

Effects of physical and chemical mutagens on olive plant

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Physical and chemical mutagens are used to develop new olive mutants. Such mutant materials are mostly used on seeds and vegetative plant parts. 1- To develop new early olive varieties, semihardwood cuttings were radiated by 1000 to 4000 roentgen. 2- To increase percent of fruit set in olive hybrids 0.5 to 4 kg roentgen x-ray was used on olive plants. 3- Effects of 0.01 to 0.05 percent colchicine was tested on olive pit. And the last part of our experiment was to test 0.01 to 0.05 percent chemical mutagens such as Dimethyl and Diethyl sulphate for 24 hours on olive.

The results indicated a height decrease and leaf color change in mutants compared to control. The color of olive fruit was darker and its vitamin content was also increased. Pit separation from the fruit, more easily a month early ripening, increase of oil content and more resistance to cold and pests were also the results of first experiment. Under 2000 roentgen treatment, morphological changes took place.

However, this was only due to modification changes and disappeared in next generation.

Hybrids treated with 0.5-4kg roentgen showed 12 percent increase in fruit set compared to 2-3 percent in control. Colchicine treatment with concentration of 0.01 to 0.05 increased plant height. Caused darker leaf color, shorter vegetative growth period, higher resistance to winter cold, and doubling chromosomes number.

Finally, using chemical mutagens of dimethyl and ethyl sulphate on olive cuttings resulted in higher resistance to winter cold and various pests.