

FINDING WAYS TO FARM FOR THE FUTURE

Farming is New Zealand's largest and most important industry with over half our land mass given to primary production. From several sources, evidence is mounting about the effects of people on climate change and on water pollution. Farming is a major player. We need to examine the evidence and form a strategy for farming that provides a path forward that is beneficial for the environment and for New Zealand and is profitable for farmers.

Of New Zealand's greenhouse emissions, 35 per cent come from methane produced by 10 million cattle and from 30 million sheep. Methane is a more damaging gas to the environment than carbon dioxide (CO₂), 1 kilogram of methane being equal to 28 times the warming effect of 1 kilogram of CO₂. Farming also produces nitrous oxide, a gas 280 times more potent in the atmosphere than CO₂. This gas is largely produced by chemical reactions on soils that have been heavily fertilised for crops and on pastures and animal excrement.

Dead zones in coastal waters are spreading worldwide, alarming scientists. These zones are linked to chemical fertilisers running off farm fields into streams and rivers and polluting coastal regions across river estuaries. Some of these zones are already very large. The largest across The Gulf of Mexico is the result of nutrient pollution from intensive cotton and maize production along the Mississippi river system.

The excess nutrients fertilise blooms of algae creating a chain reaction which eats up oxygen depriving seafloor creatures and fish killing them off unless they move to unpolluted areas. We already know that many lakes and rivers in New Zealand are also similarly polluted.

Over the last 100 years in the Western world there has been a huge surge of modern diseases such as obesity, diabetes, asthma, cancer, arthritis, heart disease and Alzheimer's disease. In the USA doctor

Floyd H. Chilton spent 25 years researching Western diseases and published his book 'Inflammation Nation' in 2005, which deals with the imbalance in the American diet between omega-6 fatty acids and omega-3. He observes that Americans take considerably more omega-6 fatty acids in their diet than omega-3, radically different to what took place prior to the last 100 years.

Chilton also states in his book that in the 1970's, due to the depleted wild fish stocks, fish farming was established. Research has shown that farmed fish mirrors intensive animal farming in that omega-6 increases in these fish and omega-3 decreases.

We need to ask ourselves the question: Are our heavily fertilised farming practices polluting modern nutrition in the same way as fertiliser is contributing to coastal dead zones and algae blooms in our rivers and lakes?

The best source of omega-3 for humans is fish, especially wild fish feeding on algae and seaweed which are full of omega-3. Although there are plant sources of omega-3, like borage oil, flaxseed oil, canola and soy products plant sources of omega-3 need to be converted by the body and it only converts about 10% efficiently. However it is still important to utilise these plant sources in our diet. It is vital for our health that farmed animal meat and dairy products are consumed in moderation.

So, of prime importance in the farming strategy must be the preservation of clean, unpolluted rivers and coastal sea areas. Water and algae and seaweed should be protected at all cost.

To preserve inland rivers, streams and lakes from pollution, areas adjacent to them must be farmed organically. Organic farming is a powerful method of farming that negates the need for chemical fertilisers, producing healthier food and a far better balance in our nutrition.

Under climate change organic farming will greatly reduce carbon emissions, reduce the demand on irrigation, and underlying costs will

be substantially reduced. Given that our overseas credibility has already taken a knock, a rebranding of our farm products with clean production techniques will result in new expansion into niche markets.

As climate change brings warmer temperatures in the northern areas of Northland, South Auckland and Bay of Plenty some farming crops like Kiwi fruit may need to be grown in cooler climates. An opportunity exists in these northern areas to develop an organic soy industry. Soy in all its forms provides healthy sources of omega-3, calcium, vitamin B12 and B2 and is cholesterol and lactose free.

There are other crops that enhance health that will also reduce carbon emissions. Olives, like wine, are expanding as a crop particularly in the North Island. However, an olive industry capable of reaching mass markets still has to be achieved and more olives could be grown in the South Island.

Walnuts in commercial quantities would also be beneficial to the economy as well as being proactive in reducing carbon emissions. Walnuts are a very good source of fatty acids, particularly omega-3 and fibre.

Given the high levels of methane emissions from cattle and sheep as well as ongoing water pollution it makes sense that further expansion of these forms of farming should be limited and that suitable areas of land be increasingly used for less damaging crops and particularly nutritionally healthy crops. Thoughtful diversification will be valuable as climate change takes more effect.

Government and farmers should consider the long term implications and abandon topdressing and research the best methods of farm production without excessive use of synthetic fertilizers.

Recommendations:

That government offer farmers a one off grant of \$40 per hectare to convert to organic-based farming methods.

And a one off grant that covers planting costs for farmers to diversify into more environment friendly crops like soy beans, olives or walnuts.

Government should also consider putting a carbon tax on nitrogen.

Over the last twenty years Terry Huggins has researched modern farming and its effects on the environment and on human nutrition. Terry farmed in Pleasant Point in the 1960s.