Vegetables, Heirlooms and Marketing

William L. Ashburner
Digger's Garden Co., 105 Latrobe Parade, Dromana, VIC 3936

MEASURE OF DIVERSITY

The number of varieties of vegetables is a fair measure of their genetic diversity. The more distinct forms there are, the greater the genetic base of that type of vegetable. Any loss of varieties is an erosion of that diversity and the subsequent genetic potential of that type of vegetable. Some of the genetic diversity is present in the next generation of varieties, but unless the parents are maintained there is theoretically a potential for depletion of this diversity.

In 1903 the United States Department of Agriculture published *American Varieties of Vegetables for the Years 1901 and 1902* which listed all available varieties. When this publication was compared recently with an inventory of the varieties held in the National Seed Storage Laboratory in Fort Collins, Colorado it was found that only 3% of these early varieties had survived to the present day (Whealy, 1987).

In 1985 the Seed Savers Exchange of Decorah, Iowa compiled and published a comprehensive inventory of the U.S. and Canadian mail order seed industry, focusing on nonhybrid or open-pollinated vegetable varieties. A second edition, published in 1987, revealed that 54 of the original 230 inventoried companies had ceased to trade and there were 39 new companies. These new companies predictably were not offering as many unique varieties as those companies which had ceased trading. In 1987, 5291 varieties were listed as opposed to 4963 in 1985. Of these, 2860 (54%) were unique to one company. The decision to drop these varieties by only one company would mean they would probably be lost if not preserved by someone else. More alarming was the fact that 1271 varieties listed were new varieties offered by companies that specialise in heirloom varieties or were foreign specialty varieties. Even though the number of varieties had increased, a quarter of the varieties listed 3 years previously had been lost. (Whealy, 1987).

Little other quantitative research has been published, but a profusion of anecdotes suggests that similar trends are occurring elsewhere in the world and also in Australia where the range of available vegetable seed varieties is dominated by overseas producers.

REASONS FOR LOSS OF DIVERSITY

The causes for the loss of available varieties are many. One cause common to mature industries is when takeovers and consolidation lead to pruning of variety lists, with view to higher profitability. In the past this has mainly been on a local scale, but now large multinational seed companies are being formed with global rather than local seed inventories.

Government legislation in Europe has resulted in a significant loss of diversity. The European Community, in its efforts to standardise every thing it touches, turned its attention to vegetable seeds in 1980. The Common List is a list of those varieties that are legal to sell in Europe. To be listed, a variety must be sponsored by a seed company (which costs many thousands of dollars), otherwise it is illegal

to sell it. Many public-domain varieties were listed initially on the lists of individual countries and so duplications became obvious when they were amalgamated into the Common List. After consultation with the seed industry, 1547 varieties were deleted, but it is estimated that only 38% of these were true synonyms (Cherfas, 1994). Mooney (1983), in comments relating to the changes in the seed industry, stated that "Brussels offers the new seedsmen a golden collective opportunity to not only rationalise their own offerings, but also to get rid of the low-profit competition offered by nonhybrid or nonproprietary varieties", i.e. Europe's traditional cultivars that belonged to no one.

Trends in plant breeding have shown a predilection for F1 hybrid vegetables. Hybrids resulting from crosses of two parents to produce seeds that give a first generation with known uniform characteristics do not produce second generation offspring which are the same as themselves. Thus knowledge of the parents to be used in the cross means exclusive ownership and subsequent higher profit margins. There is little motivation to create open-pollinated varieties that other companies could also grow and list.

HEIRLOOMS VERSUS HYBRIDS

Heirloom vegetables maybe defined as old (pre-World War II) open-pollinated varieties that are generally no longer commercially available. They are varieties that have been maintained by individuals or communities because they have characteristics that the preserver values. These varieties have become land races, where by virtue of having been grown and selected in one area over a long period of time they have genetic characteristics making them more suitable to that area.

Because they are open-pollinated, heirloom varieties tend to be more variable and genetically diverse than present day varieties. This results in plants that are not suitable for modern farming practices which require produce to ripen all at once for machine harvesting, and to stand up to rough handling when being packed and shipped. The characteristics that the commercial grower requires, in many cases, are not those the consumer would prefer. Emphasis on these characteristics by breeders has meant that flavour and specific utility for various end purposes have been ignored in order to produce a standard crop.

With larger profit margins and branded exclusive varieties (F1 hybrids), more marketing and advertising effort is being used to sell these new varieties to commercial growers and subsequently to the public. These varieties are promoted by virtue of their supposed superiority to the old varieties with regard to disease resistance, yield, and manageability.

The tomato is an often quoted example of how plant breeders have lost their way in the breeding of new vegetable varieties. The editorial of a mail order seed catalogue included this attack on the modern tomato "That the 'Florida commercial tomato' was able to survive a 6 ft fall to the floor without damage was regarded as a great step forward in tomato breeding by commercial seed houses, for surely this is their ultimate goal—an indestructible tomato. This tomato was tested in the same laboratory which evaluates 'car bumper safety standards' and they found the tomato had an impact speed of 13.4 miles per h, which was 2.5 times the speed of the minimum safety of current U.S. car models" (Garden Annual, 1993).

The promoters of hybrid varieties cite pest and disease resistance as a primary concern of the plant breeder. Crops would be produced that require lower inputs of

chemicals. Many patents are pending in the U.S. for herbicide-resistant crops, very few have been made for disease-resistant varieties. Rather than develop varieties which are pest resistant, plants are being bred to be resistant to the chemical pesticides sprayed onto the plants. The use of chemicals in the food production cycle will be further entrenched.

Trials at Digger's Garden Company seed production farm at Trawool, north of Melbourne, have been conducted over several years to determine whether commercial hybrids are superior to heirlooms. Tomatoes have been chosen as the most suitable subject for comparison. The characteristics chosen to be studied were : yield per plant, date of earliest fruit, days to harvest, and flavour. The heirlooms have been consistently superior to the hybrids for all characteristics evaluated. Often the hybrids produced the majority of their fruit all at once which is a major disadvantage for home gardeners (Spring Newsletter, 1994).

Heirloom vegetable varieties are not always useful varieties for commercial growers but they have admirable characteristics for home gardeners and speciality vegetable growers. Heirloom varieties have been judged to have superior flavour. The extended harvest period combined with better yields makes them good value for the area cropped. There are varieties which can be used for specific purposes, i.e. different tomatoes are very suitable for paste, bottling, drying, slicing, or salads. The price of open-pollinated varieties is a fraction of that for hybrids. In 1993 the seed of 'Vivian' F1, a popular hybrid home garden tomato, cost $8720 per kg compared to $320 per kg for standard open-pollinated types (Garden Annual, 1993).

STATUS IN AUSTRALIA

The stewardship of heirloom varieties is essentially left in the hands of non-government organisations. However, some specialised seed banks are maintained by Government agencies where breeding work is being carried out, e.g. The Australian Tropical Field Crops Genetic Resources Centre, Biloela. The Seed Saver's Network of Byron Bay in New South Wales is one of the first to be concerned about the preservation of heirloom varieties. Over the last 15 years they have accessioned and distributed 3000 varieties of vegetables. Unfortunately very few of these are uniquely Australian, i.e. developed in Australia, most are varieties that have been brought here by migrants. The Heritage Seed Curator's Association of Buchan in Victoria was formed in 1992 to draw together voluntary curators of vegetable groups. One of their projects is to document previously and currently available vegetable varieties. It will then be possible to determine what varieties may be "lost", so that they can then begin finding and preserving them. Their journal, *The Curator*, published in the Summer of 1995, contained an article surveying the tomato varieties listed in old seed catalogues. They have found that 207 varieties were no longer available in either the seed trade or in private collections.

MARKETING

In 1990 Digger's Garden Company tested the demand for heirlooms in their mail order seed catalogue by listing a few varieties of tomatoes. In 1992, 40 varieties were listed. In the 1995 mail order catalogue three quarters of the vegetable offerings were marked as heirlooms. These varieties sell at a premium $2.50 per packet as against $1.50 for standard lines. In the catalogue, heirloom varieties have been

promoted as being more appropriate for home gardeners and having a superior flavour. Nostalgic visions have been created of how vegetables, particularly tomatoes, tasted much better in the past. The beauty as well as utility of these rediscovered varieties has enlivened the pages of this catalogue.

The promotion and subsequent interest in heirloom vegetables has given journalists and authors new stories to tell and colourful pictures to embellish their articles. The potential loss of diversity and the rescuing of these varieties from oblivion creates a nostalgic and powerful story. It is encouraging people to contemplate vegetable growing and is creating new mainstream markets.

The more creative chefs are always quick to pick up new food ideas. Mindful of this, a *Great Tomato Taste Test* was organised by Digger's Garden Company and Your Garden Magazine in March 1993. Representatives from the media, seed trade, and food experts were invited to determine the best tasting tomato. About 100 varieties were evaluated and 25 selected for the final tasting. A variety called Tommy Toe was a clear favourite on the day. Nearly half a million packets of 'Tommy Toe' have now been sold and it is commercially available nationwide as a seedling for home gardeners. Unexpectedly it has turned out to be a variety with outstanding disease resistance and it is adaptable to a wide range of climates. The taste test was a great success and the promotional momentum gained further strength from it.

The chefs began asking their wholesalers for heirloom varieties and some of the specialty growers responded. This past season you could buy, amongst others, 'Black Russian', 'Green Zebra', and 'Mortgage Lifter' tomatoes in Safeway's Supermarkets. A uniquely Australian heirloom (not known in other countries), *Beta vulgaris* 'Five Colour Silver Beet', has leaves and stems that are rainbow coloured. It is being produced by a specialty grower, harvested young and sold alongside other salad or mesculun greens in supermarkets.

The seed packet market has been steadily declining for decades. The interest in heirloom vegetables has revived interest in growing vegetables and is a segment of the seed market showing strong growth. This growth is reversing the trend towards fewer varieties being listed and the subsequent loss of genetic diversity.

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