



## new & ornamental crops team

The New & Ornamental Crops team is the major provider of research on new crops in New Zealand.

## Research capabilities

The breadth of the team's research capabilities is illustrated in the following examples:

### MEDICINAL CROPS

Research on medicinal plants has led to an increase in commercial yields from Arnica, ginseng, Echinacea, valerian and St John's wort crops. Licorice, variegated thistle, goldenseal, and Calendula crops have also been trialled. Arnica is still mainly gathered from alpine areas in Europe so we have been working on the further development of this plant as a crop by breeding varieties suitable for New Zealand conditions and machine harvesting. This research is integrated with work on crop quality carried out by Crop & Food Research's Plant Extracts Research Unit. This unit provides quality tests on Echinacea, St John's wort, and valerian to growers and processors (prices are available on request – contact

## team capabilities

Researchers develop new crops for the arable, vegetable, ornamental and forestry sectors. The steps involved include introducing new crops, improving crop production, developing propagation and plant extraction techniques, establishing techniques for infecting plants with edible mycorrhizal fungi, and breeding improved cultivars.

Crops of interest include:

- **PHYTOMEDICINAL HERBS** – ginseng, Arnica, goldenseal, Echinacea, St John's wort,
- **PLANT EXTRACTS** – oleoresins from sweet briar and sage
- **VEGETABLES** – Japanese taro, ullucu, oca
- **EDIBLE FUNGI** – Périgord black truffle, bianchetto truffle
- **NUT CROPS** – Gevuina
- **FLORICULTURE** – gentians, Cyrtanthus, Sandersonia, Zantedeschina, Limonium
- **NATIVE PLANTS** – Leptospermum, Stilbocarpa

Nigel Perry). We have also investigated the taxol concentration in New Zealand-grown Irish yew and the bioactive compounds present in ginkgo leaf.

### NEW VEGETABLES

The focus of this work is on new vegetables from Japan and South America that are suitable for production in New Zealand. Research on wasabi has increased commercial yields in both water and soil grown systems. Burdock and myoga ginger production have also been studied. Japanese taro production is being investigated and initial trials have begun with ullucu, a tuber crop from the Andes. Two crops are being investigated for their extracts as food ingredients — Japanese konjac for glucomannan production and the South American yacon for fructan production.



## CROP & FOOD RESEARCH

Private Bag 4704

Christchurch

New Zealand

Tel. +64 3 325 6400

Fax +64 3 325 2074

[www.crop.cri.nz](http://www.crop.cri.nz)

### ORNAMENTALS

Research on ornamentals includes floriculture crops and amenity and native plants. For the important export crops, Sandersonia and Zantedeschia, and for new crops (e.g. Cyrtanthus) we have developed both flower and tuber production techniques that improve quality, overcome tuber disorders and extend the production season. Using in vitro techniques, such as embryo-rescue, we have produced new hybrids. These include gentian and Cyrtanthus hybrids with novel colours, and Limonium hybrids with new stem and flower characteristics. Cultivars from these breeding programmes are licensed to New Zealand firms. We develop new and improved tissue culture techniques for floriculture and other new crops and native species.

### EDIBLE FUNGI

Research on edible mushroom focuses on the cultivation of species that form close beneficial relationships with the roots of trees. Crop & Food Research introduced the high value Périgord black truffle into New Zealand in 1985 and the first black truffles were harvested in Gisborne in 1993 followed by commercial harvests in 1997 and 2000. The group is also working on Tuber borchii (bianchetto truffles). The research includes developing techniques for infecting tree roots with these mycorrhizal fungi and increasing our understanding of factors that influence fruiting of these fungi. The group also has expertise in assisting nurseries to infect plantation forest species with mycorrhizal fungi, which improves the establishment and growth of these trees.

### PLANT EXTRACTS

Research in plant extracts is focused on the extraction of oleoresins (essential oils and waxes) from sage and sweet briar using supercritical CO<sub>2</sub> and solvent technologies. We have considerable experience in the steam extraction of essential oils from lavender, boronia, rose, clary sage, coriander, dill, sage and thyme crops.

### CULINARY HERBS

The team has previously researched the production of sage, thyme, oregano, lemon balm, mints, perilla and saffron crocus. The focus of research in culinary herbs is now on herb oleoresins to develop concentrated flavours for the food industry.

### PLANT INTRODUCTION

New crops that have considerable potential to be commercially successful in New Zealand are identified and sourced internationally. The team has arrangements to access plant material from a number of South American countries. One new crop introduced is the Chilean nut tree, Gevuina, which is being studied in Otago and Southland. Ornamental species have been introduced for evaluation as new crops and for use in breeding programmes.

### RESEAR

The New & Ornamental Crops Team has 25 staff in Palmerston North, Invermay, Dunedin, Lincoln, Ruakura and Pukekohe.

## contacts

### Team leader (Palmerston North)

**Garry Burge**

Phone +64 6 355 6175

Mobile 025 289 9472

Email [burgeg@crop.cri.nz](mailto:burgeg@crop.cri.nz)

### Business Manager (Palmerston North)

**Bill Kirkland**

Phone +64 6 355 6104

Mobile 027 469 9039

Email [kirklandw@crop.cri.nz](mailto:kirklandw@crop.cri.nz)

### Business Manager (Palmerston North)

**Graham Smellie**

Phone +64 6 355 6131

Mobile 027 450 5523

Email [smellieg@crop.cri.nz](mailto:smellieg@crop.cri.nz)

### PLANT EXTRACTS

**Nigel Perry**

Email [perryn@crop.cri.nz](mailto:perryn@crop.cri.nz)

**Bruce Smallfield**

Email [smallfieldb@crop.cri.nz](mailto:smallfieldb@crop.cri.nz)

### EDIBLE FUNGI

**Carolyn Dixon**

Email [dixonc@crop.cri.nz](mailto:dixonc@crop.cri.nz)

### MEDICINAL CROPS

**Bruce Smallfield**

Email [smallfieldb@crop.cri.nz](mailto:smallfieldb@crop.cri.nz)

**Graeme Parmenter**

Email [parmenterg@crop.cri.nz](mailto:parmenterg@crop.cri.nz)

### NEW VEGETABLES

**Jim Douglas**

Email [douglasj@crop.cri.nz](mailto:douglasj@crop.cri.nz)

### ORNAMENTALS

**Ed Morgan**

Email [morgane@crop.cri.nz](mailto:morgane@crop.cri.nz)

### TISSUE CULTURE

**John Seelye**

Email [seelyej@crop.cri.nz](mailto:seelyej@crop.cri.nz)