Footprints.

The 23rd Annual Fertiliser & Lime Research Centre Workshop was recently held at Massey University. The theme of the conference was 'Farming's Future: Minimising Footprints and Maximising Margins'. A considerable amount of information and research was presented which is attempting to reduce the environmental impact of agriculture and horticulture while improving, or at least maintaining profitability and sustainability.

The catch-word emerging for this decade seems to be 'Footprint'. At the conference there was much information relating to carbon and water footprints and also some reference to pesticide footprints. Footprint is basically the impact or the effect left behind after a certain action or activity. From an agricultural/horticultural perspective we need to continually assess what we are doing and what impact that action is having on the longer term sustainability and profitability of the farm enterprise and the natural resources within it. Is what we are doing leaving something of lesser or greater value to pass on to the next generation?

The term 'carbon footprint' has been well thrashed out in public circles and is essentially the basis for the intent of the ETS. The amount of carbon emitted from a property can be estimated using such tools as the Carbon Farming Group Calculator (www.carbonfarming.org.nz) to determine the size of the 'footprint'. The area of exotic or indigenous forest required to offset the carbon liability can then be estimated. There is obviously considerable debate and diverse views on whether the carbon emitted is part of an ongoing natural process or whether it is anthropogenic (caused by humans and their activities) or somewhere in between. Some say we have been too hasty in signing agriculture up to the ETS before the science has had time to catch up and consequently potentially putting ourselves at an economic disadvantage.

Some of our carbon footprint can be reduced just by applying some on-farm efficiencies with the use of emerging technologies coming from the precision agriculture sector. A couple of examples were given at the conference where fuel savings of up to 50% were made by cropping contractors using precision agriculture technologies to work smarter. While the focus for them initially may have been on the efficiency of field traffic, there is the added benefit of fuel savings from reduced traffic and therefore reduced carbon emissions from less fossil fuels being burned. While it is easy to follow the recipe that great granddad used, it would appear that many benefits can be gained from embracing the technologies which improve on-farm efficiency.

A more recent addition to the footprints list is the 'water footprint'. This 'water footprint' concept was introduced by Professor Arjen Hoekstra in 2002 and includes three main components: green water footprint which is the rain-fed soil stored water; blue water footprint which is the water drawn from surface and groundwater storage for irrigation; and grey water footprint which is the water polluted by nutrients and pesticides during the process of production. Another term, within the water footprint concept, of 'virtual water' has been introduced which considers all the water used in the process of production. For example, it includes water used in washing apples post-harvest not just for the process of growing them. New Zealand could be at an

advantage, compared to many other countries, in terms of its fresh water resources reducing the size of our ‘water footprint’.

In many ways, tools such as Overseer nutrient budgeting are estimating the ‘nutrient footprint’, for want of another footprint term, of a property. Many other decision support tools have been and are being developed which model the impacts of different actions on-farm and their effect in terms of environmental and economic outcomes. These things do take time however, and rely on good science and research to achieve reliable outcomes. At the end of the day it seems that the big supermarkets of the world, and their customers, are demanding verification that our farming practices are having minimal effect on the environment.