

S₆-O-8

THE EFFECT OF DIFFERENT TIME OF IRRIGATION ON OCCURRENCE OF EARLY SPLIT OF PISTACHIO NUTS

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Abstract:

Early Splits(ES) are abnormal pistachio nuts that have both the hull and shell split while still on the tree, exposing the kernel to invasion by insects and molds (especially those that produce the potent toxins aflatoxins). The experiment carried out in around Rafsanjan city orchards during of 2001-2004 in 10 treatments including two irrigation interval (25days,45days) and five irrigation skipping in each irrigation interval. The during of the growing season when deficit irrigation occurred amount of ES pistachio nuts was evaluated in compare to full irrigation. Results indicated that long irrigation intervals and deficit irrigation of pistachio trees in late April till early June increased substantially (till 90%) the formation of ES nuts in harvest stage. Overall importance of suitable irrigation management had been illustrated in decreasing of ES nuts formation.

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COMPARISON OF AFLATOXIN CONTAMINATION AMONG DIFFERENT PISTACHIO TYPES AND CULTIVARS

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Abstract:

In order to decrease the aflatoxin amount of pistachio lots by removal of contaminated nuts, it is necessary to know which types and cultivars of pistachio nuts are susceptible to contamination. This research was conducted during 1381-82 years ,using factorial experimental design with two factor in ten replicates :1- three pistachio cultivars , 2- seven pistachio types. Results showed that Ahmad Aghaei cultivar is susceptible to contamination compared to another cultivars. Analysis of variance revealed significant differences ($p<0.05$) among different pistachio types. highest aflatoxin content were observed in pistachio nuts that have dark brown stains on their shells (309.7 ppb), and nuts that have dark gray stains (101.3 ppb). However these two types consist only 8% of pistachio lot weight , there fore by removal of them via sorting more than 82% of total aflatoxin would reduced.

S₆-O-10

PREDICTION SHELF LIFE OF PISTACHIO NUTS AT VARIOUS CONDITIONS BASED ON SENSORY EVALUATION

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Abstract:

Iran is one of the world's most important areas for the production of pistachio nuts, the Ohadee variety of Iranian raw dry pistachio nuts was selected for the experiments. The method of Accelerated Shelf Life Testing (ASLT) used for storage and sensory properties (taste, texture and overall acceptability) of raw dried pistachio nuts were investigated at 21% ,8% & < 2 % O₂ and different storage temperature (5,20,35,45 °C). Samples were experimented at 4,6,8,10,12 weeks by use of split-plot design and estimate the modeling shelf life of this product at various conditions. Results showed that the sensory attributes (taste and texture) under factors of temperature, storage time and O₂ % were significant (p< 0.05) but overall acceptability was significant (p<0.05) under factor of storage time and maximum shelf life(284 days) for raw dried pistachio nuts determined at 5 °C and < 2% O₂ based on overall acceptability. Linear Regression second order function had a best fit with R² > 98 at all levels of oxygen conditions (21% ,8% & < 2 % O₂) for raw dried pistachio nuts.

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DEVELOPMENT OF A PISTACHIO SORTING SYSTEM BASED ON ACOUSTIC TECHNIQUE

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Abstract:

Currently, closed-shell pistachio nuts are removed by mechanical devices. These devices have lower classification accuracy and damage kernels in split pistachios by "pricking" them with a needle. The needle hole can give the appearance of an insect tunnel and cause rejection by consumer. We recently developed a non-contact acoustic sorting system. This system does not cause such damage. The acoustical sorting system is based on an artificial neural network (ANN) classification technique. It was developed to distinguish pistachio nuts with closed shells from those with open shells. The system includes a Pentium IV computer, a DSP board, a microphone, a material handling system and an air reject mechanism. It was observed that upon impact with a steel plate, nuts with closed shells emit different sounds than nuts with split one. This feature was employed to develop the ANN classification algorithm. Experimental results showed that steel plate had better result than glass and wooden plates for separating of different pistachios sounds. Two cultivars of Iranian pistachios namely, Koleh Ghochi and Akbari were selected for this study. An increased sorting accuracy of the acoustic sorter with its lower cost enables a payback period of less than one year. This promising method is easily trainable and may work well for other types of pistachio defects or inspection of other agricultural products.

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STUDY OF PISTACHIO (*Pistacia Vera* L.) DRYING PROCESS IN LABORATORY AND BATCH DRYERS

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