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Abstracts

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characteristic as well as fatty acid composition and antioxidant capability. The second one aimed to study effect of environment on fatty acid composition and antioxidant capability of 15 sesame varieties under five environments. Field experiments were, therefore, conducted in five locations i.e. Ubon Ratchathani, Chiang Mai, Petchaboon, Nakhon Ratchasima and Lopburi provinces, in 2004-2005. The results showed that oil content of 83 sesame lines varies from 33-53% and the major fatty acids found in sesame oil were oleic acid (31-51%) and linoleic acid (36-47%). There were 37 sesame lines having high antioxidant capability ($IC_{50} < 5$) of which the highest one of each location were white-seeded sesame lines sm 177 and sm 190, black-seeded sesame lines sm 208 and M 6070. Oil content was varied with environment and interaction between genetic and environment up to 38-50%. The brown-seeded sesame line A30-15 gave the highest oil content (50.5%) when grew in Ubon Ratchathani in the year 2005, followed by Ubon Ratchathani 1 which grew in Ubon Ratchathani in the year 2004. Oleic and linoleic acid content were found between 39-49%, they were varied with environment up to 54-63%, with genetic only 6% and with interaction between genetic and environment 30-40%. The sesame line giving the highest oleic acid and linoleic acid were A30-15 when grew in Lopburi in the year 2004 (50.9%), and white-seeded sesame WL 9 when grew in Ubon Ratchathani in the same year (60.2%). Moreover, growing of sesame in Chiang Mai gave the highest oleic acid (48.5%) whereas in Lopburi gave the highest linoleic acid (46.6%). Sesame lines can be divided by agglomerative hierarchical into 7 groups of both oleic and linoleic acid and divided into 5 and 6 groups of oleic and linoleic acid, respectively. Similar to fatty acid composition, antioxidant capability of sesame lines were affected by environment as high as 52%, genetic only 19% and interaction between genetic and environment 29%. Sesame lines can be divided by agglomerative hierarchical into 7 groups whereas growing environments can be divided into 4 groups. White-seeded sesame WL9, NS⁵, Ubon Ratchathani 2, No.172 and No.178 have high antioxidant capability especially, NS⁴ was the variety which had the highest amount of antioxidant. The result also demonstrated that growing of sesame in Nakhon Ratchasima, Chiang Mai and Petchaboon yielded the highest antioxidant capability. We, therefore, conclude that in order to obtain high content of oleic acid, linoleic acid or antioxidant, suitable growing area need to be selected for growing of the sesame lines indicated in this study.

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CS2-S1, P73

Study of Genetic Diversity in Sunflower Promising Inbred Lines Using Morphological Traits

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One of the most important factors in breeding programs advancement is the evaluation and quantification of genetic diversity in breeding population. In the preparation of pre-breeding population and hybrid production, selection of convenient parents that are efficiently distant, is so important. In order to precise description for the sunflower genetic stocks of the Oilseed Department (Seed and Plant Improvement Institute, Karaj, Iran), morphological traits and oil percentage of 49 promising inbred lines including 18 R-lines and 31 B-lines were studied using sunflower descriptor. These lines were planted based on a simple Lattice (7 x 7) design with 2 checks in 2005. Results of ANOVA revealed significant differences between the lines for almost all traits. Relationships between quantitative and quantitative traits, qualitative and quantitative traits and qualitative and qualitative traits were calculated, using correlation analysis, ANOVA and chi square method, respectively. Results showed that there is a negative correlation between oil percentage and 100 seed weight. Classification of lines based on cluster analysis grouped the lines in to two distinct male and female groups. Factor analysis, extracted 4 factors that altogether comprised 73.92% of total variation in data. Biplot analysis based on the first two principle components clearly separated male and female lines. According to these findings Heterotic plausible groups were suggested for future crosses and hybrid assessment.

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Clonal Variability of Carbohydrate Reserves in the Trunk of Rubber Tree (*Hevea Brasiliensis*)

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The aim of study was assessed clonal variability of starch and sugar soluble (SS) in trunk of rubber tree. The two experiments were set up, the first field compared 25 clones tested in an international clone exchange program which is now 30 years old. A second field clone trial was used for 15 years trees, with 18 clones. The results showed both starch and SS in wood recorded 25 clones exchange trial at 30 years were similar to the average obtained the same season in the previous study

on standard clone RRIM600 age 11 years. However, both mean contents SS bark and particularly starch in bark were higher in the 30 years tree than the previous study. The 15 years trial with 18 clones, mean content in wood were a bit higher for both starch and SS than the previous study. The bark SS was similar as above but starch was much higher than RRIM 600 age 11 years. Starch and SS in wood seems not much variable with age, However, carbohydrate contents in bark varied widely. The main source of variation may be the status of the bark. Nevertheless, there was a negative correlation between cumulative yield and starch content in the bark. Carbohydrate contents in clones had a high variability and heritability. Some interesting trends linking contents in the different forms of carbohydrate to clonal origin or to a well known metabolic characteristic were also detected.

Key words: *Hevea brasiliensis*, rubber clones, latex, girth, reserve, total non-structural carbohydrate (TNC), starch, soluble sugar (SS), heritability, variation, principal component analysis (PCA), matrix of correlation

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Induction of Embryogenic Callus and Plant Regeneration from Nodes of Greenhouse Grown Plants of *Alstroemeria* Cv. Fuego

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Induction of embryogenic callus and plant regeneration from nodes of greenhouse grown plants of *Alstroemeria* cv. Fuego Abstract :Plant regeneration ability of callus was studied in the ornamental monocot *Alstroemeria* cv. Fuego. High frequency (23%) of compact embryogenic callus (CEC) induction was obtained on a Schenk and Hilderant (SH) medium supplemented with 2 mg/l picloram from nodal segments excised from plants grown in the greenhouse. After three months of culture, CECs were transferred to the modified MS medium supplemented with 5 mg/l picloram for further proliferation of CECs. Somatic embryos and subsequently plantlets were formed after transfer of the CEC to regeneration medium supplemented with various concentrations of BAP. The highest plantlets were formed on MS medium supplemented with 0.5 mg/l BAP. The total time needed to regenerate complete plants from the initiation of nodal segment culture was approximately 8 months.

Keywords: *Alstroemeria*, compact embryogenic callus, regeneration, somatic embryos

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Characterization and Evaluation of Cotton (*Gossypium Spp.*) Germplasm in Thailand

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The ultimate objective of this research was to characterize and evaluate cotton germplasm which has been collected and developed in Thailand and introduced from abroad since 1963 using agronomic and morphological traits based on Cotton Descriptors of IBPGR. Four species of the genus *Gossypium* were identified. These species include two diploids *G. herbaceum* and *G. arboreum*, and two tetraploids species, *G. hirsutum* and *G. barbadense*. The experiment was conducted at Nakhon Sawan Field Crops Research Center, Takfa, Nakhon Sawan, Thailand in 2004-2006. Ninety cotton accessions were grown together with five cultivated varieties. Phenotypic variation was highly significant ($P < 0.01$) for all characters of yield and fiber quality. There was large variation among these genotypes for plant height, number of the fruiting branch, number of the vegetative branch, pigment gland content, pubescence and other agronomical important traits. Ginning percentage of *G. barbadense* *G. herbaceum* and *G. arboreum* was significantly lower than the average of cultivated varieties. All accessions of *G. barbadense* were susceptible to Cotton Leaf Curl Disease. However this specie is superior in fiber length and micronaire. It is concluded that the *G. barbadense* is a useful germplasm resource for genetic improvement of fiber quality.

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Evaluation of Oat Genotypes (*Avena sativa* L.) at Seedling Stage in Salt Stress

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