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Agricultural Innovation Submission

Attention: Parliamentary committee for role of technology in increasing agricultural productivity.

Biomimicry and its **associated technologies** is a viable new term and discipline, which imitates natural processes to solve problems in a more ecologically sensitive manner, rather than getting a bigger hammer each time a new adverse symptom occurs in attempting to increase agricultural productivity. Take for example the use of nitrogen based fertilisers over 32.3 million hectares of our land [2011-12]* and yet the air we breathe contains 78% nitrogen. Should our Nation support the role of technology to improve remote monitoring, more advanced drones together with improved GPS systems for more efficient fertiliser applications? Or consider **improving agricultural production efficiency by moving closer to biomimicry**, which uses natural and low cost external inputs. **We do not have a global deficiency of N, but a deficit in understanding biomimicry.** Biomimicry and its associated technologies, hold many of the answers to increase sustainable agricultural production efficiency.

As a Nation we need to review our technological approach to achieve resilient, regenerative and sustainable agricultural production. Do we need new innovative ideas and possibly a new paradigm? Technology comes from the Greek root word – craft, so it is the systematic treatment of [modern] craft. **The major barriers to the emerging biomimicry technology** in the agricultural sector is that it is very poorly documented and is often more descriptive of this emerging craft. Telecommunications, remote monitoring and drones, plant genomics, and agricultural chemicals technologies are highly organised reductionist sciences. The technology behind the systemization of biomimicry is more of an art form and systems approach. Where by the whole is greater than the sum of the individual parts. Telecommunications, remote monitoring and drones will not feed us. Living cells feed us and to optimise; sustainable, resilient, regenerative agricultural production, biomimicry technologies are essential to our survival. If the opposite is done it become high energy usage, high cost and often polluting from an ecosystem services perspective. Biomimicry technologies are strategically linked to ecosystem services and adaptive management practices. Biomimicry technologies works with nature, food production and community capacity building. Food security will not be assured by finding a bigger band aid [plant genomics] or a bigger hammer [agricultural chemicals], but optimising existing agro-ecosystems using biomimicry technology can.

A major limitation to the adoptive implementation of biomimicry technologies is that they are often medium to long term outcomes. Agro-chemicals can act in hours, biomimicry technology act with rain events and changing seasons. Biomimicry technologies acknowledges the aspect of time and space within natural cycles. Another major limitation to the development of biomimicry technologies is that it is relatively new and there has been the need for new language and terminology. For example, the use of this **new term – biomimicry is problematic**. The ultimate aim for biomimicry technologies is to mimic natural ecosystem structures and functions for profitable sustainable agricultural outcomes.

The scope for future improvement is to fill the **gap of practical knowledge** and currently Natural Sequence Farming, Permaculture and other biology focused groups are the current conduits for these new technologies. Increased promotion of these large and small scale production systems would assist in scaling up these emerging technologies.

This committee will be making a choice:

Will you continue to focus on high tech high turn-over modern technology with its accompanying “maximum” yield approach [*How to better use the larger amounts of N fertilisers being applied*]?

Or should it consider biomimicry technologies as a viable new term and discipline, which imitates [and designs] natural processes to solve problems in a more ecologically sensitive manner with “optimum” resilient yields [*How to use the free “clean” natural resource of 78% N in our air*]?

My point of these words and the time I have placed in writing this is:

BIGGER HAMMERS CAUSE BIGGER PROBLEMS. [*N fertiliser > long term soil acidification?*]

Stop, think.

The facts are we have gone past “peak oil” and “peak Phosphorous” and possibly “peak fresh water”. Is high energy, high cost “maximum” yield agriculture going to be resilient or sustainable for future generations?

What does our Nation need? - Food security, regenerative agriculture, landscape rehabilitation, increased biodiversity, healthy profitable soil, improved ecosystem services and in one of the driest continent of the world above all – functional water in our landscapes. The use of biomimicry technology should first be promoted in water landscape management and **the scope for further improvement in this area would be in the area of training**. The current case studies of effective biomimicry technologies can be seen in the adaptive management practices by Mr. Peter Andrew OBE and supporters of Natural Sequence Farming.

In summary it is cheaper and more efficient to work with nature than go against it. Biomimicry technologies is a fast emerging set of tools to improve the efficiency of sustainable agricultural practices for both now and for future generations.

If you would like additional information of examples of biomimicry technologies a supplementary submission can be requested.

Yours Truly

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*<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4630.0Main%20Features102011-12?opendocument&tabname=Summary&prodno=4630.0&issue=2011-12&num=&view=>

http://www.aph.gov.au/Parliamentary_Business/Committees/House/Agriculture_and_Industry/Agriculture_I_Innovation/Terms_of_Reference