

were used in the crops and the petiole sap levels were recorded for both laboratory analysis. It is important to know of these analytical discrepancies when interpreting results of minor elements from crop monitoring work.

### **5.1.5 FRUIT QUALITY AND YIELD VARIABILITY INVESTIGATIONS WITH WATERMELONS**

**S McAlister**

There was no plantings made as part of this project in 1998 as the vegetable research plots at the Katherine Research Station were planted with a green manure crop which was then ploughed in and the land left fallow.

### **5.1.6 CULINARY BAMBOO SHOOTS IN AUSTRALIA: A FRESH MARKET EMPHASIS**

See 5.1.2

### **5.1.8 ASIAN VEGETABLE RESEARCH – RIRDC PROJECT**

**K Blackburn, M Traynor**

#### **Background**

The Annual Crops Section has become involved in this project in the farming systems area where their expertise could have an immediate and important impact on production and quality of Asian vegetables if the improved technology is adopted by the growers. The Section was initially approached by the Entomology Section of DPIF to assist them, some two years ago, in developing improved farming practices for their own work on IPM and nematode management on beans and cucurbits amongst these growers. As a result of this request a number of Asian growers were visited and their farming methods were examined in some detail. It was found that the yields and quality of many of their crops were suffering because of the poor cultural practices employed. As well, the effect of these cultural practices on soil structure and sustainability was seen with a great deal of alarm.

During 1997 further discussions were held with the Entomology Section and a possible co-operator was identified by them as being suitable for the setting up of a demonstration area where improved farming techniques could be employed. The improved technology being referred to was developed by DPIF in the early 1980's in assisting the melon industry in its early stages of development.

#### **Objectives**

From the observations made on the Asian growers farms the main areas that required immediate attention were:

- the use of green manure crops to improve or maintain soil structure
- improved soil cultivation and the use of more appropriate implements to reduce soil structural damage and prevent the formation of hard pans
- the use of lime and dolomite to improve pH and supply calcium

- the use of plastic mulch to develop a wetting pattern to ensure adequate root growth
- the use of drip irrigation in association with tensiometers and fertiliser injection
- the effective use of fertilisers to supply the nutrient needs of plants and in particular phosphorus
- the precise management of irrigation and fertiliser inputs to gain maximum benefit from the improved growing system.

### **Progress Report**

Two meetings were held with the proposed co-operator late in 1997 and a plan was drawn up for a demonstration area in 1998. The Entomology Section were able to organise the planting of a green manure crop on a virgin block in December 1997. Although drainage problems were experienced with this crop and growth was affected, the sorghum was cut and incorporated into the soil using DPIF implements. The demonstration area was ripped, re-cultivated and beds with plastic mulch were laid down in April 1998. It is planned to grow snake beans and bitter melon as the demonstration crops in two plantings on the 0.3 ha area.

### **5.1.9 STUDIES ON THE EFFECTS OF STORAGE TEMPERATURE AND PACKAGING ON THE SHELF-LIFE OF SELECTED ASIAN VEGETABLES**

**T K Lim, Y Diczbalis, M Gosbee, C Wicks**

#### **Objective**

To investigate the effects of storage temperature and packaging on the shelf-life of selected Asian vegetables

#### **Background**

Our attention was drawn to incidence of extensive spoilage of vegetable produce suffered by a major freight company. Investigations revealed that the spoilage was caused by overheating of produce related to improper harvesting standards and time, inadequate cool chain management, inappropriate packaging and lack of understanding of storage temperature effects on shelf-life of produce. Poor cool chain management occurred from the field to and at the packing shed; from the farm to the transport freight depot, and from the freight depot to the wholesale markets in the southern states. As part of a series of remedial strategies we were asked to implement a series of experiments to investigate the effects of storage temperature and packaging on the shelf-life of several Asian vegetables. The following Asian vegetables: two leafy types - water spinach (*Ipomoea aquatica*) and basil (*Ocimum basilicum*) and three fruit types - okra (*Abelmoschus esculentus*); bittergourd or bittermelon (*Momordica charantia*) and snake-bean (*Vigna unguiculata* cv. group *Sesquipedalis*) were selected for the studies. Types of packaging investigated included polythene bagging, perforated polythene bagging, paper wrap and null bagging in corrugated board boxes with detachable lids. Storage temperatures trialed included 5°, 10°, 15° and 20°C. Shelf-life was evaluated by visual quality assessment of appearance, change in colour, firmness or turgidity, initiation of rotting or senescence, incidence of micro-organism growth and in some cases weight loss of produce.

#### **Results**

A temperature of 10°C was found to be the best for basil giving up to two weeks of storage and no difference was detected between paper wrapped or polythene bag packaging. A temperature of 15 °C was not suitable especially when basil was packed in polythene bags.