This study was carried out during 1992 and 1993 seasons at the Horticulture, Research Institute at Giza, Egypt, to throw some lights on rooting ability of guava cuttings cvs. Banaty and Montakhab El-Sabahia. Following, a week of spraying guava trees of both cvs. with ethephon at 100 ppm subterminal cuttings (about 15 cm. long and 0.5 cm diameter, with one half of two leaves) were prepared and planted in three dates namely May, 5th, July, 5th and September, 5th. Furthermore, two trees of both cultivars were left without ethephon sprays and sprayed with tap water as a source of "control" cutting (general control). Moreover, in the previously three mentioned planting dates, the following treatments were carried out:1- General control: Cuttings taken from tap water- sprayed trees were dipped for 10 seconds in tap water. In addition, cuttings prepared from 100 ppm ethephon-sprayed trees were dipped for 10 seconds in one of the following solutions:2- Tap water (control).3- Indole butyric acid (IBA) at 2000, 4000 and 6000 ppm.4- 2000 ppm IBA + 500 ppm Naphthalene acetic acid (NAA).5- 2000 ppm IBA + 1000 ppm NAA.6- 2000 ppm IBA + 500 ppm NAA.7- 4000 ppm IBA + 1000 ppm NAA.8- 6000 ppm IBA + 1000 ppm NAA.9- 6000 ppm IBA + 500 ppm NAA.10- 6000 ppm IBA + 1000 ppm NAA.11- 4000 ppm IBA + 500 ppm NAA.12- 4000 ppm IBA + 1000 ppm NAA.13- 6000 ppm IBA + 500 ppm NAA.14- 6000 ppm IBA + 1000 ppm NAA.15- 1000 ppm Paclobutrazol (PP333).16- 1000 ppm PP333 + 500 ppm NAA.17- 1000 ppm PP333 + 1000 ppm NAA.18- 1000 ppm PP333 + 4000 ppm IBA. Thus, the study of each cv. is considered a factorial experiment consisted of 42 and 45 treatments (3 planting dates x 14 and 15 growth regulator treatments) in 1992 and 1993 seasons, respectively. The treatments were rearranged in a completely randomized block design with four replicates foreach treatment and each replicate included ten cuttings. The obtained results could be summarized as follows:

5.1. Rooting D1 guava cuttings: 5.1.1. Banaty (guava. 5.1.1.1. Rooting percentage: Cuttings planted in early May gave higher rooting percentage than those planted in early July or September. Cuttings taken from 100 ppm ethephon-sprayed trees and treated with growth regulators (Particularly 4000 ppm IBA + 500 ppm NAA) gave higher rooting percentage as compared with those of the "general control" or "control" treatments. Furthermore, growth regulator-treated cuttings gave higher rooting percentage as compared with those of the "general control" or the "control", regardless of the planting date. Also, most interactions between May planting and growth regulator treatments gave significantly higher rooting percentage as compared with the analogous ones of July planting. Generally, (4000 ppm IBA + 500 ppm NAA)-treated cuttings and planted in May gave the highest rooting percentage. 5.1.1.2. Survival percentage: Cuttings planted in early May gave higher survival percentage as compared with those planted in early September or early July. Moreover, growth regulator treatments significantly increased survival percentage as compared with the "general control" or the "control" - (4000 ppm IBA + 500 ppm NAA) treatment induced significantly the highest survival percentage. On the other hand, all interactions between growth regulator treatments and planting dates significantly increased survival percentage as compared with the analogous ones of the "general control" or the "control". Also, the interactions of early May planting statistically increased survival percentage as compared with those of early September and early July plantings. Briefly, (4000 ppm IBA + 500 NAA) -treated cuttings and planted in early May showed the highest survival percentage. 5.1.1.3. Nat af roots per cutting)
increased the number of developed adventitious roots per cutting as compared with early September or early July planting. In addition, (4000 ppm IBA + 500 ppm NAA) was the most effective growth regulator treatment in enhancing the development of adventitious roots on the cutting. On the other hand, the interactions of the "general control" and "control" induced the lowest number of developed adventitious roots per cutting. Also, the interactions of early May planting significantly increased number of roots per cuttings as compared with those of September or July planting. Briefly, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in early May induced the highest number of developed roots per cutting. Furthermore, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in early May induced the longest roots as compared with September or July planting. Furthermore, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in early May induced the highest number of developed roots per cutting. The effect of tested growth regulator treatments was more pronounced and highly significant when the treated cuttings were planted in early May. Consequently, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in early May produced the longest shoots. 

5.1.1.8. Root dry weight: May planting induced the heaviest root dry weight, whereas September or July planting exerted the lowest stimulating effect on root dry weight. In addition, all growth regulator treatments significantly increased root dry weight as compared with "general control" or "control" treatments. However, (4000 ppm IBA + 500 ppm NAA) induced the highest root dry weight, regardless of planting date. The effect of (4000 ppm IBA + 500 ppm NAA) was more pronounced when the treated cuttings were planted in May. On the other hand, untreated cuttings "general control" planted in September, May or July induced the highest root dry weight. Conclusively, early May showed to be the proper time for planting Banaty guava cuttings, hence it enhanced all tested rooting parameters and the growth of rooted cuttings. Also, (4000 ppm IBA + 500 ppm NAA) proved to be the most effective treatment in improving rooting ability of Banaty guava cuttings. Consequently, cutting taken from ethephon-sprayed trees, treated with (4000 ppm IBA + 500 ppm NAA) and planted in early May showed the best rooting parameters and subsequent growth of rooted cuttings. Furthermore, "general control" treatment gave significantly higher top: root ratio as compared with all tested growth regulator treatments. On the other hand, untreated cuttings "general control" planted in September, May or July induced the highest top: root ratio. Conclusively, early May showed to be the proper time for planting Banaty guava cuttings, hence it enhanced all tested rooting parameters and the growth of rooted cuttings. Also, (4000 ppm IBA + 500 ppm NAA) proved to be the most effective treatment in improving rooting ability of Banaty guava cuttings. Consequently, cutting taken from ethephon-sprayed trees, treated with (4000 ppm IBA + 500 ppm NAA) and planted in early May showed the best rooting parameters and subsequent growth of rooted cuttings.
treatment induced the highest survival percentage. In addition, the interaction between planting date and growth regulator treatments induced high significant increase in survival percentage as compared with those of the "general control" and "control". Besides, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in July gave the highest survival percentage. 5.1.2.3. ND.4f roots per. cutting: Cutting planted in July produced the highest number of roots per cuttings as compared with other tested planting dates. Moreover, growth regulators-treated cuttings gave higher number of roots as compared with the untreated ones "general control" or "control". Briefly, (1000 ppm NAA + 1000 ppm PP₃) and (4000 ppm IBA + 500 ppm NAA) gave the highest number of roots per cutting. On the other hand, all interactions between growth regulator treatment and planting dates significantly increased number of adventitious roots per cutting as compared with those of the "general control" and "control". Also, growth regulator-treated cuttings planted in July produced higher number of adventitious roots. 5.1.2.4. Root length: Cuttings planted in July produced longer roots than those planted in September or May. On the other hand, cuttings taken from ethephon-sprayed trees and treated with growth regulator treatments produced longer roots than those of "general control" or the "control". Generally, (4000 ppm IBA + 500 ppm NAA) treatment induced significantly the longest roots. Furthermore, root length was significantly increased due to the effect of interaction between planting date and growth regulator treatments as compared with the interaction between planting date and "general control" or "control". Also, the interaction of July planting statistically increased root length as compared with the analogous ones of September and May plantings. Consequently, (4000 ppm IBA + 500 ppm NAA) -treated cuttings, planted in July or May produced comparatively the longest roots. 5.1.2.5.19, Etf sprouted shoots per cutting: Cuttings planted in July produced the highest number of shoots as compared with those planted in May or September. Furthermore, growth regulator-treated cuttings (particularly 4000 ppm IBA + 500 ppm NAA) significantly increased number of sprouted shoots per cutting. In addition, (4000 ppm IBA + 500 ppm NAA), (1000 ppm NAA + 1000 ppm PP₃) and (4000 ppm IBA) -treated cuttings and planted in July gave the highest number of shoots as compared with all interactions between planting date and growth regulator treatments including the "general control" and "control" treatments. 5.1.2.6. Shoot length: Planting date (early May, early July and early September) failed to effect shoot length of the rooted cuttings in 1992 and 1993 seasons. On the other side, cuttings taken from ethephon-sprayed trees and treated with growth regulators gave longer shoots than those of the "general control" and "control" treatments. Briefly, (4000 ppm IBA + 500 ppm NAA) treatment induced the longest shoots. Moreover, shoot length of the rooted cuttings was greatly increased due to the interactions between planting date and growth regulator treatments as compared with those resulted from the interaction between planting date and "general control" or "control" treatments. Generally, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in July or May produced significantly the longest shoots. 5.1.2.7. Top, dry weight: Cuttings planted in July produced heavier top dry weight as compared with those of May or September planting. Furthermore, cuttings taken from ethephon-sprayed trees and treated with growth regulators significantly increased top dry weight as compared with those of the "general control" or "control". Briefly, (4000 ppm IBA + 500 ppm NAA) proved to be the most effective treatment in this respect. In addition, top dry weight of the rooted cuttings showed significant increase due to the interactions between planting date and growth regulator treatments as compared with the interaction between the planting date and "general control" or "control" treatment. Briefly, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in July gave statistically the heaviest top dry weight. 5.1.2.8. Root lla weight: July planting of guava cuttings induced statistically heavier root dry weight as compared with September or May plantings. In addition, all growth regulator treatments significantly increased root dry weight as compared with the "general control" or "control" treatments. Conclusively, (4000 ppm IBA + 500 ppm NAA) caused high significant increase in root dry weight. Furthermore, top dry weight was significantly increased due to the interaction between planting date and growth regulator treatments as compared with those of the "general control" and "control". Besides, all interactions of July planting exerted more pronounced effect on root dry weight than the analogous ones of September and May plantings. Consequently, (4000 ppm IBA + 500 ppm NAA) -treated cuttings and planted in July gave the heaviest root dry weight. 5.1.2.9. Top: root ratio: Planting dates induced
statistically similar effect on top: root ratio in both seasons. Furthermore, (4000 ppm IBA + 500 ppm NAA) and (1000 ppm NAA + 1000 ppm PP) treatments significantly increased top: root ratio as compared with the "general control" and "control" as well as all tested treatments (except for 4000 ppm IBA treatment). On the other hand, (4000 ppm IBA + 500 ppm NAA) and (4000 ppm IBA) -treated cuttings and planted in September gave the highest top:root ratio. 5.2. Chemical study: 5.2.1. Banaty guava cuttings: Generally, total soluble phenols did not show significant response to the studied factors i.e. planting date, ethephon treatment and their interactions during the two seasons of the study. Furthermore, cuttings planted in May showed higher content of total soluble indoles as compared with those planted either in July or September. Also, spraying Banaty guava trees with ethephon significantly increased the cutting content of total soluble indoles as compared with those of the control. Moreover, total soluble indoles showed significant response to interaction between ethephon treatment and planting date. Briefly, cuttings taken from ethephon-sprayed trees and planted in May showed the highest total soluble indoles as compared with the analogous ones of July and September. 5.2.2. Montakhab El-Sabahia guava cuttings: Total soluble phenols of Montakhab El-Sabahia guava cuttings showed significant response to planting date and ethephon treatment and their interactions in both seasons of study. In addition, cuttings planted in July had higher total soluble indoles as compared with those planted in May or September. Moreover, cuttings taken from ethephon-sprayed trees had higher total soluble indoles than those of the "control". On the other hand, total soluble indoles significantly responded to the interaction between planting dates and ethephon treatment. Briefly, cuttings taken from ethephon-sprayed trees showed significantly higher total soluble indoles as compared with those of the "control", regardless of planting dates. 5.3. Anatomical Anal: Histological study indicates that the preformed root initials were noticed in the cortex of Montakhab El-Sabahia guava cuttings, only, whereas, Banaty guava cuttings was lack from preformed root initials. Root initials were arised from the cambium zone in both cultivars. Moreover, cambium was activated in all growth regulators-treated (particularly, 4000 ppm IBA + 500 ppm NAA). Conclusively, one can say that May planting of Banaty guava cuttings taken from 100 ppm ethephon-sprayed trees, a week prior to cutting preparation and treated with (4000 ppm IBA + 500 ppm NAA) as well as July planting of Montakhab El-Sabahia guava cuttings taken from 100 ppm ethephon-sprayed trees and treated with (4000 ppm IBA + 500 ppm NAA) greatly enhanced rooting ability of guava cuttings.