CHAPTER II

GENERAL INTRODUCTION

2.1 POTATO

SCIENTIFIC NAME	: Solanum tuberosum
FAMILY	: Solonaceae family
COLOURS	: White, purple or pink
COMMON NAME	: Potato
BEST SEASON	: October to March

The **potato** is a perennial tuber of the Solanaceae or nightshade, family, which is one of the most widely used vegetables in Europe and North and South America. There are six other species of Solanum of minor importance. There are thousands of varieties of potato in cultivation.

It is the world's fourth largest food crop, following rice, wheat and maize. The edible part is the swollen portion of the plant. Potatoes are covered with a skin and have small 'eyes' on their surface from which new buds emerge. It is a good source of vitamins, fibres and minerals such as copper, potassium, iron and magnesium.

FIG.1 POTATOES

VARIETIES : There are about 100 varieties of this starch tuber plant. They range in size, shape, colour, starch content and flavour. Their flesh may be white or coloured like the skin. Small types are called 'fingerling' or 'new' potatoes, larger potatoes are called 'earlier' or 'main' crop.

(i). **NUTRITIONAL VALUE** : A potato, raw, with skin contains 19g of carbohydrates, 15g of starch, 2.2g of dietary fibre, fat 0.1g, protein is of 2g and water 75g.

(ii). **MINERALS** : The most important mineral matters found in potatoes are potash and phosphoric acid compounds. Potatoes contain 12mg (1%) of calcium, 1.8mg (14%) of iron, 23mg (6%) of magnesium, 57mg (8%) of phosphorous, 421mg (9%) 0f potassium and 6mg (0%) of sodium.

(iii). **VITAMINS** : The vitamins in potatoes are 0.08mg (7%) of Thiamine (vit. B_1), 0.03mg (3%) of Riboflavin (vit.B_2), 1.1mg (7%) of Niacin (vit.B_3), 0.25mg (19%) of vitamin B_6, 20mg (24%) of vitamin C.

(iv). **ORGANIC ACIDS** : There are several organic acids as citric, tartaric and succinic acid which vary in tubers of different ages and account in some measure for the flavour of potatoes.

In addition to vitamins and minerals the potato contains an assortment of phytochemicals, such as carotenoids and natural phenols. Chlorogenic acid constitute upto 90% of the potato tuber natural phenols. Others found in potatoes are 4-0-caffeoylquinic (crypto-chlorogenic acid), 5-0-caffeoylquinic (neo-chlorogenic acid)*.

(v). **CARBOHYDRATES** : The carbohydrates are by far the most abundant of the nutrients. The bulk of the carbohydrates which the potato stores for future use is in the form of starch, which is insoluble in cold water and small quantities of such soluble carbohydrates are dextrose,

sugar etc. When it begins to sprout part of the starch is converted by a ferment in the tuber into soluble glucose. The young or early potatoes and old ones both have a smaller proportion of starch and more soluble sugars than well – grown but still fresh tubers. Other carbohydrates are the pectose bodies and fat or ether extract the greater part of which occurs in the inedible skin in the form of wax like body[25].

2.2 APPLE

SCIENTIFIC NAME : Pyrus Malus

FAMILY : Rosaceae

COLOURS : Red, Scarlet red

COMMON NAME : Apple

BEST SEASON : August to October

An apple is a familiar fruit and there are multiple forms of apples, such as the golden delicious, red delicious and granny smith, but all of these apples have the same composition[26].

(i). **NUTRIENTS** : An apple is made up of 85.3 grams of water, 0.3 g of protein, 0.4 g of lipids, 11.8 g of carbohydrates, 0.6 g of organic acids and 2.3 g of fibre. An apple has 54 calories.

(ii). **MINERALS** : The minerals in an apple are 3 milligrams (mg) of sodium, 145 mg of potassium, 6 mg of magnesium, 7 mg of calcium, 65 micrograms (ug) of manganese, 480 ug of iron, 100 ug of copper, 120 ug of zinc, 12 mg of phosphorus, 2 mg of chloride, 7 ug of fluoride, 2 ug of iodine and 1-6 ug of selenium.

(iii). **VITAMINS** : The vitamins in an apple are 45 ug of carotene, 490 ug of vitamin E, 0-5 ug of vitamin K, 35 ug of vitamin B1, 30 ug of vitamin B2, 300 ug of nicotinamide, 100 ug of pantothenic acid, 45 ug of vitamin B6, 1-8 ug of biotin, 7 ug of frolic acid and 12 mg of vitamin C.

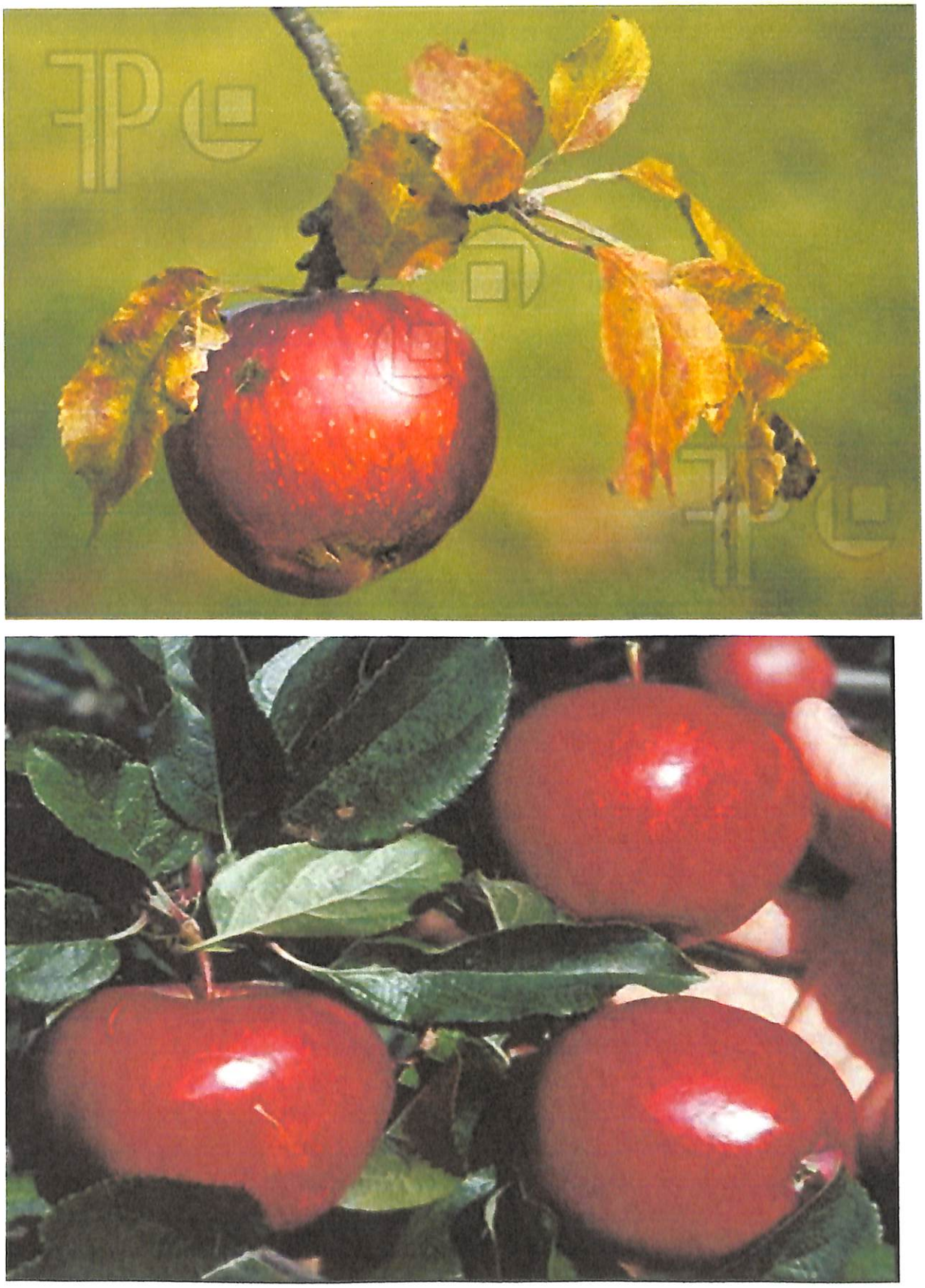

FIG.2 APPLES

(iv). **AMINO ACIDS :** There are 11 different types of amino acids in apples. The most significant are 16 mg of leucine, 15 mg lysine, 12 mg of valine and 10 mg of isoleucine.

(v). **CARBOHYDRATES AND LIPIDS :** The apple carbohydrate count is 2210 mg of glucose, 6040 mg of fructose, 2470 mg of sucrose, 600 mg of starch, 510 mg of sorbit. Its lipids are 50 mg of palmitic acid, 10 mg of stearic acid, 20 mg of oleic acid, 100 mg of linolic acid, 20 mg of lino leic acid.

(vi). **OTHERS :** An apple also has 550 mg of malic acid, 16 mg of citric acid, 500 ug of oxalic acid, 310 ug of salicylic acid and 3 mg of purines