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1. INFLUENCES THAT IMPACT UPON STRAWBERRY BREEDING
  2. FRUIT QUALITY
  3. DISEASE AND PEST RESISTANCE
  4. FRUITING SEASON
  5. CULTIVAR TRIALS AND GENOTYPE X ENVIRONMENT INTERACTIONS
  6. BIOTECHNOLOGY
  7. BREEDING SYSTEMS
  8. INTRODUCTION AND CONSERVATION OF NATIVE GERmplasm
  9. SUMMARY
  10. REFERENCES
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Up to the present day, considerable progress has been made in understanding the cultivated strawberry (*Fragaria x ananassa* Duch.) and many cultivars have been introduced. It is not the intention to review this progress, as there have been several outstanding reviews published (Hancock *et al.*, 1990; Hancock *et al.*, 1996; Hancock, 1999; Faedi *et al.*, 2002). However, at the present time, there are several major influences that impact upon strawberry breeding. These will be discussed and then those areas thought to become major areas of progress or contention in North America over the next decade will be covered.

## 1. INFLUENCES THAT IMPACT UPON STRAWBERRY BREEDING

Although there are many traditional influences that define the goals of our breeding programs, there are several movements that have developed in the latter part of the 20th century, which will have tremendous impact on the way we do business in the future. We are just beginning to feel the impact of biotechnology and at least some of the techniques developed are being and will be used to develop new strawberry cultivars. Research into the nutritional value of fruits and vegetables is starting to show the benefits to human health.

Concerns about the effect of agriculture on the environment have been with us for a while but several aspects are of more topical concern. There is relentless pressure to reduce or eliminate the chemicals used to control pests and diseases, which will inevitably change the way we view plant resistance to pathogens. Soil fumigants appear to be especially vulnerable, and the elimination of methyl bromide as a fumigant will impact the strawberry industry, particularly in California and Florida. Recently the issue of water use and quality has risen to the North American public's consciousness. Linked to this are nutrient management practices with the leaching of nutrients, especially nitrogen and phosphorus probably being of greatest concern.

Also, there is a gradual change taking place over where and how strawberries are grown in North America. California has been the dominant force in the North American strawberry industry for the last half century, but urbanization, over-production and the elimination of methyl bromide may give other areas of North America a chance to change the *status quo*. In the North, the expansion of hill systems together with the use of day-neutral cultivars are allowing these areas to extend the harvest season so that they can compete more effectively against California and other production areas in the world.

In Europe and elsewhere in the world, much of the strawberry crop is now grown under some form of protected environment structure, greenhouses or large tunnels. Just how much impact this form of culture will have on production in North America remains to be seen. With the present prices for strawberries, protected culture is not economically feasible, but that scenario could easily change.

## 2. FRUIT QUALITY

Many characteristics affect fruit quality, but this chapter will concentrate on three aspects; fruit firmness, nutritional value and flavour. Fruit firmness is generally considered to be the product of flesh firmness and skin strength, and both are often correlated (Ourecky and Bourne, 1968) and are greatly influenced by temperature and humidity during fruit development and ripening (Hancock *et al.*, 1996). Fortunately, there are now cultivars that can be considered to have firm flesh with good skin strength (Chapter 11).

There are two important points in regards to firmness. Firstly, it is thought that regional climatic differences lead to different breeding priorities for firmness. From many years of field observations of cultivars from different parts of the world, the author has concluded that although breeders in different regions breed for firm fruit, the results will be different because fruit firmness varies with temperature and strong skin protects the fruit better in high light intensities. Consequently, breeders in hot