This investigation was conducted on two date groups: Semi-dry date (Amry cultivar) and dry date (Sackoti and Bartamoda cultivars) dates, at the National Center for Radiation Research and Technology (NCRRT), in Cairo, during two successive seasons, 1992 and 1993. The aim of this study is to find out the best alternative method for improving fruit quality as well as prolonging the marketable period of date fruits.

Semi-dry date (Amry) fruits were obtained from El-Kourain region, Sharkia Governorate. While, dry date fruits were brought from Aswan Governorate. Two hundred and twenty kilograms of fruits from each date group were collected to be used for the different postharvest experiments.

Twenty kilograms of Amry date fruits were subjected to the heat treatment (40°C for 72 hours) which is commonly used in El-Kourain region, while in case of dry dates, fumigation treatment with methyl bromide (MB) was used as common method in Aswan. Anyhow, all date fruits were transferred to the laboratory then divided into samples of 500 g. each. During the first season, Amry date fruits were packed in perforated polyethylene bags.
In the second season, only one half was packed in non-perforated polyethylene, while the others packed in cloth bags. Moreover, dry dates were packed in perforated bags of either paper craft or polyethylene bags during the first season, while in the second season three types of packages i.e polyethylene, paper craft and cloth were perforated.

The obtained results can be summarized as follow:

**7-1- Physical characters:**

**7-1-1- Weight loss:**

1- Weight loss was increased by prolonging storage period in all treatments and date cultivars under study.

2- Irradiation treatments succeeded in reducing weight loss in both Sackoti and Bartamoda date fruits, while heat treatment was preferred in this respect for Amry semi-dry date fruits.

3- The higher doses of irradiation (0.75 and 1.00 kGy) reduced weight loss in all studied date fruits.

4- Paper craft and cloth packages reduced weight loss in relation to polyethylene for both Sackoti and Bartamoda date fruits, while polyethylene package was preferred in this respect for Amry semi-dry date fruits.
7-2- Chemical characters:

7-2-1- Moisture content:

1- Moisture content percentage decreased by prolonging the storage period in all treatments and date cultivars under investigation.

2- Heat treatment decreased moisture content of Amry semi-dry and Sackoti date fruits while, heat plus irradiation treatments decreased moisture content of Bartamoda date fruits.

3- Higher doses of irradiation (0.75 and 1.00 kGy) were more effective in this respect in all date cultivars under study.

4- Cloth package gave the highest decrease in moisture content of date fruits under investigation.

7-2-2- PH values:

1- PH values in fruits decreased by increasing the storage period in all treatments and date cultivars under study.

2- Heat plus irradiation treatments succeeded in preserving pH values of both Sackoti dry date and Amry date fruits, while irradiation treatment solely was preferable in this respect for Bartamoda date fruits more obviously than other treatments.
3- Polyethylene package reduced the change in pH values of Bartamoda date fruits, while cloth package reduced the drop in pH values of Amry date fruits. However, no significance was obtained between different packages for Sackoti date fruits.

7-2-3 Total soluble solids:

1- Total soluble solids percentage increased in fruits by prolonging the storage period in all treatments and date cultivars under study.

2- Heat treatment increased fruits total soluble solids percentage of all date fruits under investigation.

3- The lower doses of irradiation (0.25 and 0.50 kGy) surpassed the higher ones (0.75 and 1.00 kGy) in increasing total soluble solids of all date fruits under study.

4- Polyethylene and cloth packages augmented total soluble solids percentage of both Sackoti and Bartamoda date fruits, while cloth package was promising in this respect for Amry date fruits.

7-2-4 Total sugars:

1- Under all treatments used, total sugars in fruits decreased with increasing storage period.

2- Irradiation treatments succeeded in preserving total sugars of fruits during storage of both Sackoti and
Bartamoda date fruits, while, heat plus irradiation treatments were preferred in this respect for Amry date fruits.

3- Polyethylene package increased total sugars percentage of Bartamoda date fruits, while cloth package was preferred for Amry date fruits in this respect. On the other hand, no statistical effect was noticed between packages for Sackoti date fruits.

7-2-5- Reducing sugars:

1- All treatments used decreased reducing sugars percentage as storage period go by.

2- Irradiation as well as irradiation plus heat treatments preserved reducing sugars percentage in Sackoti date fruits, while heat treatment gave a similar effect for Amry date fruits.

3- Paper craft and cloth packages decreased the loss in reducing sugars percentage of both Sackoti and Bartamoda date fruits, while, polyethylene package was superior in this respect for Amry date fruits.

7-2-6- Tannins percentage:

Tannins percentage was not affected statistically by the different treatments used in this study.
7-2-7- **Amino acids content:**

1- Total amino acids (essential and non-essential) decreased or increased by increasing storage period according to the treatment used.

2- High irradiation treatment (1.0 kGy) succeeded in increasing total amino acids content (essential and non-essential) in fruits of all date cultivars under study.

**7-3- Insect infestation:**

1- The percentages of date fruits free of infestation decreased with increasing storage period under all treatments and packages used in this study.

2- Heat plus irradiation treatment succeeded in decreasing insect infestation in all date fruits under study.

3- Polyethylene package was generally superior in this respect in all studied date fruits.