

iodine estimation on a dry weight basis in three replications. The head of each hybrid was cut into small pieces and oven-dried at 40°C and then ground into a fine powder. Iodine estimation was based on the principal of quantitative determination of micro amounts of iodine on a catalytic reduction of microelements of ceric (Ce^{+4}) to cerous (Ce^{+3}) ions by iodine. A suitable amount of dried sample (usually containing 0.04 to 0.08 μg of the iodine) was taken in a test tube (15 × 125 mm). After digestion, incineration and extraction, the reduction of ceric to cerous ions is read in a spectrophotometer at 420 nm. A standard solution of KI (potassium iodide) containing 0.0 to 0.16 μg of iodine per milliliter was run simultaneously. A straight line response is obtained by plotting concentration of iodine in μg against reading on a spectrophotometer. Using this standard graph, the values for any unknown sample are read.

1.2.7 ESTIMATION OF MACRO, MICRO AND CAROTENE IN CABBAGE HYBRIDS

The macro, micro and carotene studies were also undertaken in cabbage hybrids. Cabbage is a source of sodium and potassium, an essential mineral that helps to regulate the body's balance of fluid. Calcium is an essential mineral for the human body. It is a source of calcium needed for the formation of protein and bone. An iron deficiency leads to general anemia while copper causes cardiovascular malfunction and bone disorders. Biologically active minerals like sodium (Na), potassium (K) and calcium (Ca) were estimated through a flame photometer and zinc (Zn), manganese (Mn), copper (Cu) and iron (Fe) were estimated through a spectrophotometer. Cabbage contains β -carotene, which exhibits great antioxidant activity. β -Carotene was estimated through a spectrophotometer and the results were expressed as $\mu\text{g}/100\text{g}$, RE (retinol equivalents) and recommended daily allowance (RDA%). All qualitative estimations were on dry weight basis.

Statistical analysis was carried out according to Gomez and Gomez (1984). Significant variation in all parameters was observed among different genotypes of cabbage. The significance of the treatment effect was determined using a F-test and to determine the significance of the two treatments CD at 1% and 5% probability level was used.

1.3 RESULTS AND DISCUSSION

Ascorbic acid, also known as vitamin C, is an antiscorbutic and is very important for health. It is required for functional activities, such as the formation of collagen fibers and mucopolysaccharides of connective tissues, osteoid tissue and dentin (Fain 2004; Iqbal et al. 2004). More than 85% of vitamin C in the human diet is supplied by fruits and vegetables (Davey et al. 2000; Lee and Kader 2000). Ascorbic acid ranged from 40.00 to 75.83 mg/100 g in the outermost leaves, 35.83 to 71.66 mg/100 g in the outer middle leaves, 28.50 to 52.50 mg/100 g in the inner middle leaves and 19.33 to 45.33 mg/100 g in the innermost leaves (Table 1.1). Genotype C5 showed maximum ascorbic acid content (75.83 mg/100 g) in the outermost leaves. There was a decrease in the ascorbic acid content in the outer middle leaves (71.66 mg/100 g), inner middle leaves (52.50 mg/100 g) and innermost leaves (45.33 mg/100 g). All nine genotypes