Growth and yield of fish under high-density stocking and phased harvesting in rice-fish system

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ABSTRACT

This study was carried out to enhance the productivity of rice-fish system following the management strategies like high-density initial stocking and phased harvesting, when the growth curve of carp and catfish starts to slow down. Impact of phased harvesting on overall growth performance of carp and catfish was reflected in faster growth of all species after 90 days of rearing, probably due to periodic phased harvesting that minimized the competition for food and space. Comparative lower apparent feed conversion ratio (1.78), higher survival rate 62.28±4.44 and higher fish yield (8.01±1.72 t/ha were also recorded in T_1 (rice-fish culture with phased harvesting) than T_2 (rice-fish culture without phased harvesting). The highest rice yield (7.6 t/ha) was recorded in T_1 resulting from increased number of panicles per unit area as well as number of filled grains /panicle. Increase in rice yield over its monocrop (T_3) was, higher in T_1 followed by

T_2 because of improving soil fertility, recovering lost energy, adjusting energy flow by consuming plankton, weeds, insect and bacteria which used to compete with rice for nutrient. From economic point of view T_1 also recorded better performance over other treatments. Treatment T_4 was designed with only carp and cat fishes provided with a commercial fish feed, 'Saudi-Bangla' (32.10% crude protein) regularly. Overall performances indicated that this eco-friendly dual production system (rice and fish) and on-dyke horticulture technology

generated a profitable return in a shortest possible time and helps in improving nutritional security, socio-economic status and employment

opportunity.

Key words: Growth performance, high-density stocking, phased harvesting and rice-fish culture.

Journal of Crop and Weed 5(1): 1-10(2009)

Studies on heterosis and yield stability in improved mulberry hybrids under irrigated gangetic alluvial soils of West Bengal

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ABSTRACT

Eight newly developed mulberry (Morus sp.) hybrids viz., C-2036, S-1908, C-2037, C-2038, C-2039, C-2040, C-2041 and C-2042 were evaluated against S-1635 as check variety for growth, yield, physio-biochemical and bioassay parameters under irrigated conditions and zonal schedule of package of practices for cultivation in the alluvial soils of Gangetic plains of West Bengal. Among the test hybrids, C-2038 was recorded to have higher number of shoots per plant (10.93), total shoot length (1059.95 cm), unit leaf area (284.06 cm^2), unit leaf weight (4.87 g), net photosynthetic rate (13.53 µ mol $m^2 s^{-1}$), physiological water use efficiency (1.028), carboxylation efficiency (0.0442), chlorophyll content (2.53 mg g^{-1} fr wt), total soluble protein (31.44 mg g^{-1} fr wt), total soluble sugar (37.41 mg g^{-1} fr wt) and leaf yield (55.23 mt/ha/year) and better economic parameters of cocoon showing its superiority over check and other test hybrids. Heterosis was studied for leaf yield and its attributing characters in 8 hybrids developed. Significant positive heterosis ranging from 5.95 to 159.31% over better parent, 13.92 to 159.31% over mid parent and 1.50 to 27.79% over standard variety (S-1635) was observed among the crosses for leaf yield. The leaf yield performance of eight hybrids and one check was tested for 3 years through stability analysis for 5 crop seasons per year. Significant genotype × environment (G × E) interaction was observed. Variance for deviation from regression (S_{di}^2) of hybrids S-1908 and C-2039 did not differ significantly from zero. The b_i value of these two hybrids is also not significantly different from unity hence these may be considered to be stable ones. The hybrid C-2038 having b_i not significantly different from unity (1.023) and moderate but significant S_{di}^2 (0.35) emerged as a high yielder with high heterotic value for leaf yield. This hybrid has been recommended for national trial before field level exploitation and S-1908 and C-2039 may be considered as stable parents in future breeding programmes

Keywords: Biochemical, heterosis, leaf yield, mulberry, physiological and stability.

Journal of Crop and Weed 5(1): 11-18(2009)

Impact on productivity of mulberry leaf and cocoon under institute village linkage programme in Murshidabad district

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ABSTRACT

Central Sericultural Research and Training Institute has developed a number of improved sericultural technologies / packages and extended these to the seed farmers of Banjetia village of Murshidabad district with the objective of development of a model sericulture village through IVLP approach as well as generation of quality seed cocoons. The benchmark yield related to mulberry leaf and cocoon was 16.0 mt/ha/yr and 15.0 kg/100dfls respectively. Improved package of practices for mulberry cultivation and silkworm rearing were demonstrated and need based training was also provided to the target group. Within a period of four years since implementation of the programme, the average leaf and cocoon yield registered an improvement of 68.75% (27.0 mt/ha/yr) and 78.33% (26.75 kg/100 dfls) respectively, which significantly has increased farmer's socio-economic condition.

Key words: Cocoon productivity, leaf productivity, IVLP and socio-economic condition

Journal of Crop and Weed 5(1): 19-22(2009)

Effect of phosphorus on growth, yield and nutrient uptake of rainfed mulberry (*Morus alba* l.) and its economics in Chotanagpur plateau of Jharkhand

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ABSTRACT

A field experiment was conducted at Regional Sericultural Research Station, Ranchi, Jharkhand during 2001-2004 to study the effect of graded doses of phosphorus on mulberry (Morus alba L.). Graded doses of phosphate (0 to 60 kg P_2O_5 $ha^{-1}yr^{-1}$) along with recommended doses of nitrogen and potash were applied to a low–P sandy loam yellow-reddish coarse textured soil under rainfed condition. Analysis of three years' pooled data revealed that the growth attributes, yield, nutrient uptake, net return and benefit : cost ratio were influenced significantly due to hosphate application up to 60 kg P_2O_5 $ha^{-1}yr^{-1}$.

Key words : Mulberry, phosphorus, nutrient and rainfed.

Journal of Crop and Weed 5(1): 23-26(2009)

Economics of gherkin production: analyses of returns to fixed factors of production and resource use efficiency in southern karnataka

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ABSTRACT

Results of the study showed that total costs of gherkin production was Rs.37360.00 per acre among farmers growing the 2-grade gherkin crop and farmers growing 3-grade gherkin crop incurred a cost of Rs. 36653.11 per acre. The return per rupee of expenditure was higher in two grade gherkin crop (1.37), than in the three grade gherkin crop (1.12). The gherkin production contributed substantially to the fixed

factors of production as revealed by the cost concepts and income measures used in the analysis. The quantum of human labour employment

generated under 2-grade gherkin crop was 349.12 mandays per acre and it was lower in the 3-grade gherkin crop at 331.15 mandays per acre. In three grade crop gross income was significantly and positively influenced by human labour and number of harvesting days. The ratio of MVP to MFC was greater than unity for FYM, fertilizer splits, nitrogenous fertilizer, number of irrigation, harvesting days and human labour, these resources were under-utilized in the production process, suggesting that there was still scope for increasing the use of

these resources to get increased returns in case of gherkin crop. It can be concluded that gherkin production is highly profitable and there is

further scope to augment profits by the increased use of resources.

Key words: Allocative efficiency, contract farming, MFC and MVC

Journal of Crop and Weed 5(1): 27-33(2009)

Effect of potassium on growth, yield and nutrient uptake of mulberry (*Morus alba* L.) in eastern ghat region of Orissa

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ABSTRACT

A field experiment was conducted at Regional Sericultural Research Station, Koraput, Orissa to study the effect of graded doses of potassium on mulberry (*Morus alba* L.). Graded doses of potash (0 to 60 kg K_2O $ha^{-1}yr^{-1}$) alongwith recommended doses of nitrogen and phosphorus were applied to a medium–K sandy loam red soil under rainfed condition. Analysis of three years' pooled data revealed that the
growth attributes, yield, nutrient uptake, net return and benefit: cost ratio were influenced significantly due to potash application up to 60 kg
K_2O $ha^{-1}yr^{-1}$.

Keywords : Graded doses of potash, mulberry, potassium and rainfed condition.

Mulberry is a deep-rooted perennial plant,
2001 - 2004 and the plantation was maintained

Journal of Crop and Weed 5(1): 34-37(2009)

Organic farming approach for sustainable quality leaf production in mulberry (*Morus alba* L.) var. S-1635 under irrigated condition

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ABSTRACT

A field experiment was conducted at Central Sericultural Research and Training Institute, Berhampore to develop a sustainable organic farming package in mulberry cultivation under irrigated condition. Analysis of 5 crops data revealed statistically significance of the on treatments. Maximum plant height, no. of branches/plant, leaf area, LAI and leaf yield were recorded in T_2 (Control i.e. traditional practice- 20mt FYM/ha/year + 336N:180P:112K kg/ha/year) followed by T_7 (15mt VC/ha/year + biofertilizers + 50% RDF and T_3 (30mtVC/ha/year). Highest leaf yield (6,601.92 kg/ha/crop) was recorded in T_2 followed by T_7 (5,911.38 kg/ha/crop) and T_3 (4,884.73 kg/ha/crop). Maximum leaf area was observed in T_2 (157.73 sq. cm) followed by T_7 (137.50 sq.cm). The highest LAI was found in T_2 (5.73) followed by T_7 (5.26). The maximum

(79.48%) leaf moisture was observed in T_5 (25mt VC/ha/year + green manuring followed by T_2 (78.82%) and T_7 (78.21%).

With regard to the leaf quality study, it was found that maximum in T_2 (25.44mg/g fw) followed by T3 (25.35mg/g fw) in respect of total soluble protein while, T_3 (37.42mg/g fw) followed by T_4 i.e. 30mtVC/ha/year +Vermi wash as foliar spray (34.60mg/g fw) recorded total soluble sugar compared to control (31.52mg/g fw). The trend of above 5 crops result revealed

that though the leaf yield is found still higher in T_2, but it is apparent that there is an increasing trend in leaf yield and other

important parameters in T_7 and T_3. It was also observed that there is a gradual improvement in leaf yield and the yield difference is reduced from 22.84% to 4.96% against control in T_7 where as the yield difference is reduced from 53.09% to 18.03% in T_3 against control.

***Key words*:** Biofertilizer, green manure, leaf quality, organic farming and vermicompost

Journal of Crop and Weed 5(1): 38-43(2009)

Effect of planting geometry on leaf yield and quality of mulberry *chawki* garden

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ABSTRACT

Silk is the most prized natural fibres and known as "Queen of Textiles" for its gorgeous fall, grace and texture, produced by mulberry silkworm Bombyx mori L. It is a monophagous insect feeds solely on mulberry (Morus sp.) leaves which play most important role (38.2%) among the various factors that influence the production of quality cocoon crop.The garden of mulberry meant for young age silkworm rearing is known as " Chawki garden". Soft, succulent leaves rich in protein and carbohydrate are required for chawki worms. Keeping this in mind, an attempt was made to instigate the effect of planting geometry in the form of paired row plantation [(150 cm+90 cm) x 60 cm] and spaced plantation (90 cm x 90 cm) in Chawki mulberry garden against the present farmers practice of 60 cm x 60 cm plantation. Pooled data of five crops revealed that plant height, no of branches/plant, no of leaves/plant and leaf yield/plant were significantly superior in the chawki leaves of paired row plantation in comparison to others. Important biochemical parameters were also found superior in paired row plantation. While feeding the Chawki worms with mulberry leaves harvested from the above three types of planting geometry, it was found that cocoon yield/100 dfls, Shell %, Filament length and Reelability % were also significantly superior in paired row plantation.

Key words: Chawki garden, mulberry, planting geometry, paired row and spaced plantation, chawki worms, quality cocoon crop

Journal of Crop and Weed 5(1): 44-47(2009)

Yield potential and economics of mulberry – based parallel multiple cropping system under irrigated condition

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ABSTRACT

A study was conducted on the feasibility of suitable intercropping in new mulberry garden under irrigated condition at the Central Sericultural Research and Training Institute , Berhampore, West Bengal during the period from 2005 – 08. The season specific and short duration intercrops, two in each season viz, green gram and black gram (March – May), maize and cowpea (June-August), toria and pea (

Sept.- Nov.) and spinach and amaranth (Dec.- Feb.) were grown in 1:1 and 1:2 rows within mulberry (var. S-1635) planted in 60 x 60cm

and 90 x 90cm spacing respectively. Maximum yield of intercrops as well as net profit per hectare were obtained in 90 x 90cm spacing with the combination of mulberry with green gram in March – May (Rs. 8344/-), mulberry with cowpea in June-August (Rs. 10,114/-), mulberry with toria in Sept-Nov (Rs. 4520/-) and mulberry with amaranth in Dec.-Feb (Rs.7880/-) seasons over Rs.7442/-, Rs.8759/-, Rs.4320/- and Rs. 6963/- in 60 x 60cm respectively. Further, it also showed better benefit : cost ratio under 90 x 90cm spacing in all the seasons.

***Key words*:** Irrigated mulberry, net monetary return and parallel multiple cropping

Journal of Crop and Weed 5(1): 48-52(2009)

Line × Tester analysis of combining ability in tomato (*Lycopersicon esculentum* Mill.)

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ABSTRACT

Nine parental lines were crossed in Line × Tester fashion to estimate heterosis and combining ability in tomato for fruit yield, yield components and fruit quality traits. Involvement of both additive and non additive gene action was operative for the control of fruits/plant,
fruit weight, locules /fruit and equatorial diameter of fruit. All the fruit quality characters like, TSS and lycopene contents of the fruit were
governed by non additive gene action. Taking into consideration the per se performance, heterosis and SCA effect in the hybrid, H-24 × NF-
31 and H-24 × Hissar Arun were the best hybrid.

***Key Words*:** Combining ability, fruit character and heterosis.

In any sound breeding programme, the

RESULTS AND DISCUSSION

Journal of Crop and Weed 5(1): 53-57(2009)

Studies on flowering and receptivity of stigma in mulberry (*Morus* sp) germplasm

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ABSTRACT

Seven species of mulberry namely Morus indica (x, hp and black), M. rubra, M. alba, M. rotundiloba, M. cathyana, M. australis and M. multicaulis maintained in the germplasm bank of Central Sericultural Research and Training Institute, Berhampore, West Bengal, India were studied for flowering and reproductive behaviours specially receptivity of stigma during regular flowering season January to April. Days taken on flowering were 2.5 – 6 days and 2.6 – 5.7 days in exotic and indigenous, respectively. Receptivity period of stigma revealed that pollination index (PI) was significantly higher between 10th and 14th day of emergence of catkins from the scale leaves. PI was low before 8th and after 18th day of bagging
in all the species. Significant positive correlation observed between the seed set and size of sorosis, seed set and weight of 100 seeds and seed set and seed germination indicated that the higher receptivity period of stigma lies between 10th and 14th
day which increased the number of seeds per sorosis alongwith sorosis weight, size, seed weight as well as rate of seed germination. The information may be useful for the breeders for synchronizing of flowering in parents and creating heterozygous progenies in mulberry.

Key word: Flowering, mulberry and stigma receptivity

Among the mulberry species available in
mulberry species for using them in breeding

Journal of Crop and Weed 5(1): 58-60 (2009)

Participation analysis of South Asian rural women towards sustainable development in agriculture.

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ABSTRACT

In Asia most of the countries are in developing stage where a high proportion of women are employed in agriculture. The official statistics do not always reveal fully the actual status and role of women in agriculture but such data provides adequate insight for economic analysis and policy decision in agricultural planning, food security allevation of rural poverty, rural development and agrian reforms. The present paper explores the participation trend of female workforce in agriculture for five leading SAARC nations i.e. Bangladesh, India, Nepal, Pakistan and Sri Lanka. The work participation rate (WPR) of female agricultural population is analyzed. A hierarchical clustering of economically active female agricultural population (EAFAP) of the SAARC nations is considered. Also an analysis has been done to study the influence of increased female literacy rate on female agricultural population. Finally an effort has been made to project the future participation in EAFAP.

Keywords: EAFAP, mean absolute percentage error (MAPE) and WPR.

Journal of Crop and Weed 5(1) : 61-66 (2009)

Multivariate genetic divergence in brinjal (*Solanum melongena* L.)

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ABSTRACT

The investigations were carried out in Department of Vegetable crops, Bidhan Chandra Krishi Viswavidyalaya, West Bengal to examine the

magnitude of genetic divergence among 70 entries of brinjal. The lot of 70 entries (10 elite varieties, 16 stable breeding lines and 44 indigenous cultivars of India and Bangladesh) based on multivariate analysis using Mahalanobis' D^2-statistic employing 18 growth, yield components, fruit yield and fruit quality could be grouped into 6 clusters. Relatively lesser number of clusters, moderate and consistent intra-cluster divergence and low contribution of all the characters towards divergence indicated that either common character constellation was manifested simultaneously in the genotypes or mutual balancing in character expression was operative the genotypes of brinjal.

Key words : *Cluster, divergence, genotype and genetic distance.*

autumn-winter season (September to March) for 18

Journal of Crop and Weed 5(1): 67-70 (2009)

Differential response of clay-organic complex and organic-free clay isolated from mulberry growing brown forest soils towards phosphorus adsorption

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ABSTRACT

Clay-organic complexes (COC) and organic-free clays (OFC) have been isolated from different locations under mulberry growing brown forest soils of Kalimpong. Homo-ionic suspension of isolated COC and OFC has been equilibrated with graded concentrations of phosphorus (P) at 300 ±1o K to study the adsorption pattern of the latter. The P adsorption data obtained for both the COC and OFC have
been significantly fitted to Freundlich adsorption isotherm (R^2 = 0.60 to 0.93**) while Langmuir adsorption isotherm is mostly fitted to the*
adsorption data pertaining to OFC (R^2 = 0.82 to 0.99**). OFC registers higher strength of adsorption (K) and affinity of adsorbate to adsorbent (n) over COC in terms of Freundlich isotherm and thus confirms the positive effect of organic matter in association with clay towards the reduction of P fixation. Poor fit of Langmuir isotherm to the P adsorption data by COC corroborates the above finding. However, P adsorption by OFC in terms of Langmuir isotherm registers varying bonding energy (K) and adsorption maxima (b) for the soils of different locations. Interestingly, OFC isolated from the soils of Reshambari, Sangsey and Bhalukhop exhibit similar adsorption maxima but differentiate each other substantially in terms of tenacity for retention of P as evinced by varying K values. Attempts have also*
been made to relate the adsorption parameters with relevant soil characteristics.

Key words: Brown forest soil, clay-organic complex, mulberry, organic-free clay and phosphorus adsorption.
Journal of Crop and Weed 5(1) 71-76 (2009)

Food and nutritional security: how much and for whom?

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ABSTRACT

The study based on secondary data reveals that in spite of producing huge amount of surplus of total cereals and food grains, per capita per month consumption of total cereals is declining continuously in major states of India during period 1991 and 2001 and a sizeable section of poor people find it difficult to collect square meals everyday and even thousands of

people die every year on starvation. Again, percentage of poor people consuming less than 70 percent of the total requirement is higher in both rural and urban areas in comparison to APL persons of major states of India in 1993-94 and

this differential calorie intake has further aggravated in 1999-00 in both areas. So, when food grains stock is virtually spilling over on the road, millions of people are suffering from hunger and malnutrition. Only universal PDS or targeted PDS is not sufficient to take care of food and nutritional security of BPL persons unless it is coupled with sufficient employment generation programmes to increase the purchasing power of these downtrodden people which will ultimately increase access to food and help the poor to lead a healthy and active life.

Key Work: Food security, calorie intake, food supply status, food supply index and self-sufficiency ratio.

Journal of Crop and Weed 5(`1): 77-90 (2009)

New strategy for quality assessment in *Bombyx mori L.(Nistari)* through larval critical weight

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ABSTRACT

Quality and performance of insects is dependent on weight gain from feeding. The unchangeable biological parameter like larval critical weight ***(Lcw)*** *is the basis for developing different criteria for insect quality. The* ***Lcw*** *has been described as a threshold weight above which normal process of pupation occurs. The* ***Lcw*** *in Nistari, Bombyx mori was 938.46 and 1118.15 mg for average sized male and female final instar larvae which were 49.60% and 53.13% of the larval maximum weight* ***(Lmw)*** *of males and females respectively. There was a consistent proportionate decrease in weight of about 0.66 % for males and 0.58% for females from larval maximum weight to the pupal weight of Nistari. There was also a consistent proportionate decrease in weight from the pupa to adult and thus, the total weight decrease from* ***Lmw*** *to adult was about 0.82 % and 0.72% for males and females respectively. A positive correlation was derived between female pupal weight and fecundity. A model representing the various fresh weight changes in relation to the* ***Lmw*** *has been suggested for the Nistari.*

The results of the study are largely consistent with those carried out on other species of Lepidoptera and using ***Lcw*** *a new strategy for quality assessment of Bombyx mori has been described. Thus, quality assessment and its control is the key in regulating and sustaining the performance of an insect*

Key Words: Larval critical weight, larval maximal weight, latent feeding period and silkworm.

Journal of Crop and Weed 5(1): 91-95 (2009)

Growth and yield of lentil (*Lens culinaris* L.) as affected by boron and molybdenum application in lateritic soil.

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ABSTRACT

Field experiments were conducted during winter seasons of 2004-05 and 2005-06 at the RRSS, Sekahmpur, BCKV, to study the effect of B and Mo to the growth, and yield of lentil grown on inherently poor lateritic soil. The lentil (cv. B77) was raised with application of B and Mo either separately or in mixture through foliage or to soil along with NPK fertilizers. The leaf area index, above ground dry matter and crop growth rate increased with the application of B and Mo. Soil application of B coupled with foliar application of Mo enhanced the yield

attributing characters and yield of the lentil crop. The study indicated that growing of lentil in lateritic soils depleted the nutrients particularly micronutrients which resulted in loss of yield and could be recovered, if the relevant micronutrients are supplemented through

appropriate application methods and dosage.

***Key words**:* Boron, CGR, molybdenum and LAI.

Journal of Crop and Weed 5(1): 96-99 (2009)

In vitro mass multiplication with genetic clonality in elephant garlic (*Allium ampeloprasum* L.)

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ABSTRACT

A novel protocol was developed for Allium ampeloprasum L. to enhance in vitro cloning through multiple shoot induction. First bud induction was recorded from shoot tip within 6 days in MS with 0.25 mgl^{-1} NAA and 2 mgl^{-1} Kn. A maximum of 3 buds from a single explant
appeared within the 15 days after the first bud induction. MS with 2.5 mgl^{-1} Kn plus 60 mgl^{-1} of adenine sulphate proved best for multiple shoot proliferation resulting in 6 shoots per inoculated shoot bud within next 30 days. Maximum 5 roots per shoot were recorded when cultured on MS with 0.5 mgl^{-1} IAA for 20 days. The combination of soil, sand and vermicompost with intermittent water spraying proved to
be the best for hardening of micropropagated plantlets ensuring 90% success in next 25 days. Selected ISSR primers were used to ensure genetic clonality for the in vitro generated propagules.

Key words: Acclimatization, *Allium*, *in vitro* cloning, ISSR, and multiple shoot

Journal of Crop and Weed 5(1): 100-104 (2009)

Characterization of different *Lycopersicon* species

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ABSTRACT

Three wild relatives of Lycopersicon namely, L. pimpinellifolium, L. cheesmanii and L. peruvianum along with five varieties /lines of cultivated tomato belonging to L. esculentum were employed for species characterization of Lycopersicon.. For this purpose, growth characters namely, plant height, leaflet width, leaflet length; flower characters namely number of flower / cluster, sepal length, petal length,, style length, anther length; fruit characters namely fruit/cluster, days from anthesis to turning, days from turning to ripening, equatorial length, longitudinal length, pericarp thickness, fruit weight, locules / fruit were studied. . L. esculentum appeared to have close relation with L. pimpinellifolium compared to L. peruvianum.

***Key words*:** Characterization, *Lycopersicon* species and wild relatives

Journal of Crop and Weed 5(1): 105-107 (2009)

Analysing and forecasting trade behaviour of major pesticide trading countries in the world

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ABSTRACT

To supply two meals per day to the ever increasing population of the world with limited resources, protection of crops against pests is an essential components in augmenting food production. Use of pesticides in this direction play is well established. Though hundreds of countries in the world use pesticides for the purpose, production and contribution of only a few countries play vital role in supply of pesticides through out the world. The present study is an attempt to visualize the nature of changes that have taken place in the major countries w.r.t the trade of pesticide i.e. import and export. It is revealed from the study that on an average 10-12 countries contribute more
than 75% of the total world pesticide market. If supply of pesticides from these countries to the food growing zones get hampered by any means, the hole world will under food crisis. The study also revealed that there have been a quantum jump in the trade surplus of pesticides
of these countries during last two decades and forecasting of export-import behaviour of these countries suggest that this trend will continue. On the basis of best fitted model forecasting values of the major pesticides countries w.r.t their import and export potentials have
been suggested.

Key words : Export, forecasting, import and pesticides.

In a country like India, the second most
which situation specific and judicious use of pesticide

Journal of Crop and Weed 5(1): 108-115 (2009)

Manifestation of hybrid vigour in brinjal (*Solanum melongena* L.)

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ABSTRACT

Evaluation of 29 F_1 hybrids indicated manifestation of pronounced hybrid vigour for fruit yield and most of the yield components in them. It
established brinjal as a prominent candidate for commercial exploitation of heterosis provided consumer acceptable character constellation
are framed in the hybrids. Selection of hybrids should be based on both manifestations of heterosis and per se performance of the hybrids as both all the time did not match. Outstanding hybrids emerged from the study were BCB 75 × BCB 45, BCB 38 × BCB 1 and BCB 23 × BCB 42. This report suggested the possibility for getting commercial exploitable heterosis in the hybrids with the involvement of locally adapted cultivars as parental lines.

Key Words: Hybrid vigour, heterosis, fruit yield and brinjal

Brinjal offers much scope for improvement
fruit yield and other important economic traits like

Journal of Crop and Weed 5(1): 116-118 (2009)

Effect of different levels of boron and molybdenum on growth and yield of mung bean [*Vigna radiata* (L.) Wilczek (cv. *Baisakhi Mung*)] in red and laterite zone of West Bengal

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ABSTRACT

A field experiment was conducted during 1999 and 2000 kharif (rainy) season in a sandy loam soil (mixed hyperthermic paleudalfs) at Jhargram, Paschim Medinipur in the Red and Laterite zone of West Bengal to investigate the effect of four levels of boron and three levels of molybdenum on growth and yield of Mung Bean [Vigna radiata (L.) Wilczek (cv. Baisakhi Mung)]. Boron, molybdenum and their combined application significantly improved all the growth and yield attributing characters of Mungbean. The synergistic influence of these two micronutrients helped augmenting growth and yield of the crop.

Key words: Boron, growth, molybdenum, mungbean, and yield.

Journal of Crop and Weed 5(1): 119-121 (2009)

Targetting extension intervention for promotion of sunflower productivity in coastal saline zone of West Bengal

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ABSTRACT

A study was undertaken in South 24 Parganas of West Bengal to find out the problems faced by three groups of sunflower growers of costal saline terrain, namely Resource Rich (RR), Resource Moderate (RM) and Resource Poor (RP). It was observed that identified problems differed across the groups. Rank correlation coefficient was significant between RM and RP farmers in respect of input related, technology transfer related and marketing related problems and the same was significant between RR and RM farmers with the problems related to nature. In solving the problems, significant association was observed between RM and RP farmers with suggestions related to technology transfer and infrastructural development and policy matter. There was significant association both in between RR -RM and RM - RP farmers with suggestions regarding policy matter which implies for targeting of extension activities for production of sunflower in particular in this weakly integrated and vulnerable are duly considering the resource based of the farmers as potential factor.

Key words *: Bank loan, imputs, marketing, Sunflower.*

Journal of Crop and Weed 5(1): 122-126 (2006)

Effect of bio-fertilizers on growth, yield and quality of onion cv. sukhsagar

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ABSTRACT

A field experiment was carried out during the winter season of two consecutive years 2006-07 and 2007-08 to study the effect of six combinations of bio-fertilizers and two chemical fertilizers on onion cv. Sukhsagar. The treatments were Azotobacter+PSB, Azotobacter+VAM, Azotobacter+Azospirillum, Azospirillum+PSB, Azospirrilum+VAM, PSB+VAM, NPK 100%, NPK 50% and Control. The height of the plant was maximum (43.46cm) with the application of Azotobacter+VAM. No. of leaves, no. of inflorescence / plot and bulb diameter were maximum of Azotobacter+Azospirillum. Azotobacter+Azospirillum and NPK 100% gave maximum length of bulbs(6.03cm). The maximum number of scale per bulb (9.81) was counted from NPK 50%.The plants raised under NPK 100% produced the maximum bulb weight 67.45g. TSS % was found maximum (12.29%) from NPK 100% but the highest reducing sugar (1.420%) and starch percentage (6.27%) were noted from NPK 50%. The total loss of weight (%) upto 60 days, was found minimum (11.5%) from Azotobacter+PSB followed by Azotobacter+Azospirillum (14.32%). It is therefore, concluded that Azotobacter+Azospirillum combination is
the bestfor onion as compared to others so far as the sustainability in production and environmental consideration are concerned.

Key words: *Azotobacter, Azospirillum, PSB, starch and VAM..*
Journal of Crop and Weed 5(1): 127-130 (2009)

Identification of suitable early *rabi* onion varieties under West Bengal condition

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ABSTRACT

Promising kharif onion cultivars or breeding lines developed at different at different Agricultural Universities and National Research Centre for Onion and Garlic, Pune have been evaluated under different temperature regimes by three plantings in field condition under tropical-humid conditions to assemble the basic information on the possibility of growing onion under early rabi condition in the Gangetic

plain of West Bengal. Average day/night temperature of 20° to 21°C coupled with rainless condition has been found suitable for growing early onion in the humid condition in the Gangetic alluvial region of West Bengal. Growing early-rabi onion with planting of seedlings in the first week of October employing the varieties like, Baswant 780, Agrifound Dark Red, Arka Pragati and Phule Safed and harvesting the

bulbs during last week of February appeared to be the best.

***Key words*:** Onion, *early-rabi* and temperature

Journal of Crop and Weed 5(1): 131-135 (2005)

Integrated nutrient management on growth, yield and economics of maize (*Zea mays* L) under terai region

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ABSTRACT

A field experiment was conducted during the Kharif season of 2007 and 2008 to study on the effect of integrated nutrient management on maize. The experiment was laid out in Randomized Block Design with eight treatments and three replications. The results indicated that T_8 (25% RDF + 5 + Vermicompost ha^{-1} recoded significantly higher LAI and dry matter production, cob length, grain yield and (50% RDF + 5 t FYM ha^{-}) uptake of nitrogen, phosphorus and potassium over other treatments. In terms of economics T_5 fetched higher net returns (Rs. 21256.38) and T_3 (75% RDF + 2.5t FYM ha^{-1}) recorded the highest B: C ratio (1.40).

Key words: Economics, maize, nutrient uptake, INM and LAI.

Journal of Crop and Weed 5(1): 136-139 (2009)

A study on poverty of agricultural households in coastal saline zone of West Bengal

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ABSTRACT

A study was undertaken in Coastal and Saline Zone of West Bengal to measure the poverty among the agriculture households using Simple Random Sampling Without Replacement (SRSWOR). Extent of poverty was measured by Head-Count Ratio and Poverty-Gap Ratio. It was found that poverty existed among agricultural households in marginal and small size classes. In head-count measure about 48 per cent and 22 per cent of the agricultural households respectively in marginal and small size classes were found to be lying below poverty line (BPL). Overall, 41 per cent of the total agricultural households were found below poverty line. The extents of poverty of agricultural households below poverty line were measured 23.62, 8.30 and 20.00 per cent respectively in marginal, small and overall size classes by poverty-gap ratio measure. In this measure extent of poverty was estimated 20 per cent taking all the agricultural households into consideration. The highest disparity in income between agricultural households above and below poverty line was observed to originate from crop production, being a major source of income of agricultural households. Linear correlation analysis indicated a significant positive relationship between net income of agricultural households earned from crop production and each individual variables like size of operational holding, irrigated land and land allocated to non-food grain crops. A significant positive relationship was also observed between size of irrigated land and land allocated for non-food grain crops. Among the large number of crops grown by the agricultural households above poverty line (APL), the crop like cucumber, spinach and betelvine were not found to be grown by the agricultural households below poverty line. Not only the size of operational holding, irrigated land and area of land under non-food grain crops were recorded to be higher for the households above poverty line compared to the households below poverty line, level of net income per unit area was also estimated to be higher for the former than for the latter. Lower level of per capita non-farm income of the households below poverty line was found to be attributed to not only higher size of family but also to lower level of non-farm income per household as compared to those of the households above poverty line.

Key words*:* APL, BPL, head count ratio, poverty and poverty gap ratio.

Journal of Crop and Weed 5(1): 140-146 (2009)

Effect of molybdenum and seed inoculation on nodulation, growth and yield in urdbean [*Vigna mungo* (L.) Hepper]

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ABSTRACT

A two-year field experiment was conducted during kharif season of 2005 and 2006 at the Pulses and Oilseeds Research Sub-station, Beldanga, Murshidabad, West Bengal, India to study the effect of molybdenum spray and seed inoculation on nodulation, growth and seed yield in urdbean. The results revealed that two rounds of foliar spray of 0.05% ammonium molybdate solution at 25 and 40 days after sowing (1269.50 kg ha^{-1}) increased seed yield by 9.02% over water spray (1164.50 kg ha^{-1}). Combined inoculation of seeds with Rhizobium + Azotobacter + PSB (1629 kg ha^{-1}) and Rhizobium + PSB remarkably increased the seed yield due to better nodulation along with improvement in growth and yield attributes. The effect of interaction between foliar spray and seed inoculation on seed yield was found significant.

Key words: Molybdenum, nodulation, seed inoculation, seed yield and urdbean.

Journal of Crop and Weed 5(1): 147-150 (2009)

Identification of heat tolerant lines of tomato under West Bengal condition

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ABSTRACT

Three consecutive field evaluations to screen 38 tomato genotypes for tolerance to high temperature stress under spring-summer season (February to May) in 27.3º to 42.3ºC range of day temperature and 13.8º to 22.9ºC night temperature, the average day/night temperature being 34.5º/19.2ºC revealed abnormal hastening in flowering (34%), marked reduction in number of truss/plant (35%), number of flowers/truss (25%), fruit set/truss (53%) and fruits/plant (71%) compared to that recorded in autumn-winter season under optimal temperature condition. Of the 16 genotypes that set fruits in high temperature stress three lines viz.,CLN 2413R, CLN 2116B and COML CR-7 emerged as heat tolerant genotypes considering pollen viability, pollen germinability, fruit set, fruit yield/plant.

Key words: Evaluation , genotype and tolerance.

Journal of Crop and Weed 5(1): 151-153 (2009)

F_2 segregation pattern for fruit shape and pedicel character in tomato

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ABSTRACT

The present investigation was designed to study the segregation pattern of fruit shape and pedicel character in tomato. Semi dominance and
gene interactions were operative for the control of fruit shape. Segregation analysis in the F_2 population indicated the involvement of two genes controlling fruit shape. It could be determined that 'jointed pedicel' character controlled by the single gene 'JJ' was completely dominant over 'jointless pedicel' character controlled by 'jj'.

***Key words** : genotypes, pedicel, segregation and tomato.*

Different characters of tomato have been
investigation 20 plants were allotted to each parent

Journal of Crop and Weed 5(1): 154-157 (2009)

Biochemical factors for TLCV tolerance in tomato genotypes

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ABSTRACT

An experiment was conducted during 2000 – 05 to evaluate 25 tomato (Lycopersicon esculentum Mill.) genotypes for resistance to tomato leaf curl virus. The percent disease incidence and coefficient of infection in the genotypes was highest in early autumn (planting in last week of August) followed by spring-summer (planting in first week of February) and autumn-winter (planting in second week of October) seasons suggesting significant influence of environment on symptom expression apart from white fly population. The three moderately resistant lines emerged from the study viz., 'H-24', 'Agata' and 'EC-321425' showing very low coefficient of infection (2-6), were crossed with 5 highly susceptible testers with very high coefficient of infection (above 21), namely 'Punjab Chhuhara', 'Pusa Ruby', 'Ratan', 'Hisar

Arun' and 'Patharkutchi' in line x tester mating design. The hybrids recorded a range of intermediate disease reaction and it varied widely

in 2 seasons suggesting polygenic nature of disease resistance. Higher total phenol content in the leaves estimated at 80 days growth stage

appeared to have determined the resistance actively in the host. Exploitable level of disease resistance could be achieved in very few hybrids

involving moderately resistant x susceptible cross.

Key Words: genotypes, bio-chemical, resistance and tolerance

Journal of Crop and Weed 5(1): 158-161(2009)

Genetic variability, correlation and path analysis of some morphological characters in chilli

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ABSTRACT

Forty-nine genotypes of chilli were evaluated to study the genetic variability as well as association for 12 growth and fruit characters. There was significant variation among the genotypes. Fruit yield (g)/plant, number of fruits/plant, fruit length (cm), placenta length(cm), fruit weight (g), number of seeds/fruit and plant height (cm) showed high values of GCV and PCV. High heritability in broad sense coupled

with high GA in % grand mean( ) was recorded for fruit yield/plant, number of fruits/plant, fruit length, days to 50% flowering and plant height indicating such characters were controlled by additive gene action The phenotypic path-coefficient analysis revealed that number of

fruits/plant, fruit weight and 1000 seed weight had positive and high direct effect on fruit yield indicating their reliability as selection criteria to improve yield of chilli.

***Key words*:** Correlation, genetic variability and path coefficient.

Journal of Crop and Weed 5(1): 162-166(2009)

Diversification of rice-based cropping system and their impact on energy utilization and system production

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ABSTRACT

In an on-farm field experiment different rice (Oryza sativa) based crop sequences were tested for their performance over two consecutive years 2006-07 and 2007-08 at Haringhata, Nadia, West Bengal. The sequences were: rice – rice, rice – rapeseed (Brassica campestris) – sesame (Sesamum indicum L.), rice – potato (Solanum tuberosum L.) – sesame, rice – potato – lady's finger (Hibiscus esculentus) and rice –

rapeseed – rice. Among the five cropping systems, rice-potato-lady's finger gave the highest system yield as well as net return and the ricerice

cropping system recorded lowest system yield as well as net return in both the experimental year. During the 1st year of experimentation, rice-rapeseed-rice cropping sequence was found to be the best regarding benefit cost ratio, though it is statistically at par

with the rice-potato-lady's finger sequence and showed its superiority over the other sequences in the 2nd year. Highest energy productivity

as well as fuel energy use efficiency was recorded with rice – potato – sesame (0.54kg/MJ and 1.97kg/MJ, respectively), followed by rice –

potato – lady's finger (0.52kg/MJ and 1.66kg/MJ, respectively). Considering productivity, profitability, energy use efficiency and fossil fuel

energy use efficiency rice – potato – lady's finger was the best out of the five crop sequences.

Key words: *Cropping system, energy use efficiency, net return and system yield.*

Journal of Crop and Weed 5(1): 167-170 (2009)

Evaluation of ber cultivars for growth, yield and quality in red and laterite zone of West Bengal

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ABSTRACT

Six different local as well as commercial cultivars of ber were evaluated for their growth, yield and quality at RRSS, Sekhampur, BCKV, Birbhum during the years 2007-2008 and 2008-09 on three (3) year old trees of uniform vigour. Among the evaluated culivars maximum plant height was recorded in Kazi (2.88 m) (local name) while *Apple Colour* (local name) showed maximum plant spread in both East-West
and North-South directions (211.25 and 193.50 cm respectively) and total number of branches (14.75) compared to all the other cultivars. Significantly maximum number of flowers/cluster (31.25) was recorded with the cultivar *Apple Colour* but the yield/plant was maximum with Madhav Kool (7.10 kg). Total Soluble Solids (TSS) and sugar content were highest in *Apple Colour* (10.5°B and 9.30% respectively) as compared to the cultivar Narkeli (8.10°B and 5.20% respectively). Among the six cultivars *Apple Colour* performed better in respect to both yield and quality in the red laterite region of West Bengal..

Key Words: Cultivars, evaluation, growth, quality and yield.

Journal of Crop and Weed 5(1): 171-172 (2009)

Effect of different levels of irrigation and weed management on growth, yield and WUE of hybrid maize on new alluvial zone of West Bengal.

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ABSTRACT

To study the most critical physiologically water need stage of hybrid maize, effect of scheduling of irrigation at different physiological growth stages and different methods of weed control measures on growth, yield and WUE of hybrid maize under new alluvial zone of West
Bengal, a field experiment was conducted at the Viswavidyalaya farm during pre-kharif season in 2007. The experiment was conducted in a
sandy loam soil with 20 treatment combinations (4 irrigation levels in main plot and 5 weed control methods in sub-plot) in a split plot design replicated thrice. The study revealed that irrigation did not significantly influence the growth attributes, number (m^{-2} area) and dry weight (g m^{-2} area) of grassy, sedge and broadleaved weeds but significantly influenced the grain yield(t ha^{-1}). Irrigation applied at knee height stage and tasselling stage recorded an increase in grain yield to the tune of 76.1% and 36.72% over control, respectively. Weed control methods significantly influenced all the characters in most of the cases. The highest growth attributes and grain yield were recorded
under pre-emergence application of metribuzin @ 600 g ha^{-1} and minimum number(m^{-2} area) and dry weight(g m^{-2} area) of grassy, sedge and broadleaved weeds were recorded under pre-emergence application of Metribuzin @ 600 g ha^{-1} (W_1).. The lowest CU (210.9 mm), depletion of soil moisture (%) and highest WUE (18.87 kg ha^{-1} mm^{-1}) were recorded under irrigation applied at knee height stage and these
were just reverse incase of irrigation applied at silking stage.

***Key words*:** Hybrid maize, herbicide, irrigation and water use efficiency.

Journal of Crop and Weed 5(1): 173-177 (2009)

Performance of some elite mungbean [*Vigna radiata* (L.) Wilczek] mutant families in M_7 generation

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ABSTRACT

Gamma ray induced suspected variants from M_6 generation of mungbean cv. K851 were evaluated for yield and its attributing traits with estimation for different genetic parameters. Eleven mutant families along with control were considered in the present investigation. The different traits considered were plant height, number of branches per plant, days to first flowering, number of pods per plant, number of seeds per pod, pod length, pod breadth, test weight, harvest index and yield per plant for evaluation of mutant families. Different genotypic parameters like, heritability, genetic advance, phenotypic and genotypic coefficient of variation were also estimated to define the nature of genetic control over the traits. The experiment was laid out in RBD design with three replications during pre kharif 2007. Most of the treatments except, number of branches per plant showed little environmental influence. From the estimation genetic parameters it was found that number of pods per plant, harvest index and yield per plant were predominantly governed by additive gene effect whereas, other traits were controlled by either dominance or higher level of genetic interaction. Two highly yielding mutant families were identified with concomitant improvement for number of pods per plant and harvest index and these can be forwarded in further advanced generation to develop stable high yielding mutants.

Key words : Genetic gain, gammaray, munghen, mulation breeding and heritability

Journal of Crop and Weed 5(1): 178-181 (2009)

Participatory wetland management in Loktak lake: a road to sustainable development

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ABSTRACT

The study was conducted in order to understand the participatory management of the Loktak lake Manipur by different stakeholders. The study tools used were stakeholder analysis, activity analysis and participation analysis. 30 stakeholders were identified, their relationship was analysed and they were prioritized according to their 'influence on' and 'importance to' the project. The observations of the study were

that the capture and culture fishermen need adequate capacity building. NHPC, jhum farmers and athaphum owners were the major threats

to the project. Most of the project activities were taken up in association with meira paibies, ngami lups and other CBOs. In most cases, local people in general were just informed about the project activities. Activities were taken up in association with CBOs and LDA who acted as the major decision making body. Participation of stakeholders specially the primary stakeholders in every project activity at different stages justifying its extent and typology should be designed and implemented for project sustainability as well as sustainable development of the natural resource and its users as a whole.

Key words: Management, participatory method, sustainable development and wetland.

Wetlands are areas of land, where the water

region of India. Due to its importance in the socioeconomic

Journal of Crop and Weed 5(1): 182 194 (2009)

Effect of inorganic and biofertilizers on chilli

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ABSTRACT

An experiment was carried out at Horticulture Research Station, Mondouri, Bidhan Chandra Krishi Viswavidyalaya, West Bengal during 2007-2008, to find out the efficacy of biofertilizers (Azospirillum and phosphate solubilizing bacteria) with different levels of inorganics on growth and yield of chilli (Arka Lohit and Arka Suphal). The experiment was laid out in Factorial RBD with two replications. Three levels (25%, 50% and 75%) of both inorganic N and P were included alongwith full dose of K and biofertilizer. There were altogether 12 treatment combinations. The biofertilizers were applied twice @ 15g/3 sq m during 30 and 60 days after transplanting (DAT) but inorganics were applied at 45 and 75 DAT. The results revealed that plants under treatment $N_{75\%}P_{75\%}K_{100\%}$ + biofertilizers and $N_{75\%}P_{50\%}K_{100\%}$ + biofertilizer recorded the maximum growth and yield in Arka Lohit and Arka Suphal respectively, indicating there is a chance of saving 25% both inorganic N and P in Arka Lohit and 25% N and 50% P in Arka Suphal through biofertilizer.

***Key words*:** *Azospirillum*, biofertilizers, inorganics, phosphate solubilizing bacteria and yield.

Journal of Crop and Weed 5(1): 195 200 (2009)

Adaptation of the alimentary tract to feeding habits in the weed eating fish (grass carp) *Ctenopharyngodon idella* (Val.)

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The present communication is on the adaptation of the alimentary canal to feeding habit of the weed eating fish Ctenopharyngodon idella *(Val.) from Nadia District of West Bengal. The morphology of the alimentary canal, relative dimensions of different parts of the alimentary canal in the total length of the alimentary canal (morphometrics); relative length of the gut (R.L.G.) at different groups of the fish have been studied in relation to the food and feeding habit of the fish. The gut content analysis of the fish has been done at different length groups of the fish. The pattern of mucosal folds at the different regions of the alimentary canal of the fish has been described. Morphology of the alimentary canal and relative dimensions of different parts of the alimentary canal suggests its herbivorous feeding habit. The fish has been found to depend on food of animal origin at its early stages. In the juvenile stage the fish preferred food of both plant and animal origin . In the advanced stages the fish depended only on aquatic macrophytes. The R.L.G. value varied from 0.8 to 2.5. the value increased with the increase of vegetable matter in the gut content. The R.L.G. value of the adults (2.5) suggests that the gut is rather short when compared to other herbivours. The pattern of mucosal folds at different regions of the alimentary canal was found to vary for performing different functional roles. The fish has been recommended for control of aquatic weeds. Their feeding strategy could be altered by providing them with cheaper food from indigenously available raw materials of plant origin to make fishery operation more economic.*

Key words: Adaptation, alimentary tract, feeding habits and grass carp.
Journal of Crop and Weed 5(1): 201-205 (2009)

Effect of mulching on ginger (*Zingiber officinale* Rose) in the hilly region of Darjeeling district.

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ABSTRACT

A field trial was conducted at the Horticultural Research Station, Bidhan Chandra Krishi Viswavidyalaya, Pedong, Darjeeling, West Bengal for two consecutive years to study the effect of mulching on growth and yield of ginger (Zingiber officinale Rose). The beds of ginger cv. gorubathan was covered with four different mulching materials viz. wheat straw, ulu-grass and dry leaves @ 5.0 tones per hectare and black polyethylene sheet @ 2.0 quintal per hectare immediately after planting of seed rhizomes, along with a control plot. Among the different mulching materials, dry leaves showed maximum height (78.05 cm), number of pseudostem per clump (4.26), leaves per clump (62.65) and highest yield (52.17 t/ha) with an increase in yield by 12.92 t/ha over control followed by wheat straw and ulu-grass.

Key Words: Mulching, rhizome and ginger.

ulu-grass, dry leaves @ 5 tonnes per hactare and black

Journal of Crop and Weed 5(1): 206-208 (2009)

Effect of anilofos and pendimethalin on the mineralization of carbon and nitrogen in a *Haplustept* soil of West Bengal

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ABSTRACT

An experiment was conducted under laboratory condition to investigate the effect of two systemic herbicides, viz. anilofos (S-[N-(4-chlorophenyl)-N-isopropylcarbamyl]-O,O-dimethyl phosphorodithioate) and pendimethalin (N-(1- ethylpropyl) -2, 6-dinitro-3,4-dimethyl aniline), either alone or in combinations, at their recommended field rates (400 g and 1.0 kg a.i./ha, respectively on the mineralization of carbon and nitrogen, and changes in total phosphorus content in a Haplustept soil of West Bengal. Application of herbicides in general, stimulated the mineralization of carbon and nitrogen in soil. Single application of anilofos and pendimethalin augmented retention of organic carbon and availability of exchangeable NH_4^+ in soil. Application of herbicides either singly or in combinations retained 9% higher total nitrogen as compared to untreated control soil. Anilofos increased the availability of NO_3^--N to the highest extent (36.3%). Incorporation of pendimethalin increased 20.7% exchangeable NH_4^+ in soil. The retention of total phosphorus was significantly increased (14.3%) due to the pendimethalin and its combination with anilofos.

Key words: Anilofos, available nitrogen, herbicides and organic carbon.

Journal of Crop and Weed 5(1): 209-215 (2009)

Weed management through leguminous herbs for sustainable leaf production in mulberry (*Morus alba* L.) var. S-1 under irrigated condition

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ABSTRACT

A field experiment was conducted at Central Sericultural Research and Training Institute, Berhampore West Bengal during 2001-2003 to develop a sustainable weed management practice through the use of leguminous herbs in mulberry under irrigated, alluvial condition. Analysis of pooled data for 8 seasons revealed that 6 monocotyledonous weeds with dominant Poaceous plants recorded 86.9% population
while 16 dicotyledonous weeds registered 13.1% population. The weed population was found more (64.4%) on 35 days after pruning (DAP)
and less (35.6%) on 70 DAP. In fact, once or twice weeding per crop registered minimum weed population and dry weight of weed biomass,
maximum plant height, number of branches per plant, optimum leaf yield and N, P and K uptake in leaves in mulberry but it was costly and economically not viable. Among the leguminous crops tested, minimum (28.83/sq.m) weed population was observed in the treatment with Vigna sinensis indicated 32.91% reduction in weed population over control (44.46/ sq. m). Dry weight of weed biomass was
also found to be reduced by 38.8% in V. sinensis (15.68g/sq.m) over control (25.62/sq.m). Mulberry grown with V. sinensis, in rows, recorded maximum plant height (122.33cm), number of branches per plant, similar leaf area, marginally higher leaf yield (25401.04 kg/ha/year), similar leaf moisture, maximum N uptake (171.92 kg/ha/year), similar phosphorus uptake and maximum potassium uptake (111.28 kg/ha/year) in leaves compared to control (traditional practice). Besides, total soluble protein was significantly increased and total soluble sugar though marginally higher, was statistically at par with the control. In addition, growing of V. sinensis could save Rs. 1385/ha, resulting 41% reduction in the cost of digging-cum-weeding activity which generally practiced after application of chemical fertilizer. It also improved soil fertility through the incorporation of green biomass (32.5 mt/ha/year), providing an eco-friendly approach without affecting leaf yield and quality. Hence growing of V. sinensis in mulberry may be recommended to the farmers as a weed control measure under irrigated condition.

Keywords: Mulberry, quality, weed management and yield.
Journal of Crop and Weed 5(1): 216-223 (2009)

Efficacy of a new fungicide 'Trifloxystrobin 25% + Tebuconazole 50%' 75WG against sheath blight (*Rhizoctonia solani* Kühn) of rice

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ABSTRACT

Sheath blight of rice caused by Rhizoctonia solani Kühn is one of the most devastating diseases in West Bengal. Due to widespread cultivation of susceptible variety Swarna (MTU 7029), the disease has spread in large scale and sometimes cause severe damage even 100%
crop loss also occur. Cultural practices combine with spraying fungicides is the most common practice to manage the disease. An attempt was made to evaluate the efficacy of a new fungicide – a combination of two systemic fungicides viz., Trifloxystrobin 25% (Strobilurin compound) and Tebuconazole 50% (Triazole compound) alongwith two other commercially available fungicides Hexaconazole and Validamycin under challenge inoculation condition. The new fungicide was most effective in decreasing disease severity (37.61% lower over
control) and increasing grain yield (50% higher over control). The same fungicide was also proved as best or at par with leading triazole compound to manage the sheath blight disease of rice at several centre under All India Coordinated Rice Improvement Programme during
the year 2006 and 2007.

Key Words: Rice, sheath blight, trifloxystrobin and tebuconazole.

Journal of Crop and Weed 5(1): 224-226 (2009)

Seasonal incidence and control of white fly (*Dialeurodes pallida* Singh) infestation in betel vine (*Piper betle* L.)

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ABSTRACT

Seasonal incidence, correlation studies and efficacy of some insecticides of white fly (Dialeurodes pallida Singh) *on betel vine were conducted in the Instructional Farm, Uttar Banga Krishi Viswavidyalaya, Pundibari, Coochbehar, West Bengal during November,2005 to*

April, 2007. the whitefly was found active throughout the year but the maximum population was observed during last week of November to

December. Population of whitefly showed negative correlation against maximum & minimum temperature and rainfall while positive correlation to maximum humidity. The R_2 value suggested 72% variation in leaf infestation due to various climatic factors. Out of ten (10) synthetic as well as botanical insecticides, imidachloprid was found to be most effective to suppress the population of whitefly which resulted 89.87%, 73.45% and 60.31% mortality at 3,8 and 14 days after spraying.

Key words: Betel vine, correlation, efficacy of insecticides, seasonal incidence and whitefly.

Journal of Crop and Weed 5(1): 227 231 (2009)

Present status of rice tungro disease in West Bengal: occurrence and characterization of viruses

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ABSTRACT

Rice tungro disease is one of the most severe virus diseases of rice (Oryza sativa L.) and significant threat to rice production in Southeast Asia. In India, it can cause an estimated loss of 2% at the national level. Rice tungro is a composite disease caused by joint infection of two unrelated viruses, rice tungro bacilliform virus (RTBV) and rice tungro spherical virus (RTSV), appears in the form of severe yellowing and stunting in susceptible rice cultivars. Exhaustive surveys have been made to identify the locations of tungro incidence in West Bengal during 2007-2008. The samples showing tungro like symptoms were collected and checked for the presence of tungro through polymerase chain reaction (PCR) using primers specific for the tungro viruses. But all the collected samples were virus free except that collected from Rice Research Station, Chinsura, Hoogly, West Bengal. Previous studies reported all the RTBV isolates from the India as the "South Asian type".

Recently considerable variations at the genomic level have been detected within the above group. In this present experiment, attempts were taken to sequence a part of the genome of both RTBV and RTSV from West Bengal to reveal any changes that might have been occurred in these segments. These sequences have been compared with the previous reports available from NCBI. Similarity analysis of the sequenced genome of RTBV exhibited about 95% similarity with the previously reported isolate from West Bengal. Where as sequenced segment of RTSV exhibited near about 96% similarity.

Key words: Rice tungro; detection; PCR, RTBV, RTSN; and sequence.

Journal of Crop and Weed 5(1): 232 235 (2009)

Observations on the effect of glyphosate based herbicide on ultra structure (SEM) and enzymatic activity in different regions of alimentary canal and gill of *Channa punctatus* (Bloch)

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ABSTRACT

Glyphosate is the isopropyl amine salt of N- (Phosphonomethyl)-glycine, a broad-spectrum nonselective herbicide, which has been extensively used to control annual and perennial weeds in agricultural, forest and aquatic systems. The ultrastructural changes in different regions of alimentary canal and gill were observed by Scanning Electron Microscopic study on a non-target aquatic teleostea fish, Channa punctatus. Fishes were exposed to herbicide at a dose of 4 mgl^{-1} generally used by farmers to control weeds in water bodies for a period of 45 days in laboratory condition with a control. Severe damage, shrinkage and degeneration of pentagonal cellular contour of stratified epithelial cells (SEC) were observed in gill. Shrinkage of SEC resulting in degeneration of microridges was observed in buccopharynx. Slight necrosed and distorted SEC was observed in oesophagus. Severe mucus secretion was observed in stomach. Erosion on the apical surface of mucosal folds and columnar epithelial cells (CEC) and necrosis of CEC was also noticed in stomach. Obliteration of CEC along its entire length from basement membrane was observed in the intestinal portion. After 45 days treatment by glyphosate protease activity was slightly reduced in stomach and intestine in comparison to control fish. Amylase activity reduced in oesophagus and intestine in treated condition. Lipase activity was also reduced slightly in stomach and intestine of glyphosate treated fish.

Key words: Amylase, alimentary canal, glyphosate, gill, lipase and protease.

Journal of Crop and Weed 5(1): 236-245 (2009)

Critical period of weed control in summer groundnut (*Arachis hypogaea* L.) in gangetic alluvial region in West Bengal

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ABSTRACT

Many disciplines conduct studies in which the primary objectives depend on inference based on a non-linear relationship between the treatment and response. In particular, interest often focuses on calibration- that is normally used for estimation of an unknown value of an independent variable (X) corresponding to an observed value of a dependent variable (Y) which is functionally related to X. The application of calibration technique on non-linear models is well known in the field of agriculture, specially, in estimation of critical period of weed control (CPWC) of crops. In the present piece of investigation, an attempt has also been made to determine the CPWC of summer groundnut in West Bengal. The beginning and end of CPWC were based on 5% acceptable yield loss levels which were determined by fitting Logistic and Gompertz models to relative percentage yield data, representing increasing duration of weed interference and weed free period, estimated as growing degree days (GDD). The study reveals that CPWC for pod yield of summer groundnut (var. J.L.-24) was between 149.02 and 587.84 GDD in the year 2001 and it was between 153.27 and 718.72 GDD in the year 2002.The weeds should be controlled from the 15 days after emergence and it should be controlled up to 50 days after emergence to avoid losses above 5%.

Key Words: Calibration technique, CPWC. GDD, gompertz model and logistic model,

Journal of Crop and Weed 5(1): 246-250 (2009)

Laboratory evaluation of LC_{90} values of three insecticides against whitefly *Dialeuropora decempuncta* (Quaintance and Baker) infesting mulberry

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ABSTRACT

Experiments were conducted to determine the effective concentration of three insecticides i.e thiamethoxam (Actara, 25%WG), diafenthiuron (Pegasus,50%WP) and clothianidin (Dantop,50% WDG) against nymphal stages of whitefly under laboratory condition. Probit analysis was done with the observed values of mortality against concentrations of insecticides. From the analysis LC_{90} values of these three insecticides were worked out as 0.0131% for thiamethoxam, 0.0635% for diafenthiuron and 0.0046% for clothianidin.

Key words: Insecticides, LC_{90}, nymphal stage, pest incidence and whitefly.

Journal of Crop and Weed 5(1): 251-253 (2009)

Screening and selection of low grain arsenic (As) accumulating rice germplasms under West Bengal condition

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ABSTRACT

For developing (As) tolerant rice variety, screening and selection of As tolerant rice germplasms (low As containing grain) is an essential pre-requisite. Keeping this objective in mind, a collaborative research programme has been undertaken and three different As contaminated locations viz, Purbasthali-1, Birnagar and Beldanga-1(As content ranges from 10 µg /L to >50 µg /L) were chosen for field trials along with a control set at RRS, Chinsurah. During *Boro* 2007-2008, hundred (100) rice germplasms were grown at the said locations and all of the entries were evaluated. The result of the experimental trial revealed that out of the hundred entries, only seven entries are promising with respect to grain arsenic content. Arsenic content in grain was very high in three entries and low in four entries irrespective of locations. The result of the arsenic analysis of rice grains suggests that diversified rice germplasms have differential reactions towards uptake and translocation of arsenic into the grains and this differential reaction is mainly due to genotypic differences of the rice varieties.

Key words: Aresenic, germplasm and tolerance

Journal of Crop and Weed 5(1): 254-257 (2009)

Epidemiological studies of stem rot of betelvine caused by *Phytophthora parasitica* under closed conservatory condition in West Bengal

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ABSTRACT

Relationship between five meteorological parameters like maximum temperature, minimum temperature, maximum relative humidity, minimum relative humidity and rainfall with disease severity of stem rot of betelvine caused by *Phytophthora parasitica* showed
similar type of reactions in different cultivars of betelvine with regards to rate of progress of disease. Multiple regression analysis of meteorological parameters with disease severity showed that except minimum relative humidity all other meteorological factors were negatively correlated with disease severity. These observations were observed in all the tested 3 varieties. Step wise multiple regression analysis of original PDI is highly accurate and viable for disease prediction and it is confirmed by high Co-efficient determination (R^2) value, Adjusted R^2 value and low Residual sum of square and Standard error of estimate. Among the two transformed models Gompertz fit
better for disease prediction in stem rot of betelvine.

Key Words: Betelvine, epidemiology, prediction equation, *Phytophthora parasitica*, and stem rot.

Journal of Crop and Weed 5(1): 258-260 (2009)

Seasonal incidence and control of black fly (*Aleurocanthus rugosa* Singh) infesting betelvine (*Piper betle* L)

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ABSTRACT

Black fly (Aleurocanthus rugosa Singh) is an important pest in betel vine particularly under Tarai region of West Bengal. Experiments were conducted to find out the population build up of black fly in betel vine as influenced by climatic factors and efficacy of some insecticides under the boroj of the instructional farm, Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar, West Bengal during the period from Nov.,2005 to Apr.,2007. Population of black fly was found active throughout the year but the maximum (20 nos./ leaf) and minimum (1.2 nos./ leaf) population (nymphs & adults) was recorded at 44th standard week of 2006 and at 16th standard week of 2007 respectively. Simple correlation analysis revealed no significant correlation between abiotic factors with black fly population; though population was positively correlated with maximum and minimum temperature, maximum relative humidity but negatively with minimum relative humidity and rainfall in the present study. Multiple regression analysis showed significant variation and the R^2 value suggested that the biotic factors contribute 20% variation in blackfly population. Among ten (10) different insecticides, the highest mortality (74.53%) of black fly was found in the Imidachlorprid treated plots though it was at par with acetamiprid and quinolphos + cypermethrin combined product.

Key wodrs: Betel vine, black fly, chemical control and population dynamics.

Journal of Crop and Weed 5(1): 261 266 (2009)

Performance of pre-*kharif* mungbean genotypes under varying fertility levels in West Bengal

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Journal of Crop and Weed 5(1): 267-269 (2009)

Application of biotechnology in natural resource management

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Journal of Crop and Weed 5(1): 270-273 (2009)

Effect of lime on soil pH reaction and mulberry leaf productivity

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Journal of Crop and Weed 5(1): 274-276 (2009)

Effect of age of seedlings under different system of rice intensification(SRI)

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Journal of Crop and Weed 5(1): 277-280 (2009)

Effect of organic and inorganic sources of nutrients on rapeseed (*Brassica campestris L.*) under terai region.

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Journal of Crop and Weed 5(1): 281 284 (2009)

Performance of aromatic rice varieties under terai region of West Bengal

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Journal of Crop and Weed 5(1): 285-287 (2009)

Bamboo (*Bambusa* sp.) based agroforestry systems under rainfed upland ecosystem

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Journal of Crop and Weed 5(1): 288-292 (2009)

Response of finger millet (*Eluesine coracana.L.*) to organic and inorganic sources of nutrients under rainfed condition

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Finger millet (*Eluesine coracana.L.*) is an

Bangalore. The experimental site was fairly

Journal of Crop and Weed 5(1): 293-295 (2009)

Studies on rooting response and survival of different morphotypes of Som plant (*Persea bombycina*, King ex Hook. F., Kost)

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Journal of Crop and Weed 5(1): 296-298 (2009)

Effect of fertilizer levels on growth parameters, yield components and seed cotton yield of Bt cotton hybrids under irrigated condition in TBP area

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Journal of Crop and Weed 5(1): 299-302 (2009)

Evaluation of suitable nutrient management over state's recommendation and farmers' practice in rice-rice system of cropping

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Journal of Crop and Weed 5(1): 303-306(2009)

Pigeonpea - sesame intercropping systems for sustained production in northern transition zone of Karnataka

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Journal of Crop and Weed 5(1): 307-309(2009)

Effect of different system of rice intensification on yield, water requirement and water use efficiency (WUE)

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Journal of Crop and Weed 5(1): 310-312 (2009)

Response of Bt cotton hybrids for targeted yield under Northern transitional zone of Karnataka

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Journal of Crop and Weed 5(1): 313-315 (2009)

Current status, distribution and ethno-medicinal values of medicinal plant in hilly regions of Darjeeling district of West Bengal

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Journal of Crop and Weed 5(1): 316-320 (2009)

Studies on chemical weed control in aerobic rice (*Oryza sativa* L.)

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Journal of Crop and Weed 5(1): 321-324 (2009)

Studies on weed management in onion (*Allium cepa* L.)

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Journal of Crop and Weed 5(1): 325-326 (2009)

Effect of herbicides and cultural treatments on uptake of major nutrients by crop and weeds under aerobic rice cultivation

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Journal of Crop and Weed 5(1): 327-330 (2009)

Population dynamics of insect pests and their natural enemies in rice seed bed ecosystem

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Journal of Crop and Weed 5(1): 331-333 (2009)