

released as a new variety.

### C. Hybrid Vigour or Heterosis

Inbreeding leads to reduction in vigour and fertility and this phenomenon is known as **inbreeding depression**. However, hybridization which involves cross pollination between two different genotypes, results in increased vigour and fertility. Thus, the phenotypic superiority of the hybrid over either of its parents in one or more traits is known as **hybrid vigour** or **heterosis**. This term was coined by A.F. Shull (1912). However heterosis was first studied by Kolreuter (1763) followed by Charles Darwin (1876). Hybrid vigour leads to increased size, yield, vegetative growth, resistance to disease, insects, environmental stresses, agronomic superiority etc. This property of hybrid vigour has been exploited in commercial crops such as rice, maize, sorghum, tomato, bajra, sugarbeet, cabbage, cucumber, *Petunia* and *Zinnia* etc. Hybrid cotton produces large sized boll, cabbage produces large head, maize produces 30-50% higher yield in grain. Heterosis also leads to larger number and size of fruits in brinjal, tomato, mango, apple, larger tubers in potato, larger roots in radish, beet and carrot. Even in some cases the yield may be increased upto 300%.

By inbreeding, the hybrid vigour is lost gradually. Hence, seeds should be produced every year by crossing the pure parental lines so that optimum heterosis is maintained. However, heterosis is suitable for vegetatively propagated plants due to lack of genetic changes. For this reason vegetatively propagated hybrid varieties of mango, apple, guava, sugarcane, potato, rose, dahlia and *Chrysanthemum* are so popular and commercially profitable.