

## Problems facing agriculture in Victoria

Department of Agriculture, Victoria

The fixed resources in Agriculture in Victoria are its land and climate. Agronomic problems are then seen as constraints on the optimisation of returns on these together with the existing human and financial resources employed in the utilisation of that land.

In the face of the continued cost/price squeeze our general objective is to ensure that we maintain and improve our competitiveness by adjustment of input/output relationships and enterprise mixture.

In addition, as we also require agriculture to contribute to general economic growth, we have an objective to increase production in absolute terms by 25% for selected products, including grains and sheep, by the end of the 1980's.

### Field Crops

For field crops the problems are of two closely interrelated types:

#### 1. Cost minimisation

There is not a great deal of scope, but some fine tuning can be made in the use of labour and purchased inputs. Into this category go issues such as machinery purchases, power and equipment matching, reduced tillage, herbicide selection, automation and capital replacement of labour.

#### 2. Increased Productivity

This is the area of opportunity; particularly in developing strategies to maximise returns to the limiting water (rainfall or irrigation) resources. Many different options still need to be explored. They include:

##### Crop systems

- Matching crops and crop sequences to use best stored or expected rainfall.
- Fertility maintenance/replacement, legume crops, oilseeds and other non-cereals, weed and disease control.

##### Soil improvement and cultivation technology

- Increasing root exploration, ripping, soil conditioning.
- Increasing soil water intake and retention (and drainage of excess), stubble retention.
- Removal of toxic materials, e.g. salt.
- Reducing compaction and erosion hazards. . Overcoming excess soil acidification.

##### Plant improvement

- Improved physiological basis for water use efficiency in cereals, legumes and oilseeds, including those situations where water can be supplied by irrigation.
- Disease resistance to permit full potential for growth (CCN, stem and stripe rust, Septoria, take-all, barley scald, blackleg of rapeseed, linseed wilt, brown leaf spot in lupins, etc.).
- Marketability, crop quality factors (wheat protein, barley malting, oil content and composition in rapeseed and sunflower, glucosinolate in rapeseed, protein and mineral content in lupins, etc.).

##### Crop protection

- Loss prevention by effective control of weeds (wild radish, broad- leaved skeleton weed), diseases (bunt, loose smuts, CCN and other root diseases), insects (armyworm, budworms, RLEM and Rutherglen bug), and birds.

Paradoxically, although water supply is the dominating constraint on crop growth, excess water is a serious impediment during part of the growing season in many traditional areas and limits the development of crop production in areas with higher average annual rainfall. Effective systems of removal and disposal of excess water both within the farm and on a regional basis need to be solved.

## **Pastures**

For pastures in Victoria, the most important present problem is a wide-spread decline in the sward content of clover, with a consequent reduction in pasture productivity, feed quality and ability to fix atmospheric nitrogen. Possible causes of this problem are being studied in several areas in the State. Early results suggest an association with one or more factors including declining soil pH, lack of Rhizobium bacteria in the soil, aluminium and/or manganese toxicity, soil compaction, and fungal pathogens causing root-rot.

Rising fertilizer costs and a dwindling natural resource dictate a need to use most effectively the main pasture fertilizer, superphosphate. A computer model (known as SUPERATE) has been developed to predict the most profitable rate of superphosphate to apply to a particular pasture, based on physical and financial factors affecting response and profit. The model has been shown to have the potential substantially to improve fertilizer decisions and profits arising from them, and will shortly be promoted to assist farmers and their advisors.

The productivity and quality of pastures depend on the characteristics of their component species. Current and continuing research is aimed at producing species and cultivars that give overall improvement over presently- available lines, or which better meet the needs of particular environments or enterprises. At the same time, for consumer protection, pasture cultivars offered commercially are tested for suitability in comparison with standard lines.

Some other important issues concerning Victorian pastures to which Departmental resources are directed include: effects of salinity, better use of potash fertilizer, control of pests and diseases, effects of landforming (for irrigation) on productivity, technology of direct drilling, and control of weeds, particularly bent grass.

## **Horticultural Crops**

Producers of all perennial horticultural crops face the problem of high capital investment and a long period required from planning to the first commercial crop. The cost of establishing fruit and nut plantations could be reduced by developing more efficient propagating methods and training and irrigation systems. Improved training methods and new developments with growth suppression will significantly reduce the lead time.

The establishment of even stands of vegetable crops increases the efficiency of utilization of all inputs, including seed, fertilizer agricultural chemicals, irrigation, fuel and labour, improves yield and quality, and increases harvest efficiency. Research is being directed at improving plant establishment by both direct seeding and transplanting seedlings.

Use of resources, such as water, fertilizers and spray materials are often based on doubtful assessment methods. There is need to upgrade these and develop more refined methods to define time of application or treatment. Further, efficiency could be greatly improved by the extended use of integrated pest control methods and improved spray application techniques. Besides saving costs, these would help to reduce environmental pollution.

Difficulties occur in achieving the correct balance between plant growth and fruit production. There is often an antagonism between vegetative growth and fruit production and there is a need to refine tree and vine management processes to increase yield/growth ratios.

There is a continuing need for improved cultivars to increase production efficiency and meet market requirements. Disease resistance is desirable in most vegetable cultivars, particularly crops affected by soil-borne fungi, insect-borne viruses, and mycoplasma diseases that are not amenable to control with agricultural chemicals. Potato and tomato cultivars with improved yield and quality characteristics are required to increase the efficiency of production, particularly for processing.

The fresh fruit and vegetable industries are faced with a continued problem of supply and price fluctuations. This appears to have been exacerbated by reduced competition in the market place with the continued expansion of supermarket outlets.

Loss of traditional export markets has hit sections of the fruit industry. Surplus supplies of canning fruit have been created by diminishing market demand locally and overseas. New production techniques will have to be developed to meet market demands for fruit size and quality to permit diversion of canning fruit to fresh fruit markets.

An oversupply on world markets for dried vine fruit is imminent, but there is an increasing demand for table grapes on overseas markets. Dual-purpose varieties would have a potential for diversion if suitable production and handling technology could be developed to satisfy fresh market quality requirements.

While post-harvest handling techniques for apples have been well developed, there are still difficulties in identifying maturity levels that will ensure minimal losses and maintenance of fruit quality.

In the face of oversupply on several existing markets for traditional fruit crops, there is a need to develop technology for the propagation, production and marketing of exotic fruit crops to expand the range of options now available for fruit growers.

Packaging of bulky horticultural produce, such as lettuce and celery, is now the most important single production cost and alternative handling systems are essential if costs are to be contained.