

AL-BALQA APPLIED UNIVERSITY



**The 2nd International
Symposium on Medicinal
Plants,
Their Cultivation and
Aspects of Uses**

Petra Marriot Hotel

Petra-Jordan

3-4 November, 2010

Abstracts Book

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replications. Characters measured were: Total of dry weight (TDW), leaf area index (LAI), leaf dry weight (LW), Crop growth rate (CGR), net assimilation rate (NAR), leaf area ratio (LAR), leaf weight rate (LWR), specific leaf area (SLA), relative growth rate (RGR). Growth parameters were calculated during six growth stages by harvesting samples from leaf area and dry weight and determination of regression coefficients. On the basis of obtained results, in the early stages of growth, due to low use of N by plant, nitrogen has less effect on growth indices and by advancing in time, and development of growth stages, rate of N use increases in plant and LAI, CGR, LWR, and LAR, and SLA have increased and among rates of N, difference was observed. NAR of photosynthetate and RGR during Cumin growth showed decreasing trend, as well. With respect to obtained results, 100 kg N/ha, had lowest effect on number of umbel, biomass, 1000 seed weight, and yield and 150 Kg/ha N had highest effect on 1000 seed weight and yield. Highest biomass and number of umbel was obtained in 200 Kg N/ha.

Key words: *Cuminum cyminum*, medicinal plant.

5.38 Evaluation of Some Drought Resistance Criteria in Cumin (*Cuminum cyminum* L.) Landraces

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Abstract: Cumin is one of the most important herbal drug crops used in traditional foods. It needs low water for growth cycle, and grows in arid and semi-arid regions of Iran. Two experiments under drought stress and normal conditions were performed. Leaf water potential, osmotic potential, harvest index and stress susceptibility index (SSI) were studied on cumin landraces. Sarvestan-e Fars, Tabriz and Sabzevar landraces were distinguished as tolerant landraces. Cluster analysis with single linkage method, classified genotypes into three groups. Sabzevar, Sarvestan-e Fars, Tabriz and Khorasan2-374 landraces made the first group. Second group included Zeirkoh-e Quen, Qunabad and Ferdous landraces. Kerman landrace, alone, was located in the third group.

Key words: Cumin, drought resistance, *Cuminum cyminum* L.

5.39 Effect of Nitrogen Fertilizer and Soil Characters on Growth and Essential Oil of *Thymus vulgaris* L.

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Abstract: Experiment was carried out at field of Medicinal Plant Research Canter in Karaj city (Iran) in 2007. Four net N fertilizer levels were used including 0, 50, 100 and 150 kg/ha. The garden thyme aerial parts were harvested in full blooming time. In order to drying, the samples were placed at shade (room temperature). The aerial parts essential oil was extracted by hydro-distillation in a Clevenger apparatus and analyzed by GC/MS.

Results showed that nitrogen fertilizer had significant effect on essential oil of *Thymus vulgaris* so that plants grown at 100 kg/ha net nitrogen fertilizer had the highest essential oil (1.57% (v/w)). The N levels had a significant effect on growth traits, essential oil and its composition. The maximum (15.3%) and minimum (2.5%) content of thymol were observed at 100 kg/ha and 0 kg/ha of N level respectively. There was also positive correlation between N fertilizer and carvacrol content. The maximum (14.2%) and minimum (8.6%) contents of carvacrol were related to 100 kg/ha and 0 kg/ha of N level respectively. The results showed that there were significant correlations between chemical character of soil and medicine ingredients material. There were positive correlation among essential oil percent and Nitrogen, potassium and phosphorous elements.

Keywords: Essential oil, metabolites, nitrogen fertilizer, *Thymus vulgaris* L.

5.40 Immature Harvesting of Medicinal Plants from Natural Forests of Central India and Its Impact on Raw Material Quality

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Abstract: The tropical dry deciduous forests of central India are known to have rare germplasm of the medicinal species i.e Aonla (*Emblica officinalis*), Safed musli (*Chlorophytum* spp.), Kali haldi (*Curcuma caesia*), Satawar (*Asparagus racemosus*), Baibirang (*Emblia tsejaram-cottom*), Sarp Gandha (*Rauwolfia serpentina*) etc. The rural poor, tribals and other forest dependant population harvest the fruits, roots, tubers etc. much before the maturity and sell them in raw form in the local markets. During the survey of different natural forest areas of central India (Madhya Pradesh- Katni district; and Chattisgarh- Dhamtari district and Maharashtra-Nagpur district), it was observed that due to increasing demand of Ayurvedic medicines and raw materials, the primary collectors harvests fruits, tubers of commercially important medicinal species like Aonla, safed musli, Baibirang, Sarp Gandha, Satawar, Kali haldi etc. at unripe stage. The harvested raw material are kept in direct sunlight or rains, in sub-standard godown, having dust, fungus, termites and rats etc. which adversely impacted the raw material quality as well as medicinal properties. The report broadly examines the raw material quality of few medicinal species of central India on the basis of organoleptic evaluations like color, shape, size, smell etc. The raw material quality of the medicinal plant is also adversely impacted due to less weight of the unripe fruits/roots etc; bad and small shape of fruits and roots, less potency due to infection because of unripe collection; bad smell and taste; smaller size of fruits/roots etc. The present study provides a valuable tool for those who depend on macroscopic assessment techniques for assessing raw produce quality (of medicinal plants) and hopefully will encourage others to incorporate this simple, yet highly effective technique.

Key words: Harvesting, forests, medicinal plants, quality.