizer 114.23, 15.38 and 109.08 % for N, P and K respectively. Making use of these basic parameters, fertilizer prescription equations were developed for chickpea (var. Radhey) and an estimate of fertilizer doses was formulated for a range of soil test values and desired yield targets. It was observed that fertilizer rates increased as yield targets of chickpea increased while its rates decreased as the initial soil test level increased.

## **Exploitation of heterosis among parthenocarpic and monoecious genotypes of cucumber (*Cucumis sativus* L.) under polyhouse**

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### **ABSTRACT**

Six parental lines and 15 F1 hybrids of cucumber obtained from half-diallel were studied to investigate the extent of heterosis for yield and its contributing characters under polyhouse. PCUCP-1, PCUCP-2 and PCUCP-4 were observed to be three top performing parents for fruit yield, producing 1094.99 q/ha, 1070.59 q/ha and 1069.25 q/ha, respectively. Appreciable heterosis in desirable direction was found over better parent and check parent for maximum characters except average fruit weight. A good extent of heterosis under polyhouse found for F1 hybrid of parthenocarpic x parthenocarpic genotypes. Crosses PCUCP-1 x PCUCP-3



(77.78%), PCUCP-3 x PCUCP-4 (74.53%) and PCUCP-2 x PCUCP-3 (53.25%) were found promising for fruit yield, which were parthenocarpic in nature.

## **Risk factors associated with occurrence of zoonotic diseases in rural community**

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### **ABSTRACT**

Zoonotic diseases are diseases which are naturally transmitted between vertebrate animals and man. People get affected all around the globe. The impact is more in rural areas than in urban areas. It has always been a challenge to deal with zoonotic diseases among people with facilities not at par. Poor people are more likely to suffer from zoonotic diseases for several reasons. Poor education, poor veterinary and public health services, poor sanitary conditions, close contact between animals and man are some. Rearing cheaper animals which are often less healthy and consumption of uninspected meat also increases the risk of getting infection. Improper nourishment increases the susceptibility to infectious diseases. Contact between livestock and wildlife in rural areas is another feature. The areas being more remote always have less access to public health care and veterinary care at its door. Therefore, the importance of zoonotic diseases in rural areas extends beyond the realm of public health. The study aimed to determine the health of villagers as well as animals of village Jainagar near Pantnagar affecting the agricultural production and harming the social structure of a community.

## **Changes in blood leukocyte and vaginal exfoliative cytology in normal and metritis affected post-partum crossbred attle metritis affected post-partum crossbred cattle**

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### **ABSTRACT**

The present study was conducted on 16 (Normal n=10 and metritis affected n=6) crossbred cattle aged 3-6 years. Metritis cattle were selected on the basis of pus flakes present in vaginal discharge. Total leukocyte count in blood was estimated in normal and metritis affected crossbred cattle. Significantly (P<0.01) higher leukocyte count was observed on day

7th, 14th, 21st and 28th postpartum. Vaginal epithelial cells (Parabasal, Intermediate, Superficial squamous and cornified) were also counted. During the counting of 100 such cells, the rafts, neutrophils and endometrial cells were also taken for counting, separately. Over all mean percentage of all the epithelial cells varied non-significantly whereas significantly ( $P < 0.01$ ) higher number of neutrophils and endometrial cells were observed on day 7th and 14th post-partum in metritis-affected cattle. Numbers of endometrial cells were also significantly ( $P < 0.01$ ) higher on 21st day post-partum in metritis affected cattle. Thus presence of endometrial cells and neutrophils in vaginal scrapings may be used as diagnostic criteria for endometritis along with other test. However, further work is warranted on larger number of animals.

### **Vaginal exfoliative cytological changes with respect to blood steroids during advanced gestation and early post-partum period in crossbred cattle**

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#### **ABSTRACT**

Blood estradiol 17- $\beta$  and progesterone were estimated by RIA and vaginal smears were prepared and stained for counting vaginal epithelial cells. Mean progesterone concentration during 205-215 days ( $2.88 \pm 0.65$  ng/ml) was significantly ( $P > 0.05$ ) lower compared to 235-245 days ( $6.95 \pm 0.67$  ng/ml) and 250-260 days ( $7.34 \pm 0.53$  ng/ml) of gestation. The concentration started declining from 265-275 days of gestation. Significantly ( $P > 0.05$ ) positive correlation ( $r = 0.670$ ) between progesterone and intermediate cells was observed. There was a significant ( $P > 0.05$ ) increase in estradiol 17- $\beta$  concentration from 250-260 days ( $57.25 \pm 7.10$  pg/ml) to 265-275 days ( $155.25 \pm 34.89$  pg/ml) of gestation. Significantly ( $P > 0.01$ ) positive correlation ( $r = 0.849$ ) between neutrophils and estradiol 17- $\beta$  was observed. Significantly ( $P > 0.05$ ) low progesterone ( $2.66 \pm 0.54$  ng/ml) and high estradiol 17- $\beta$  ( $671.42 \pm 112.73$  pg/ml) was observed during 2-3 days pre-partum, while concentration of both the steroids was significantly ( $P > 0.05$ ) decreased during 2-3 days post-partum. The results indicated that decline in steroids (estradiol 17- $\beta$  and progesterone) concentration 2-3 days pre to 2-3 days post-partum influenced the percentage of parabasal cells (rise) and intermediate cells (decline). Thus vaginal exfoliative cytology in conjunction with other techniques can be used as tool for projecting the circulating the sex steroids level.

### **Effect of vitamins and minerals on the growth, feed conversion ratio and meat production assimilation of *Cyprinus carpio* fry**

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### **ABSTRACT**

*Cyprinus carpio* fry with an average body weight of  $40.0 \pm 0.9$  mg and length  $19.0 \pm 0.6$  mm were stocked in experimental pools of 60 liter capacity for 60 days (5.4.2003-3.6.2003). The fishes were fed with diets comprising Deoiled Rice Bran (DORB) and Deoiled Mustard Cake (DOMC) @5% body weight. The diets were supplemented with varying doses of Vitamin C @ 30, 40 and 50 mg per kg feed (Experiment-I), zinc @ 40, 70 and 100 mg per kg feed (Experiment-II), and Vitamin+ Mineral mixture @ 3, 5 and 7 g per kg feed (Experiment –III). The controlled diet (DOMC and DORB in 1:1 ratio) was not supplemented with vitamins and minerals. Experiments I, II and III elicited maximum growth of fish at the doses of 50 mg/kg, 70 mg/kg and 5 gm/kg, respectively. Higher growth rate, feed conversion ratio and meat production assimilation were recorded in experiment –III followed by experiment –I and experiment –II in comparison to control diet (2.52, 3.05 and 28.28%, respectively). The study reveals that growth rate of common carp can be significantly increased by providing supplementary feed with required quantities of both vitamins and minerals.

### **A study of geotechnical properties of local soil mixed with fly ash**

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### **ABSTRACT**

Fly ash generation is expected to grow as coal would continue to remain a major source of energy. Safe disposal of the ash without adversely affecting the environment are major concerns. Hence, attempts are being made to utilize fly ash rather than to dump it. Fly ash is a powdery particulate material that has particle sizes ranging between fine silts and fine sands. It is one of the most commonly used pozzolans in the world. The major problem of fly ash lies in the fact that if not properly disposed, it pollutes air and water causing respiratory problems. To safeguard the interest of human life, wild life and environment an utmost care has to be taken while disposing and utilizing fly ash. This paper presents the results of investigation on the geotechnical parameters of local soil modified with varying fly ash content. Different percentages of fly ash (i.e. 20%, 40%, 60% and 80%) were added to the soil in order to evaluate the optimum moisture content, maximum dry density, specific gravity and unconfined compressive strength values. From the test results, it was observed that the increase in the percentage of fly ash content resulted in the increase in optimum moisture content and decrease in maximum dry density. Specific gravity values showed a decreasing trend with increase in fly ash content. Similar pattern was observed for unconfined compressive strength values.

## **Economical design and analysis of subunit microirrigation system**

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### **ABSTRACT**

Pressurized Pipelines with multiple outlets are used extensively for irrigation under microirrigation systems. In this research, a lateral pipeline with single lateral laid on the horizontal ground was designed. The diameter of both lateral and manifold were assumed to be three types of lateral diameters and five types of manifold diameters. Design was investigated using back stepwise method. The subunit pressure head variation was calculated and allocated to the lateral and manifold pressure head variation. The head loss of the lateral and manifold was calculated stepwise method up to full utilization of pressure head variation allocated to the lateral and manifold. The lateral and manifold lengths, discharges inlet pressure were obtained for each pipe sizes combination. The best combination that gave the minimum unit area cost was 16 mm lateral diameter and 40 mm manifold diameter. From the combination of diameters the result showed that the lateral and manifold lengths were 87 m and 72 m respectively. In the subunit the total lateral number obtained were 12 and a total lateral length was 1044 m having area coverage of 6264 m<sup>2</sup>. The minimum unit area cost of 0.501 Rs/m<sup>2</sup> was obtained from the best combination of the lateral and manifold diameters mentioned above.

## **Effect of moisture content on shelling characteristics of barnyard millet (*Echinochloa frumentacea*)**

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### **ABSTRACT**

Barnyard millet (*Echinochloa frumentacea*) is commonly grown millet in Uttarakhand state of India. Experiments were conducted to study the milling characteristics of barnyard millet (VL-172) at four moisture levels (8, 10, 12 and 14%, db). The brown millet and undehusked millet were maximum and minimum respectively at 10 % (db) moisture content and were found 48.9 % and 7.68 %, respectively. The husk content was higher at 10 and 12 % (db) of moisture content with the values of 28.23 % and 27.63 %, respectively. Though, the broken

was minimum at 14 % (db) moisture level but shelling index, describing the shelling phenomena, was maximum at 10 % followed by 12 % (db) of moisture level and values were found 0.7077 and 0.6632, respectively. Ash, protein, fibre, fat and carbohydrates of dehusked millet varied from 1.02-1.20 %, 8.03-9.08 %, 1.01-1.68 %, 2.62-2.92 % and 86.09-87.02 %, respectively during considered moisture levels.

### **Comparative evaluation of milling bi-products: finger millet seed coat (FMSC), chick pea husk (CPH) and wheat bran (WB) for their nutritional, nutraceutical potential and storage quality**

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#### **ABSTRACT**

Seed coats, husks and bran produced as bi-products during milling operation are rich sources of important micronutrients, dietary fibre and nutraceuticals. Present study is an endeavour to evaluate the nutritional components viz. proximate composition, minerals and nutraceutical potential in terms of dietary fibre, phytic acid, total phenolic content and total antioxidant activity as well as storage quality of finger millet seed coat (FMSC), chick pea husk (CPH), wheat bran (WB). The results of the study showed a highest amount of crude protein in WB (15.52 g%) followed by FMSC (11.64 g%) and CPH (5.17 g%). The crude fat and crude fibre content of CPH was found to be lowest (0.85%) and highest (51.45%), respectively, whereas total ash content was observed highest in WB followed by FMSC and CPH. The total dietary fibre content was found to be maximum in CPH (88.22g %) followed by FMSC (57.38g %) and WB (48.01g %). Soluble dietary fibre fraction of FMSC (6.38g %) was found slightly less than that of chickpea husk (6.80g %) but its synergistic effect with higher phenolic content makes it more efficient as antidiabetic agent. Besides, it contained highest amount of calcium (805.44mg%) and chromium (0.03mg%) which are very important minerals in diabetes management. Further, FMSC also possessed highest antioxidant potential in terms of total antioxidant activity (81.29%) and total phenolic content (2356.30 mg%) among the samples taken which make it suitable for storage at room temperature.

### **Nutritional and sensory qualities of finger millet incorporated muffins**

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#### **ABSTRACT**

Two varieties of finger millet ('PRJ1' and 'Bharsar Local') were taken for the study. The flours of both varieties were subjected to proximate analysis. The finger millet flour was

blended in various proportions (30, 40 and 50 per cent) with refined wheat flour and was used for the preparation of muffins. Control muffins were made out of refined wheat flour. Sensory, physical and nutritional qualities of the muffins were evaluated. Nutritional evaluation of the two varieties of finger millet showed significant differences in crude protein, crude fat, crude fibre, total ash, carbohydrate content, physiological energy, calcium and iron. Sensory evaluation of muffins showed that the muffins prepared by refined wheat flour and finger millet flour in the ratio of 70:30 obtained highest mean sensory score. The weight of muffins increased significantly, whereas, volume, specific volume and diameter decreased with increase in the amount of finger millet flour. There was significant difference between the total ash, crude protein, carbohydrate, and calcium and iron content of muffins from both the varieties. Nutritive value increased with the increase in the amount of finger millet flour. It can be concluded that finger millet flour incorporated muffins at the level of 30 per cent were most acceptable and nutritious.

### **Quality attributes of oven dried and freeze dried ripe papaya powder and its acceptability in some Indian recipes**

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#### **ABSTRACT**

A study was carried out to determine the drying characteristics of ripe papaya fruit using different drying methods. Papaya (*Carica papaya L.*) powder was prepared by two different methods viz. oven drying and freeze drying from ripe papaya fruit. The effects of different operating conditions on physical and chemical quality attributes were investigated. The papaya was cut into different thickness slices. The drying times were found as 7 to 9 h and 10-12 h for the oven and freeze drying, respectively. The drying time increased with the increase of sample thickness. Papaya powder was also analyzed for its various physicochemical characteristics i.e. moisture, total ash, crude protein, ether extractives, ascorbic acid, total carotenoids, non-enzymatic browning and organoleptic characteristics. Comparative analysis was done in both papaya powders. Total carotenoid and ascorbic acid content in freeze dried papaya powder was 15,535 µg/100g and 54.07 mg/100g, respectively. Sensory evaluation of papaya powder revealed that freeze dried papaya powder had better quality in terms of color, taste, flavor, appearance and texture as compared to oven dried papaya powder. Powder was incorporated in two Indian recipes viz. Ladoos and Semolina Pudding at 10 per cent and 20 per cent level of incorporation. Sensory evaluation of the products revealed that freeze dried papaya powder fortified products were more acceptable in terms of color, texture, taste and overall acceptability.

### **Physical, nutritional and sensory quality characteristics of stabilized rice bran bread**

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**ABSTRACT**

Rice bran, an important by-product of rice milling industry constitutes 8.0-11.0% by weight of brown rice and consists of outer brown layers of the kernel and the part of germ. Stabilized rice bran is one of the most potent sources of phytochemicals. It contains all of the vitamins, minerals, and other nutrients needed to help fight disease, ageing and to help promote health. Nutritional and functional properties of rice bran are well suited for bakery products like bread, cookies, muffins, snack food and *chapati*. Breads were prepared incorporating stabilized rice bran (SRB) at different levels 0, 5, 10, 15, 20 and 25%. The effect of adding stabilized rice bran to refined wheat flour was investigated through sensory evaluation, physical characteristics and nutritional composition of stabilized rice bran incorporated breads. In general, the sensory scores and physical characteristics of breads decreased with increase in incorporation of stabilized rice bran. However, bread made up to 15% incorporation of stabilized rice bran was rated acceptable. Nutrient composition of bread had considerable increase in moisture, crude protein, crude fiber, dietary fiber, calcium and iron content with an increase in stabilized rice bran incorporation.

**Evaluation of oat (*Avena sativa*) incorporated chapatti for Glycemic index**

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**ABSTRACT**

The present study was undertaken to develop oat incorporated chapatti for diabetic patients. Two varieties of oat UPO-94 and UPO- 212 were taken. Both of these two varieties of oat were evaluated for nutrient composition, dietary fiber, gluten content and physical characteristics. Oat flour and wheat flour were blended in a ratio of 0:100, 25:75, 50:50, 75:25 and 100:0 respectively. Control consisted of wheat flour chapatti. The chapatti from both the varieties having a composition of 25:75 (oat flour and wheat flour) were selected best on the basis of sensory evaluation. According to proximate analysis, it was found that moisture content of different varieties ranged from 6.97 to 9.53 per cent and had significant difference. Crude protein content ranged from 15.07 to 17.29 per cent. Total ash content of varieties was significantly different and ranged from 3.07 to 3.56 per cent. Crude fiber content ranged from 7.62 to 8.89 per cent and had significantly different. Carbohydrate content and physiological energy value of varieties ranged from 63.51 to 67.75 per cent and 378.36 to 393.10 kcal/100g respectively. There was significant difference in the mineral composition and total dietary fiber content of varieties. The Glycemic index (GI) of chapatti in a ratio of 25:50 (oat flour and wheat flour) for both the varieties, best selected by sensory evaluation was observed significantly lower for both varieties (UPO-94 and UPO-212 as

36.53, 31.88 respectively) than control chapatti (59.44). Oat incorporated chapatti were found nutritious and have hypoglycemic effect.

## **Assessment of work environmental and physiological cost of nurses working in shift pattern in hospitals of Uttarakhand**

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### **ABSTRACT**

The investigation was planned to study environmental parameters at nurses workplace, to study environmental conditions during field experiments, to assess physiological parameters i.e. BP, pulse rate, heart rate and energy expenditure rate and analyze variance for these. Purposive-cum-random sampling technique was used to select study area. Uttarakhand state was selected from which districts Udham Singh Nagar and Nainital were chosen. Total of 120 nurses from 5 government, 6 private hospitals were selected and out of this, 12 nurses were selected for experimental group. Major problems were reported as poor air circulation and overall poor physical environment in patient wards. On the basis of blood pressure and pulse rate, heart rate, energy expenditure rate, group II and III activities were more tiring as compared to other group of activities. The results were significant at  $P < 0.01$ , indicating average blood pressure was significantly higher in group 3 activities i.e 96.16 as compared to others.

## **Assessment of knowledge increment on nutrition and health among adolescent girls of Uttarakhand state**

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### **ABSTRACT**

Various studies and nutritional surveys showed that undernutrition is a prevalent problem among school going children and adolescent due to intake of inadequate diet and negligence towards nutritious foods. Adolescence is the period of growth spurt in which overall



development takes place and in this period prime importance should be given to nutrition. Nutrition education can be the best way to overcome nutritional related problems through creating nutrition awareness. This study was conducted to assess the nutritional awareness of adolescent girls (12-18 years), to educate them about nutrition and health and to adjudge the impact of nutrition education on the knowledge level of selected adolescent girls. For conducting this study 6 schools were selected from district Udham Singh Nagar in Uttarakhand state. The aim was to provide nutrition education of school going girls and the girls were selected from 7th class to 12th class. Thus a total number of girls were 1889. The mode of education was lecture method with the help of flip chart. Pre and post test was conducted to know the knowledge level. Results showed that there was 41.9 per cent increase in knowledge and the percentage of increase in knowledge was affected by the attendance percent of the students in the class.

### **Screening of Sorghum germplasm for resistance to anthracnose caused by *Colletotrichum graminicola***

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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.*

### **Cooking quality evaluation of four newly released rice varieties of Pantnagar**

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### **Attitude of mothers towards gender socialization of children with in the family: A rural perspective**

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