Papaya "Carica papaya", L." is cultivated for its ripe fruits, favoured by tropical people, as breakfast fruit, and as an ingredient in jellies, preserves, or cooked in various ways. Juice makes a popular beverage. Young leaves and fruits cooked as a vegetable. Latex used to remove freckles. Bark used for making rope. Leaves used as a soap substitute and supposed to remove stains. Flowers are eaten in Java. Papain, the proptelytic enzyme, has a wealth properties and active over a wide pH range.

Papain is useful in medicine, combatting dyspepsia and other digestive orders. In liquid preparations, it has been used for reducing enlarged tonsils. Nearly 80% of American beer is treated with papain, which digests the beer remains clear on cooling. Papain is also, used for degumming natural silk. However, most of the papain imported in the U.S. is used to extract the oil from tuna liver. Cosmetically, it is used in some dentifrices, shampoos and facelifting preparations. It is used to clean silks and wools before dying and to remove hairs from hides during tanning (Duke, 1989).

Papain is also used in the manufacture of rubber from Hevea. Fruit and seed extracts have pronounced bactericidal activity against Staphylococcus aureus, Bacillus cereus, Escherichia coli, Pseudomonas aeruginosa and Shigella flexneri (Emeruwa, 1982). The juice is used for warts, cancers, tumors and indurations of the skin. Sinapisms prepared from the roots are also said to help tumors of the uterus. Green fruit said to be ecbolic. Leaves poulticed onto nervous pains and elephantiod growths.
Furthermore, each 100 g of ripe fruit is reported to contain 32-45 calories, 87.1-90.8g water, 0.4-0.6g protein, 0.1g fat, 8.3-11.8g total carbohydrate, 0.5-0.9g fiber, 0.4-0.6g ash, 20-24mg Ca, 15-22mg P, 0.3-0.7mg Fe, 3-4mg Na, 221-234mg K, 710-1050 μ beta carotene equivalent, 0.03-0.04mg thiamine, 0.03-0.05mg riboflavin, 0.3 - 0.4 mg niacin and 52-73mg ascorbic acid.

On the other hand, papaya plants are commonly propagated by seeds. Consequently, some of emerged seedlings are males or females and still others hermaphrodite. Therefore, soaking seeds in some chemical solution i.e. gibberellin, ethephon, naphthalene acetic acid, paclobutrazol, zinc sulphate, thiourea, .......... etc as well as seed radiation with gamma rays may help not only in enhancing germination percentage and rate, but also and more importantly in changing sex ratio of the emerged plants, particularly towards pistillate plants.

Moreover, one male plant is sufficient to ensure perfect pollination for at least 25 female plants. Thereupon, the growth and development of sprouted seeds into male plants, which are detected only at blooming stage are considered not only useless plants, but also a great loss from the commercial view. Thereon, early detection of sex in papaya plants is of great importance from the commercial standpoint.

Consequently, the target of this investigation is to study the effect of some chemical substances i.e. gibberellin, ethephon, naphthalene acetic acid, paclobutrazol, thiourea,
sodium thiosulphate and zinc sulphate as well as gamma irradiation at different doses on seed germination, growth and blooming -particularly sex expression- of papaya plants. Besides, this investigation was initiated to achieve another important objective, definitely the prediction of sex in papaya plants through detecting the relationship between some leaf chemical composition and sex expression of papaya plants cv. Fairchild.