then a deeper investigation by HPLC (High Performance Liquid Chromatography) was performed, with the aim of exhaustively investigate the differences and similarities in the chromatographic patterns, through the picrocrocin and crocetin esters profiles. The results of this study clearly demonstrate the importance of monitoring the storage conditions in order to improve saffron samples in terms of quality.

P2-20. Application of artificial intelligence to predict the effect of fertilizers on saffron production

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A method that employs a Back Propagation Neural Network (BPNN) with data obtained using controlled Saffron production is introduced in this paper as an approach to solve inverse problems in agricultural research. Since Saffron is an auto sexual sterile plant, it does not produce seeds, so manipulating the seed is not possible to obtain a better pant. In order to increase the level of Saffron production the effect of three different ratios of fertilizers (N, P_2O_5 and composted cow manure) under controlled conditions were studied experimentally. For this approach two saffron fields in different geographical locations were divided into platforms each comprising of 108 plats. Four blocks of plats were chosen randomly from a platform for the study. The effects of 27 treatments of varying the ratio of the three fertilizer applied to the plats were studied in three sequential years using weight measurement of Fresh Flower Weight (FFW), Saffron Yield (SY) and Leaf Biomass (LB). The experimental data was used to train a BPNN. The input to the network was the weight of each fertilizer in each treatment and the year of production; the output was the weight of FFW, SY and LB. Once trained a mathematical function relating the inputs to outputs was found allowing the approximate weight of FFW, SY and LB to be predicted for any combination of fertilizer, bound by the training envelope, quickly and accurately. Using this function it is possible to predict the Saffron production levels for the coming years for the fertilizer ratios tested and also for different ratios of fertilizer that have not been tested experimentally.
Keywords: back propagation, *Crocus sativus* L., inverse problem, neural network, product prediction

P2-21. The effect of different corm coverage and size of saffron and drought stress on root and leaf characteristics of saffron

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Saffron *(Crocus sativus* L.*)* is a very expensive spice used mostly as a herbal medicine or a food coloring and flavoring agent in parts of the world, it belongs to the Iridaceae family, and grows natively in Middle East, Asia and the Europe. The goal of this study was to investigate the factors affecting morphophysiological traits of saffron. In this experiment we focused on morohophysiological characteristics of root growth and leaf morphology under treatments of 4 groups of corm size (w_1=2-4, w_2=4-6, w_3=8-10 and w_4=10-12 g) and 2 groups of corm covering ($C_1$with tunic and C_2=without tunic) and 2 level of irrigation (M=with and D= without irrigation). The corms used in this study were collected from Tiebaad in southern khorasan province. The green house research was carried out in autumn 2008 at Faculty of Agriculture in Ferdowsi University of Mashhad, Iran. This factorial experiment was conducted based on completely randomized block design with three replications. Results indicated that we had the highest biomass, number and length of roots in MC_1W_4 treatment that it was included irrigation, covered corms with maximum weight. In Irrigation treatments and covered corms effect of corm size was positive and with increasing corm weight to (W_3), an increasing trend was observed in root length. But there is no significant difference between (W_3) and (W_4). The maximum biomass was obtained in highest corm size (W_4) and covered corms (C_1) and also the greatest leaf length were achieved in middle corm size. It could be concluded that the average corm size shown better morphophysiological characteristics.

P2-22. The effect of plant density and depth on agronomic characteristic of saffron (*Crocus sativus L*)

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In order to investigate of the effect of plant density and depth on agronomic characteristic of saffron an experiment was conducted as a complete randomized block design with factorial arrangement in 2008. Treatments were 6 levels of high density (8, 11, 13, 16, 19 and 21 ton per hectare) and 3 planting depth (5, 10 and 15 cm). Results indicated that with increasing planting depth, flower number per unit area, fresh and dry weight of