Possibilities of land use analysis

Posted on 02nd Dec 2011 10:10 | By Sue Edmonds

With the increasing number of land use rules, regulations, limitations and potential changes, figuring out what is the best use for each part of the farm is more than 'back of the envelope' stuff these days.

And we haven't even mentioned the ETS and climate change yet.
So when hearing a presentation at the Biological Farming conference by Oliver Chikumbo of Scion, which promised a "Triple Bottom Line in 3D" optimal analysis of farm land use, I just had to find out more to share with readers.

Of course it's all done with computers and involves a lot of complex sounding mathematical terms, but a lot of the inputs are already computerised, including Overseer, Farmax Standpak and the GIS database.

The aim is to balance the economic, environmental and social components of land use, including of course being profitable and sustainable for each part of the landscape. So if you've got forest blocks (or are planning some) it can look at where to put them and at the same time look forward at maximising sawlog production, pulpwood production, milksolids, beef, sheep meat, wool, carbon

sequestration, water production, income and Earnings Before Interest and Tax (EBIT) and at the same time minimising costs, nitrate leaching, phosphorus loss and sedimentation.

In getting the programme right so the computers could cope, they had to reduce the number of objectives, by clumping them in three groups. They also aimed for results looking at a property as a whole and also looking at it paddock by paddock.

The conformation of the land, its soils, aspects for sun, erosion potential, as well as what is going on in neighbouring paddocks, will all affect the 'best use' answers. As an example, farms in dry areas which rely on stream flow for water and which planted up gullies with streams are already finding that the trees absorb more of the water that falls and stream flows are slowing. It's this sort of complex future thinking that the new programme is being designed to do. To date, they've trialled it in relation to a Rotorua farm of 1500ha with 315 paddocks, to optimise land use where land use change is being thrust upon them because of the state of the lakes.

It has all arisen from Oliver having been for the last 12 years part of a network of biologists, engineers and computer buffs, many of whom are based in Michigan, working on the idea that evolution happens because nature makes a mistake or a change and computers can – and do – do it too.

So in the USA they have set up the BEACON Centre for the Study of Evolution in Action and the Federal Government has given it a grant of $US25m to let those involved find out how to use it.

Because Oliver first worked with those involved in his time in Australia, using the concepts in relation to

forestry, his current work at Scion is in close connection with the BEACON team and some of that funding could be available here on a dollar for dollar basis.

If farmers here are to meet expectations of increased productivity, greater sustainability and still be able to make profits, it would seem that the programme could prove to be a tremendous help in getting all the ducks in line.

While I have briefly described what the programmes can do in relation to land use, those involved see a million uses worldwide for using this analysis of evolution in action in industry, laboratory work and other un-thought of as yet developments.