

STUDY OF NITROGEN FERTILIZER AND CYCOCEL ON Fv/Fm AND DRY MATTER MOBILIZATION TO GRAIN YIELD OF WHEAT (*TRITICUM AESTIVUM* L.)

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ABSTRACT. In order to study of effects of nitrogen fertilizer and cycocel on yield, yield component and dry matter mobilization of wheat (*Triticum aestivum* L.) a factorial experiment was conducted based on randomized complete block design with three replications during 2014. Treatments were included nitrogen rates in four levels (without nitrogen application as control (N₀) and application 80 (N₁), 160 (N₂) and 240 (N₃) kg ha⁻¹ urea) and four cycocel levels (without cycocel as control (C₀), application of 500 (C₁), 1000 (C₂), 1500 (C₃) ppm). Results showed that cycocel application increased chlorophyll index, photochemical efficiency of PSII (Fv/Fm) and dry matter mobilization from shoots and stem. Application of nitrogen and cycocel reduced dry matter mobilization from shoots and stem, contribution of remobilization from shoots to grain and stem reserve contribution in grain yield. Application of nitrogen and cycocel as N₃C₃ had 58.5% and 46.26% more dry matter mobilization from shoots and stem in comparison with N₃C₀. The highest 1000-grain weight by 28.90 and 28.54 g, respectively, belonged to application of cycocel as C₂ and C₃ and the lowest 1000-grain weight by 26.93 g belonged to the C₀. The highest grain yield (1.068 g per plant), number of grains per ear (37.36) and 1000-grain weight (28.77 g) were obtained in application of 240 kg ha⁻¹ urea. It seems that the increase of Fv/Fm ratio due to current photosynthesis in plants that were grown under cycocel and nitrogen treatments decreased mobilization of dry matter and stem reserves to grain yield. Generally, it was concluded that nitrogen and cycocel can be as a proper tool for increasing wheat yield.

Keywords: CCC; grain weight; photochemical efficiency.

COMPARISON THE EFFICIENT RECLAMATION OF DIFFERENT INORGANIC MATERIALS WITH ORGANIC AMENDMENTS TO RICE-WHEAT CROP SUSTAINABLE PRODUCTION IN SALT-AFFECTED SOILS

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ABSTRACT. Amelioration of salt-affected soils requires an integrated management approach, which not only improves their effectiveness for improving soil properties, but also increases the crop production and quality of the produce. Hence, a study was planned to evaluate combined use of organic and inorganic amendments for better rehabilitation of salt affected soil in rice-wheat cropping sequence from 2013 to 2016. Treatments included T₁ - control, T₂ - gypsum @ 100 SGR, T₃ - CaCl₂ @ 50% SGR, T₄ - CaCl₂ @ 50% SGR + biogas slurry @ 10 t ha⁻¹, T₅ - H₂SO₄ @ 25% GR, T₆ - H₂SO₄ @ 25% SGR + biogas slurry @ 10 t ha⁻¹. A saline sodic field was selected, prepared and leveled. Composite soil samples were collected and analyzed for pH_s = 9.15, EC_e (dS m⁻¹) = 4.86, SAR (mmol L⁻¹)^{1/2} = 42.52 and GR (t ha⁻¹) = 8.64. Experiment was laid out in RCBD with three replications. The inorganic amendments (gypsum and CaCl₂) were applied 30 days before rice transplanting in the respective treatment plots, followed by leaching while biogas slurry was applied 15 days before transplanting and H₂SO₄ was applied with first irrigation. Recommended dose of fertilizer 120-110-70 NPK kg ha⁻¹ for

wheat (Inqlab-91) and 110-90-60 NPK kg ha⁻¹ for rice (Shaheen Basmati) was applied. Soil samples were collected before application of amendment and after harvesting of each crop. Straw and grain/paddy yield data were recorded at maturity. Pooled data showed that grain/paddy and straw yield of wheat and rice crop was higher in T₂ (gypsum @ 100% SGR), but statistically ($P \leq 0.05$) non significant with T₄ (CaCl₂ @ 50% SGR + biogas slurry @ 10 t ha⁻¹). T₃ (CaCl₂ @ 50 % SGR) was at par with T₆ (H₂SO₄ @ 25% SGR + biogas slurry @ 10 t ha⁻¹), followed by T₅ (H₂SO₄ @ 25% SGR). The minimum yield was recorded in T₁ (control). Soil analysis showed that pH_s, EC_e and SAR were significantly decreased in T₂ (Gypsum @ 100% SGR), followed by T₄ (CaCl₂ @ 50% SGR + biogas slurry @ 10 t ha⁻¹). Hence, CaCl₂ @ 50% SGR + biogas slurry @ 10 t ha⁻¹ may be an effective alternative reclamation strategy for areas that are restricted use because of salinity.

Keywords: gypsum; calcium chloride; reclamation; rice; wheat.

ENHANCING SEED YIELD OF HYBRID RICE BY MAINTAINING ROW RATIO AND DOSAGES OF GIBBERELIC ACID

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ABSTRACT. The purpose of this study was to identify the optimum levels of gibberellic acid and suitable row ratio for maximization the seed yield of hybrid rice. An experiment was conducted at the experimental farm of Rice Research and Training Center, Egypt, during 2013 and 2014 growing seasons. The material under this study included the parental lines of IR69625A (Female lines) and Giza 179 R (Restorer line) to produce F₀ hybrid seeds. A split-plot design with three replications was used. The main plot was row ratio (2R:8A, 2R:10A and 2R:12A) and sub plots was the doses of gibberellic acid (g/ha) (control, 300, 350, 400). The results indicated that, Application of GA₃ and row ratio had significant effect on different traits of seed yield and hybrid seed production. The highest values of flag leaf area, panicle length, seed set, panicle weight, panicle exertion and seed yield were achieved by using 2R: 8A row ratio and was observed the lowest values were obtained at the 2:12 row ratio. According to gibberellic acid application, the highest values for panicle length (cm), seed set (%), panicle weight (g), panicle exertion (%), harvest index and seed yield were recorded by using 400 g /ha gibberellic acid. Accordingly, the highest net economic return from seed yield was obtained with the treatment combination of 400 g/ha GA₃ x 2:8 (R: A) row ratio.

Keywords: GA3; hybrid seed production, *Oryza sativa*; row ratio.

ESTIMATION OF GENETIC EFFECTS CONTROLLING DIFFERENT PLANT TRAITS IN COTTON (*GOSSYPIUM HIRSUTUM* L.) UNDER CLCuV EPIDEMIC CONDITION

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ABSTRACT. Nine cotton genotypes, comprised of four non Bt males (CIM-1100, CIM-506, FH-942 and FH-900), five Bt female genotypes (FH-113, FH-114, MNH-886, AA-703 and IR-3701) and their 20 crosses were screened in order to evaluate their response to Cotton leaf curl virus symptoms through epidemiology in the field and greenhouse. The 20 crosses among their

nine parents were sown in two replications under randomized complete block design, during 2013 and 2014. The mean squares were significant for all traits indicating that both additive and non-additive genes control the characters, but non-additive genes were more important because, variance of dominant genes were higher than additive genes. In our test, FH-900 showed the best performance against CLCuV, number of lobes per boll and seed yield. The CIM-1100 genotype performed well in boll weight, fiber strength and fiber fineness, whereas CIM-506 was good for plant height, number of sympodial branches and ginning. Maximum boll number, seed index and fiber length were shown by FH-942. Among lines, MNH886, FH-113, IR-3701 and FH-114 exhibited the best general combination for many traits. Hence, parents were preferred for hybridization program to improve the majority of characters. Hybrids FH-113 × FH-942, MNH-886 × CIM-1100, MNH-886 × FH-942, IR-3701 × CIM-506, AA-703 × CIM-1100, FH-114 × FH-942, FH-114 × CIM-1100 and MNH-886 × FH-900 was best in specific combinations for different traits, especially against CLCuV. The results indicated that to increase resistance against CLCuV, hybrids should be exploited to develop CLCuV resistance.

Keywords: *Gossypium hirsutum*; cotton leaf curl virus (CLCuV); genetic effects; general and specific combing ability; North Carolina Design II.

USING GELATIN TO PRODUCE HONEY JELLY FROM CITRUS, CLOVER AND COTTON LIQUID HONEY

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ABSTRACT. The liquid form of honey is relatively undesirable because honey could be crystallized and then spoilage under certain conditions. In this study, producing honey jelly from liquid citrus, clover and cotton honey using gelatin was investigated. Only gelatin and water were used to produce the honey jelly without other additives. Some chemical components were then determined in produced honey jelly of each type, in comparison with components of liquid honey. The results showed that solid honey jelly can be obtained using 10 g gelatin dissolved in 50 ml per 200 g honey. Using different amounts of gelatin and water did not show significant impact on measured components of produced jelly. Liquid honey had significantly higher percentage of sugars than jelly honey. The variations between the two types of honey were about 9.9, 9.7, and 9.75% for fructose, 13.5, 19.86 and 19.15% for glucose, 2.44, 1.85, and 1.7% for sucrose, for citrus, clover and cotton, in respect. The viscosity of honey jelly was significantly higher (from 82 to 90.66 poise) than liquid honey (from 31.63 to 63.86 poise) for each honey type. The moisture ranged insignificantly ($P > 0.05$) from 36.03 to 38.36% for honey jelly, and insignificantly ($P > 0.05$) from 17.35 to 20.00% for liquid honey of all honey types; pH values showed insignificant variations between liquid honey and honey jelly. Fructose and moisture of liquid honey showed insignificant weak correlation with components of honey jelly. Glucose, sucrose and pH of liquid honey are correlated significantly by 88%, 86%, and 84% with percentages of glucose and sucrose, and pH of honey jelly, respectively. Producing honey jelly using gelatin could be considered as a promising product from liquid honey to encourage bee honey marketing.

Keywords: bee honey; gelatin; citrus; clover; cotton; jelly.

RESPONSE OF SESAME SEEDLINGS TO DIFFERENT CONCENTRATIONS OF HUMIC ACIDS OR CALCIUM NITRATE AT GERMINATION AND EARLY GROWTH

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ABSTRACT. This study was conducted in order to evaluate the response of sesame seeds (*Sesamum indicum* L.) to organic or mineral fertilization. The effects of two fertilizers, which were calcium nitrate and humic acids were studied separately at germination and early seedlings growth. Different concentrations of humic acids (HA₀: 0, HA₁: 500, HA₂: 1000 and HA₃: 2000 mg L⁻¹) or calcium nitrate (CaN₀: 0, CaN₁: 50, CaN₂: 100 and CaN₃: 200 mg L⁻¹) were applied distinctly to the growth media. The experimental design was accomplished in a completely randomized block design with three replications. Germination measurements, seedlings length, fresh seedling weight, total chlorophylls and carotenoids, total soluble proteins and sugars were determined. Results showed that humic acids applied at 1000 mg L⁻¹ or calcium nitrate applied at 100 mg L⁻¹ reduced the mean germination time (3.5 and 3.61 days) and had the highest germination index (GI) and the highest coefficient of velocity (CV). The longest seedling was obtained at the concentrations HA₂ and CaN₂ (+22%). Total chlorophyll and carotenoids were significantly higher in seedlings receiving the HA₂ and CaN₂ and these treatments increased total soluble proteins content by 32%. Higher concentrations of humic acids or calcium nitrate HA₃ and CaN₃ delayed germination and enhanced proline and total soluble sugars, respectively, by 42% and 46%, compared to control. These preliminary results indicated that the use of fertilizers should be optimized and they can be transformed at high level to an abiotic stress menacing plant productivity. On the other hand, suitable concentrations of fertilizers can be used in the future as a remedy to improve growth under abiotic stress.

Keywords: humic acids; calcium nitrate; proline; soluble sugars; soluble proteins.

PREDICTING SEED GERMINATION OF SAFFLOWER (*CARTHAMUS TINCTORIUS*) CULTIVARS USING HYDROTIME MODEL

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ABSTRACT. Safflower (*Carthamus tinctorius*) is a highly branched, herbaceous, thistle-like annual plant. It is commercially cultivated for vegetable oil extracted from the seeds, which is cultivated under arid environments. In such environments, the water needed for germination is available for only a short time and, consequently, successful crop establishment depends not only on rapid and uniform germination of the seedlot, but also on its ability to germinate under low water availability. All of these attributes can be analyzed through the hydrotime model (HT). Safflower seeds were germinated in various polyethylene glycol (PEG 600) solutions to obtain water potentials of 0, -0.2, -0.4, -0.6, and -0.8 Mpa. Results indicated that germination of safflower cultivars decreased significantly with reduction of osmotic potential. The highest germination percentage for Sina (93.06 and 94.02%), Faraman (93.52 and 95.33%), Talaei (94.98 and 93.98%) and Kouseh (93.58 and 95.55%) cultivars were attained from distilled water (0 MPa) and -0.2 MPa, respectively. The hydrotime constant (θ_{ii}) for Sina, Faraman, Talaei and Kouseh cultivars were 0.93, 0.84, 0.78 and 0.72 MPa d, and the water potential ($\Psi_{b(50)}$) for Sina, Faraman, Talaei and Kouseh cultivars were -0.56, -0.67, -0.64 and -0.77 MPa, respectively. Cumulative germination of safflower seed was higher in Kouseh cultivar, than in

Sina, Faraman and Talaei cultivars. Results showed that, hydrottime model is suited to predicting seed germination of safflower seeds. In addition, the information gathered with this work allows us to build mathematical models to predict germination of safflower cultivars in the field under various environments.

Keywords: germination percentage; germination rate; osmotic potential; safflower.

POTENTIAL, CULTIVATION AND QUALITY OF SOME *CRAMBE* SP. IN SOUTHERN TURKEY

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ABSTRACT. *Crambe* sp. is an oilseed crop from the *Brassicaceae* family and native to the Mediterranean region. It can be converted into a number of industrial and energy uses. *Crambe* oil is used in introducing in stain, primers, plastic and solid wax, cosmetic and engine portions in the form of nylon-13.13 exclude carburetor as eco-friendly. All these properties make it interesting. This study is the first report on yield, cultivation procedure, and quality characteristics of *Crambe* sp. cultivated in Turkey. Native *Crambe* seeds, collected from eight different locations in Turkey, were cultivated under Çukurova conditions in Mediterranean region. Two *Crambe* species, *Crambe orientalis* and *Crambe tataria*, determined at the locations were studied, and some morphological characteristics and oil compositions were sown from cultivars and native forms. Fatty acid composition of seeds was examined with GC and GC/MS. In native populations, high seed oil contents were obtained from *C. tataria* (Ankara - Faculty of Science and Letters) and *C. tataria* (Kahramanmaraş-Elbistan), as 45.62 and 45.50%, respectively. The highest erucic acid content (49.0 %) was found in *C. tataria* (Ankara-Bilkent). In Çukurova conditions, despite cultivated all collected species, just *C. orientalis* was bloom among this species, and so that seed yield (472.77 kg/ha) oil rate (% 27.43) and erucic acid (41.0 %) could determine just this species.

Keywords: bioenergy; bioplastic; *Crambe* sp.; erucic acid; fatty acid.

TRANSITION FROM EMOTIONAL TO RATIONAL ADVERTISING FOR FOOD PRODUCTS ON THE ROMANIAN MARKET

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ABSTRACT. Advertising helps to establish a set of assumptions that the consumer will bring to all other aspects of their engagement with a given brand. Advertising provides tangible evidence of the financial credibility and competitive presence of an organization. Persuasion is becoming more important in advertising. In marketing, persuasive advertising acts to establish wants/motivations and beliefs/attitudes by helping to formulate a *conception* of the brand as being one which people like those in the target audience would or should prefer. Considering the changes in lifestyle and eating habits of a significant part of the population in urban areas in Romania, the paper aims to analyse how brands manage to differentiate themselves from competitors, to reposition themselves on the market and influence consumers, meeting their increasingly varied needs. Food brands on the Romanian market are trying, lately, to identify new methods of differentiation and new benefits for their buyers. Given that more and more consumers are becoming increasingly concerned about what they eat and the products' health

effects, brands struggle to highlight the fact that their products offer real benefits for the body. The advertisements have become more diversified and underline the positive effects, from the health and well - being point of view, that those foods offer (no additives and preservatives, use of natural ingredients, various vitamins and minerals or the fact that they are dietary). Advertising messages' diversification is obvious on the Romanian market, in the context of an increasing concern of the population for the growing level of information of some major consumer segments.

Keywords: advertising; persuasion; positioning; target market.

REZUMAT Tranziția de la publicitatea emoțională la cea rațională pentru produsele alimentare pe piața din România. Publicitatea ajută la stabilirea unui set de ipoteze, pe care consumatorul le va corela cu toate celelalte aspecte ale angajamentului său față de un anumit brand. Publicitatea oferă dovezi concrete ale credibilității financiare și prezenței competitive ale unei organizații. Persuasiunea devine tot mai importantă în publicitate. În marketing, publicitatea persuasivă acționează pentru a stabili dorințe / motivații și credințe / atitudini, ajutând la formularea unei concepții a brandului ca fiind unul pe care oamenii din publicul țintă ar putea sau ar trebui să îl prefere. Având în vedere schimbările în stilul de viață și obiceiurile alimentare ale unei părți semnificative a populației din zonele urbane din România, lucrarea își propune să analizeze modul în care brandurile reușesc să se diferențieze de competitori, să se re poziționeze pe piață și să influențeze consumatorii, satisfăcându-le nevoile din ce în ce mai variate. Multe branduri alimentare pe piața românească încearcă, în ultimul timp, să identifice noi metode de diferențiere și noi beneficii pentru cumpărători. Având în vedere că tot mai mulți consumatori devin din ce în ce mai preocupați cu privire la ceea ce mănâncă și efectele produselor asupra sănătății, brandurile luptă pentru a sublinia faptul că produsele lor oferă beneficii reale pentru organism. Reclamele au devenit mai diversificate și subliniază efectele pozitive ale produselor asupra sănătății (fără aditivi sau conservanți, folosirea ingredientelor naturale, diferite vitamine și minerale sau faptul că sunt dietetice). Diversificarea mesajelor publicitare este evidentă, în contextul unui nivel tot mai mare de informații, de care dispun unele segmente de consumatori.

Cuvinte cheie: publicitate; persuasiune; poziționare piață-țintă.

DETERMINANTS OF MARKET PARTICIPATION AMONG MAIZE FARMERS IN OGBOMOSO ZONE, OYO STATE, NIGERIA

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agricultural output in developing countries is improving the productivity of farmers, which cannot be achieved without markets that would effectively bind the increasingly specialized activities of thousands of widely dispersed producers into an integrated national economy. Although, there is a high potential for rural farmers to derive livelihood from market-oriented agriculture and improve their standard of living, but what are those factors determining farmers' market participation. Thus, this study investigates the determinants of market participation among maize farmers in Ogbomoso zone of Oyo state, Nigeria. A simple random sampling technique was used in the selection of respondents and a well-structured questionnaire was used to gather information on socio-economic attributes and market participation among maize farmers in Ogbomoso, Oyo State. Eighty questionnaire were administered, but 79 retrieved were subjected to analysis. Data were analysed using descriptive statistics and probit regression. The results show that majority of the farmers were male

(70.9%), married (67.1%) and had a minimum of secondary education (74.7%) and above. Also, 70% had direct access and planted improved maize seed and 58% sold maize produced in the urban market. Probit model result shows that gender, age, marital status, household size, farming experience, educational level and membership of association/group are the major determinants influencing market participation in the study area. The study recommends that government should encourage formation of associations/groups, where farmers can get information about market situations and formulate policies on adult literacy programme to encourage farmers to participate more in market.

Keywords: productivity; smallholders; probit; agriculture; crop.