gene ethics
working for a GM-free future
ABN 67 104 140 918
A: 60 Leicester St, Carlton Vic 3053
T: 03 9347 4500 / 1300 133 868
F: 03 9341 8199
E: info@geneethics.org
W: www.geneethics.org

Gene Ethics Comment for Productivity Commission Inquiry Into Rural Research and Development 25/6/10

Gene Ethics will comment on the:

- economic and policy rationale for Commonwealth Government investment in rural R&D;
- appropriate level of, and balance between public and private investment in rural R&D;
- effectiveness of the current RDC model in improving competitiveness and productivity through R&D;
- appropriateness of current funding levels and arrangements for agricultural R&D;
- impediments to the efficient and effective functioning of the RDC model, identifying scope for improvements;
- current RDC model and how it interacts with other R&D arrangements;
- extent to which RDC's provide an appropriate balance between projects that offer benefits to industries versus broader public interests, including interactions and potential overlaps across governments and programs, such as: mitigating and adapting to climate change; managing the natural resource base; understanding and responding better to markets and consumers; food sovereignty and security; and managing biosecurity, biosafety and biopiracy threats;
- end of oil and phosphates;
- current levy arrangements and whether they address free rider concerns effectively;
- R&D need to make the necessary transition from industrial agriculture to ecological farming.

Executive summary

Since industrial chemical agriculture was developed post WW2 the emphasis has been on measuring grain output to market. A false measurement of 'productivity' was thus created which ignored the displacement by industrial agricultural systems of diverse low-input systems of localised agriculture with multiple beneficial outputs for communities, animals and the planet. These diverse systems, essential for healthy environments and communities, are falsely identified as 'non productivity related' by the current RDC model. Similarly ignored in Green Revolution measurements are the high input requirements of the industrial agricultural system – in energy, water, oil-dependent agrochemicals, synthetic fertilisers, pesticides and herbicides, and the vulnerability of uniform high response seed varieties.

Privatization of much public research and development occurred in the 1980s and 1990s, as public breeding programs and research institutions gave way to private control over R&D, genetically manipulated (GM) seeds and intellectual property over genetic resources in food and agriculture. The neoliberal dogma of GNP, dollars and global trade figures has replaced 'Green Revolution' measurements of 'productivity'. What is missing from the picture is how escalating corporate profits and focus on trade figures mask a reality of growing global hunger and poverty, ecological damage, desertification, corporate monopolies and climate chaos. The UN Food and Agriculture Organisation (FAO) announced in 2009 that the number of hungry globally had topped 1 billion, up from 350 million when GM crops were launched in 1996.

Current government priorities in R&D do not address public needs. Globalisation commentator Dr Vandana Shiva (2010 Sydney Peace Prize winner) writes: "In early June 2008 an emergency meeting of the UN was called to address the crisis of climate change and the food crisis.... the same corporate interests that have created the two crises tried to offer the disease as the cure – more fossil-fuel-based chemical fertilisers, more non-renewable genetically engineered and hybrid seeds bred to respond to the intensive use of chemicals, more corporate control of food, and more globalised trade. The food crisis reflects a deeper crisis- the creation of "redundant" or disposable people and, alongside them, the potential for violence and political instability. Disposability of people is built into the denial of food to millions as well as the destruction of rural livelihoods..."(Vandana Shiva "Soil Not Oil", Spinifex Press 2008)

Ensuring food and water sovereignty and security for this and future generations should be at the top of Australian government R&D agendas, along with adapting to and mitigating the effects of global climate change and other looming resource depletion crises, such as the end of oil and phosphates, dramatic declines in agricultural biodiversity worldwide, loss of global wildlife and plant biodiversity, declines in soil health and land degradation. Rural R&D has a crucial role to play in all these areas. We need real solutions for family farmers and not false promises.

A truly 'green' revolution

Industrial agriculture contribution to climate change

Our R&D programs must address the globalised industrial food and agriculture system's massive contribution to climate change. The International Commission on the Future of Food and Agriculture write that: "The dominant industrial food production – characterized by commercial seeds, chemical use, high water usage, giant gas-guzzling farm equipment, and a massive fossil fuel-based global transport system – is both very vulnerable to climate change and a significant contributor to it. The way we produce our food should play an important part in how we reduce greenhouse gas emissions and adapt to climate change."

They further note that: "According to the Stern Review Report on the Economics of Climate Change, agricultural activities directly contribute 14 percent of greenhouse gases. However, this is not the entire picture.. a significant percentage from both the land use and transportation categories can also be attributed to industrial food and agriculture systems. When percentages from these two categories are included in a total picture calculation, some estimate that at least 25 percent of global emissions are related to non sustainable agriculture."

So effectively addressing climate change must include systemic reform of industrial globalised food and agriculture and we need R&D priorities to reflect this. In their comments for the present inquiry, the Environmental Farmers Network writes that "Farming in Australia in the future will change dramatically due to severe weather effects associated with climate change. Large areas of land will be unsuitable for traditional pursuits such as cropping or grazing. These areas will still need to be managed and a new system of rewarding land managers will need to be developed." We support this progressive view and urge that the current RDC model be reformed as most of its R&D dollars are now spent on grain crop and livestock research.

> "DAFF targets R&D support on the 20% of Australian industrial farmers who produce 80% of the produce - mainly bulk commodities for export. But family farms and the organics movement who value add and feed the nation also need substantial R&D support to help them nurture our productive land and biodiversity. They are also the fastest growing sectors of farming and should be assisted to do better," - Bob Phelps

Living carbon economies

The Commission notes: "Discussions within political, financial and trade institutions, as well as the media, must.. begin to shift away from the reductionist conversation of "zero carbon" and "no carbon" as if carbon exists only in fossilized form under the ground. What is widely neglected in the discussions, and therefore not considered in the solutions, is that biomass of plants is primarily carbon. Humus in the soil is mostly carbon. Vegetation in the forests is mostly carbon. Carbon in soil, plants and animals is organic and mostly living carbon and is part of the cycle of life... The renewable carbon economy and ecology embodies biodiversity, is based on cycles of assimilation and dissimilation (source and sink) and offers the solution to food security in times of climate change. Current global trade and economic policies are enforcing a centralized, fossil fuel-driven food and agriculture system that is directly at odds not only with the ecological imperative but also with the time table and reduced emission targets that most governments are committing to in international fora. This huge contradiction must be addressed if we are to meet the challenges of climate change and global warming."

Rural R&D can make a significant contribution to addressing climate change, by bringing back a living carbon economy which greens the earth, sequestering carbon as organic material in healthy soils. Living, organic soils also hold and clean more water, contributing to a healthy hydrological cycle. Cultivating healthy living soils with diverse microorganisms and conserving water resources are not marginal issues nor are they 'non productivity related' areas but are fundamental to the future of productivity in Australia.

Seed monopolies

Of particular concern for rural communities is the loss of control over seed. As Frontier Economics note in their report produced for the Rural R&D Council, shifts in international drivers of R&D in the 1980s and 1990s included the strengthening of intellectual property protection through international treaty arrangements and greater trade liberalisation in agriculture. A further result particularly in developed countries was a move away from public breeding and research institutions in agriculture toward the dominance of private multinationals in R&D and in intellectual property rights granted over genetic resources. The RDC model needs to be amended to increase public control over seeds to ensure that

traditional varieties remain accessible. R&D conducted with public money should remain in the public domain and not be transferred to private ownership. The US government is investigating Monsanto for anti-trust behaviour over withholding seed from farmers.

We oppose patents on living organisms. The addition of one or a few genes encloses the biological commons developed in the public domain over thousands of years (biopiracy).

Perth Now reports: "Patrick Fels was sacked from the non-GM canola breeding program in November last year after 10 years of service. He says it was because he challenged a decision to hand over data and seed from the public trials to the private sector."http://www.perthnow.com.au/news/special-features/wa-canola-planting-marks-new-chapter/story-e6frg19l-1225857482035
Patrick Fels is a whistleblower opposing direct transfer of public data to private hands, however, the same thing is happening all the time on a global scale through the use of mechanisms such as WTO Trade Related Intellectual Property Rights Agreement.

The former Chair of CSIRO Professor Adrienne Clarke of Melbourne University has lamented that foreign seed, chemical and food-processing giants already own patents on most of the genes typically used in GM crops. Our scientists do the work at our expense and the companies reap the profits. GM cotton in Australia is a good example where farmers and taxpayers funded most of the research but Monsanto applied a hefty technology fee ($245/hectare) claiming ownership over the Bt and Roundup Ready genes.

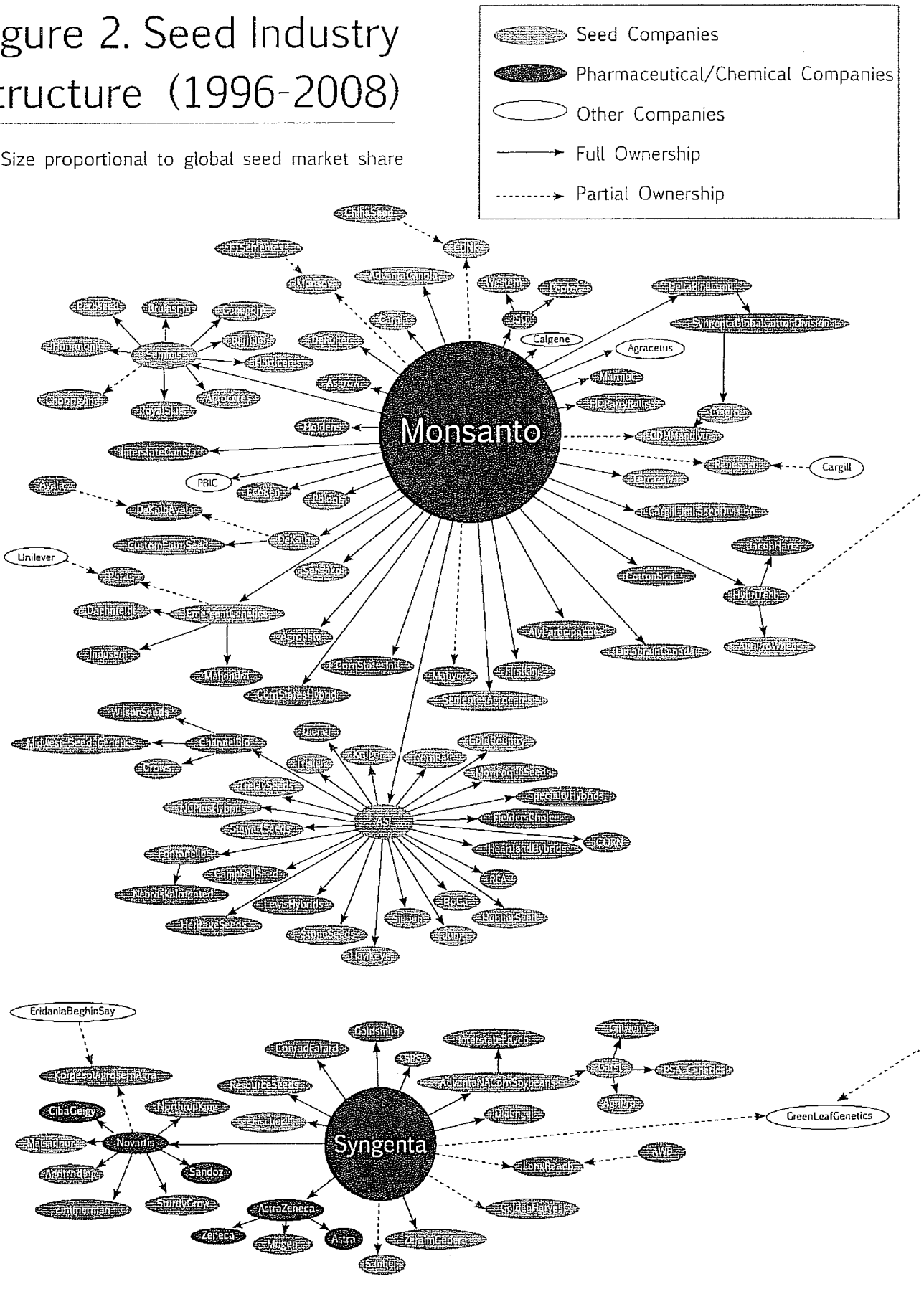
A world where 1 billion are going hungry cannot allow corporate monopolies on food and seed. Corporate consolidation and trade monopolies have resulted in concentration of ownership of seed to the point where the top 10 companies account for 65 percent of the world's proprietary seed for major crops. One company, Monsanto, alone owns around 22.4% of the world's proprietary seed trade. Such corporate control is an impediment to control over R&D as well as a reduction of democratic control over food and agriculture. The Nobel Prize winning economist Amartya Sen has shown how non-democratic systems produce famine.

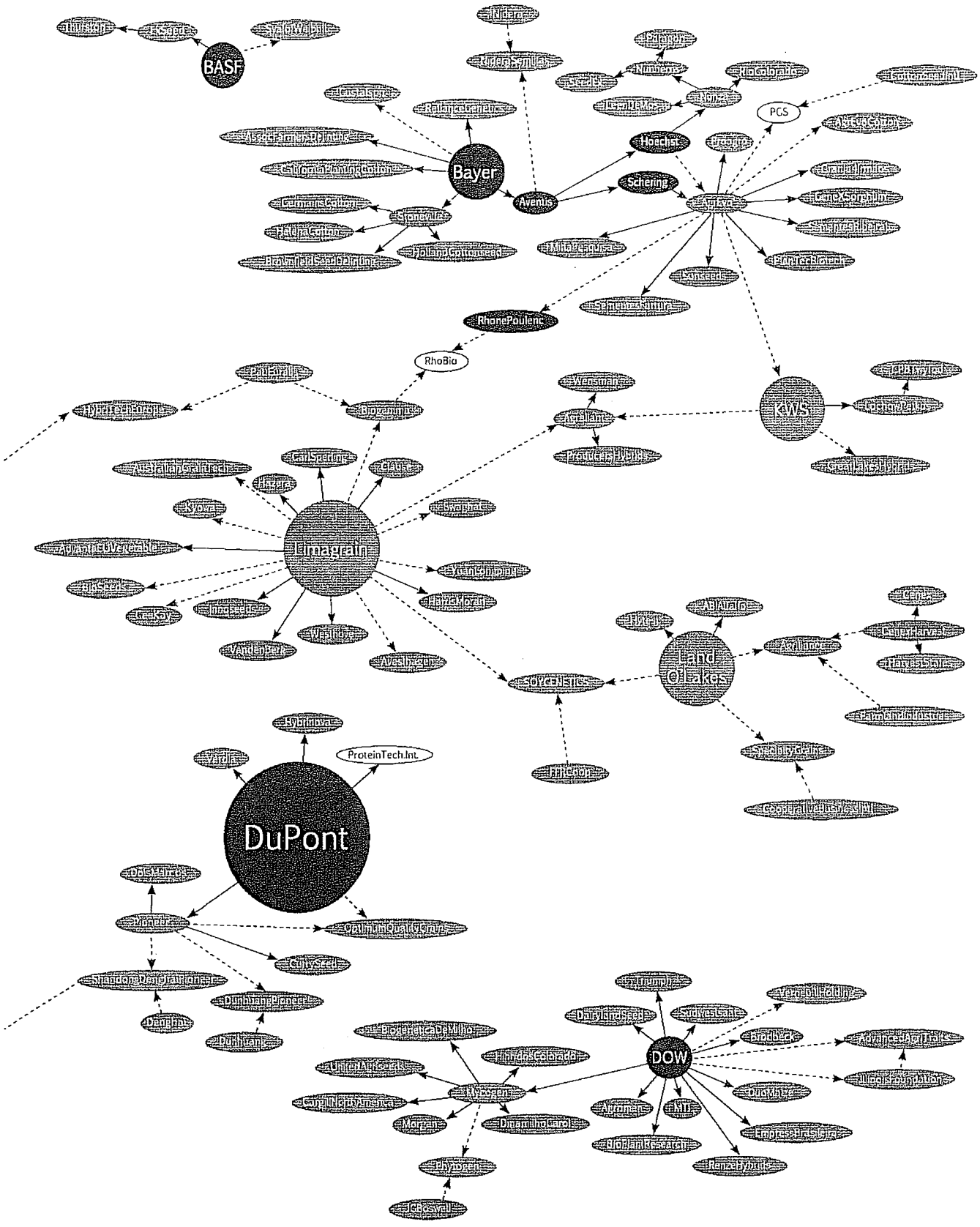
A report produced by the US National Family Farm Coalition "Out of Hand" notes that: ' Economists say that an industry has lost its competitive character when the concentration ratio of the top four firms (CR4) is 40 percent or higher. In seed, the top four firms account for 50 percent of the proprietary market alone, and 43 percent of the commercial market, which includes both proprietary and public varieties."
http://farmertofarmercampaign.com/Out%20of%20Hand.FullReport.pdf

> "A 'patent' is only a document authorising the monopoly control of an object or process. The problem is, therefore, not with the use of the term 'patent', but with the criteria for granting patents, which were developed as appropriate for tools and machines, being extended blindly in the realm of living things' -Dr Tewolde Egziabher, Director of Ethiopia's Environmental Protection Authority and a leading expert on conservation of genetic resources.

Figure 2. Seed Industry Structure (1996-2008)

Size proportional to global seed market share





Source: Phil Howard, Assistant Professor, Michigan State University, http://www.msu.edu/~howardp

Seed patents impede research and development

Recent editorials in Scientific American (August 2009) and Nature Biotechnology (October 2009) report that GM companies' will not supply proprietary seed to independent researchers and companies' demand pre-approval of research and publication of results. These constraints are impeding public control over scientific research on these crops and the publication of the truth about GM food crops and their negative impacts on health and the environment.

> "In a letter to the EPA... 26 public sector scientists complained that crop developers are curbing their rights to study commercial biotech crops. 'No truly independent research can be legally conducted on many critical questions involving these crops [because of company-imposed restrictions],' they wrote." - Nature Biotechnology
>
> "A Seedy Practice": Scientists must ask seed companies for permission before publishing independent research on genetically modified crops. That restriction must end." -Scientific American

ABC news reports similar concerns in Australia:

> "Stymying R&D on GM seed (ABC Country Hour)
> Date: Wed, 16 Jun 2010 00:40:51 +0800
> Listen between the 3 min & 9 min mark:
> http://www.abc.net.au/rural/wa/content/2010/06/s2927654.htm
> http://www.abc.net.au/rural/wa/content/2010/06/s2927653.htm
> **International GM seed supplying companies accused of stymying crop research**
> **and development**
> By Owen Grieve
> Tuesday, 15/06/2010
>
> The international seed producing companies that supply genetically modified seed are being accused of stymying research and development. When the companies sell seed, contracts stipulate that the companies own rights to research and technology.
> Researcher and weed scientist with the department of agriculture and food John Moore says that farmers in the US are asking companies to allow more on-farm research and we should as well. He says that many of the breakthroughs in herbicide technology came from external research, much of it from farmers and farm groups, experimenting with additives and varying label rates.
> Meanwhile GM seed companies and herbicide manufacturers claim although they want ownership of their products in terms of label rates and description, they do release product for further research and development provided they can approve the projects submitted.
> Dr James Neilsen is Monsanto Australia's technology leader and says the company encourages well-conducted research. He says there has been over 20 applications for canola research from farm groups and research bodies recently."
> But company approved research is likely to be skewed in the company's favor and unscientific. Safety concerns are likely to be downplayed or ignored. Research restrictions imposed through company control of patents are not in the public interest.

IAASTD and GM crops

Ensuring food security for this and future generations in a climate-stressed world should be at the top of Australian government R&D agendas with a focus on real solutions, not industry hype.

The largest intergovernmental study to date on agriculture is the International Assessment of Agricultural Science and Technology for Development (IAASTD). 300 scientists working for 4 years concluded that patented GM crops were no solution to global hunger, and identified a number of ways in which GM and IP frameworks were impeding R&D. The IAASTD Executive Summary statement on biotechnology says:

> "Higher level drivers of biotechnology R&D, such as IPR frameworks, determine what products become available. While this attracts investment in agriculture, it can also concentrate ownership of agricultural resources. An emphasis on modern biotechnology without ensuring adequate support for other agricultural research can alter education and training programs and reduce the number of professionals in other core agricultural sciences. This situation can be self-reinforcing since today's students define tomorrow's educational and training opportunities. The use of patents for transgenes introduces additional issues. In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability. In this regard, there is particular concern about present IPR instruments eventually inhibiting seed saving, exchange, sale and access to proprietary materials necessary for the independent research community to conduct analyses and long term experimentation on impacts. Farmers face new liabilities: GM farmers may become liable for adventitious presence if it causes loss of market certification and income to neighboring organic farmers, and conventional farmers may become liable to GM seed producers if transgenes are detected in their crops."

IAASTD conclude: "A problem-oriented approach to biotechnology R&D would focus investment on local priorities identified through participatory and transparent processes, and favor multifunctional solutions to local problems. These processes require new kinds of support for the public to critically engage in assessments of the technical, social, political, cultural, gender, legal, environmental and economic impacts of modern biotechnology. Biotechnologies should be used to maintain local expertise and germplasm so that the capacity for further research resides within the local community. Such R&D would put much needed emphasis onto participatory breeding projects and agro-ecology."

The IAASTD report shows where R&D dollars should be spent: ensuring adequate support for communities and agricultural research which matches local priorities identified through 'participatory and transparent processes', not on GM and intellectual property.

International agricultural and research consultant, Professor Tim Reeves says: "Most States have significantly reduced agricultural research capacity and we have lower enrolments in agricultural degrees... There's been something of an apathy starting early in the 1990s... because of complacency and the belief among decision makers that food comes from supermarkets... Australian farm research [is] at a crossroads... We've seen cuts in many State agriculture departments from where a lot of applied work stems, but on the positive side there's more involvement from farmer groups... filling gaps and the private sector is more involved.. but a strong public sector investment remain(s) critical" ('Price to

pay in R and D lag' Stock and Land 'Farming 2020' supplement 24.6.2010) The article continues: "With pressure from all angles – population, land and water availability and energy and carbon constraints – the job of producing food viably (is) getting tougher. 'If that doesn't ring alarm bells about the need for research and development I don't know what does' Dr Reeves said."

GM is not a boom industry and gives poor returns for R&D investments

Genetically manipulated (GM) crops are not the boom industry portrayed by Monsanto and Bayer. The development of four GM crops - soy, corn, canola and cotton - with only two traits - herbicide tolerance and inbuilt insect toxins - is a poor performance, after 25 years and the investment of tens of billions of dollars. The promises of drought and salt tolerant crops, and more nutritious, healthier or longer shelf life foods, are false.

Data from industry-backed International Service for Acquisition of Agro-biotechnology Applications (ISAAA) (www.isaaa.org) shows most of the GM crop industry stalled years ago, though ISAAA inflates its figures by ignoring large amounts of grain and oilseeds grown from farmer saved seed and by counting only commercial seed sales. They also double count stacked traits, as trait-acres. Thus an acre of crop with both a Bt and herbicide tolerance gene is counted as two acres.

GM crops are not a global industry. In 2009, the USA grew 50% of all GM crops, while Argentina, Brazil, Canada and Paraguay grew 80% of the rest - mainly for animal feed and biofuel production. The 140 million hectares of GM crops were grown on less than 2% of the world's productive land area - less than the area of organic food crops.

Twenty-five nations grew some GM crops but most were on a trial scale of less than 200,000 hectares. Another 170 countries (plus 60 occupied territories) remain GM-free. Less than 1% of the world's 1.4 billion farmers grow GM crops as they are designed to fit into broad-acre farming systems that require a leveling of the landscape and the alienation of community lands. GM soy has already destroyed many Argentine and Brazilian rural communities, and much of their rainforest.

Most countries will continue to ban GM crops at least until the Cartagena Biosafety Protocol is fully implemented at the end of 2010. This treaty requires the Precautionary Principle to be applied to the international trade in GM organisms, gives regulators the right to say 'no' to living GM products on scientific grounds, and will make GM owners responsible for any damage. Though the Protocol is backed by more than 140 nations, Australia and the USA have not signed or ratified it.

The area of GM canola has barely increased since 1999 and is just 21% of the global canola crop. Of 20 countries that grow canola, only Canada, the USA and now Australia allow GM. Soybean is the only GM crop strongly expanding but this causes great social and environmental disruption in South America. An RIRDC study found Australia would gain just $28 million a year from accepting GM crops but also risked extra costs for testing and segregation and the loss of markets for a range of food products.

GM yields less, not more

The Grains Research and Development Corporation (GRDC) reported on the first commercial GM canola in Victoria and NSW last season and found just 7,000 hectares - less than 0.5% of all canola – was grown and harvested. Their data showed the best

conventional canola varieties out-yielded GM Roundup herbicide tolerant canola. (Ask: ground-cover-direct@canprint.com.au or free call 1800 11 0044 for a copy).

The IAASTD found no evidence that GM crops increase yields or lower synthetic chemical use. And "Failure to Yield", the Union of Concerned Scientists USA review of data from all GM crops grown since 1996 found, with one minor exception (Bt corn) that GM crops all yield less than the top conventional varieties. Traditional breeding contributed much more to crop production gains over the decade than GM. http://ucsusa.org/food_and_agriculture/science_and_impacts/science/failure-toyield.html

Corporate and government research and development pipelines contain little new to be commercialised in ten or twenty years (Monsanto 2008; BRS 2006). GM crops are stalled world-wide. GM soy, corn, canola and cotton, with herbicide tolerance and insect toxin traits, were first grown in 1996. That's all that's available now! How would we view computer technology if they were still running Windows 95?

Empty promises

Despite 25 years of research, GM techniques have failed to deliver the promised GM drought, salt or acid tolerant crops; grains that fix nitrogen; virus resistant plants; or nutritious foods. GM techniques are too crude to deliver on these good ideas. Multi-genetic traits are not amenable to recombination using cut and paste GM techniques with single genes and most GM organisms will not function successfully in open environments. Monsanto estimates its rate of success with products in its pipeline at about 8%, and that's optimistic. See: http://www.monsanto.com

Resources urgently needed

Australia's over commitment of scarce R&D funds to industrial agriculture, especially GM crops and foods, must stop. It is based on spurious and hyper-optimistic claims about the potential of GM to feed the world. Our resources are urgently needed to develop management systems for farmers and other land managers to really cope with recurring drought, global climate change and depleting inputs The interested public should be encouraged and enabled to participate in the setting of R&D priorities via open, transparent mechanisms for public engagement.

The example of scientists such as Dr Maarten Stapper, who was fired from CSIRO for raising his concerns about R&D priorities, particularly, CSIRO's commitment to GM, show the need for more independent discussion within the scientific community. Dr Stapper was sacked from CSIRO Plant Industry while researching healthier soil systems, for critiquing crop GM and its products. This travesty of justice highlighted that the priorities for taxpayer-funded research and development are grossly distorted by CSIRO contracts with companies that direct public resources to private profits. GM giants Bayer and Monsanto can't patent know how on healthier soils so Stapper must go. http://www.theage.com.au/news/national/csiro-dumps-antigm-expert/2007/05/26/1179601737365.html

Australian governments spent $1.29 billion on GM research from 2003 to 2005 alone ($1.29 billion since 2003; Warren Truss media release June 2005). Yet the main beneficiaries of GM cotton developed by CSIRO and Cotton Australia are the companies that patented the genes.

Australian government investment in gene technology is driven by futile efforts to secure a share of the massive financial investment in GM world-wide - $100 billion in the US industry alone in the past 25 years, with US$40 billion in losses to 2004. (Hamilton, D. Biotech's Dismal Bottom Line: More Than $40 Billion in Losses. Wall Street Journal, May 20 2004). Public expenditure on failed GM is a waste of the scarce R&D resources needed to make the nation's productive systems sustainable.

There is no evidence for CSIRO chief Jeremy Burdon's claim that biological and organic farming systems are not "a long term viable strategy." http://www.abc.net.au/science/news/stories/2007/1879045.htm And research to create sustainable biological and organic farming systems, especially to cope with climate change and the end of oil, is under-funded and urgently needed.

Increase the funding for R&D into sustainable systems and recruit more staff for sustainable farming systems. This work is the way to go.

Stop gagging scientists

Scientists who question GM are often howled down, drowned out or ignored by the news and scientific media. They are also sometimes silenced or sacked by their universities, research bodies or the GM industry. The Australian Senate was told in 2005 that CSIRO scientists are: "gagged, under pain of disciplinary action. It now seems that this knowledge is to be withheld from the Australians who actually own it.". http://www.non-gm-farmers.com/news_print.asp?ID=2427

A survey of 500 UK scientists and technicians found that 30% had been pressured to change or amend research findings and results. http://www.non-gm-farmers.com/news_print.asp?ID=2427

In contrast, pro-GM opinions are managed and manipulated for maximum exposure, by public relations groups that include:

- Agrifood Awareness (backed by AVCARE, NFF and (GRDC with $100,000pa);
- Ausbiotech (the GM industry body set up with $450,000 from the federal government);
- Biotechnology Australia (spending $10 million of taxpayer money);
- Institute of Public Affairs (free market think tank).
- Victorian and Queensland Premiers offices which are full members of the Washington-based Biotechnology Industry Organisation (BIO) which promotes GM globally on behalf of the US government and GM companies.

Scientists disagree

World-renowned Canadian geneticist and broadcaster, Professor David Suzuki, says:

> "Any scientist or politician who assures you that genetically engineered organisms and their products are safe is either very stupid or lying. Biotechnology is revolutionary and at this very early stage in its development, we don't know enough to make such outrageous claims. As a geneticist, it grieves me that my fellow scientists rush to support the conjectured scientific and economic promises of gene technology while virtually ignoring the much .

more likely potential costs, failures and unexpected consequences. We need far more research so that biotechnology can mature into a usable field but it will be a long time before it delivers sustainable practices." http://www.non-gm-farmers.com/news_print.asp?ID=2427 & http://www.safe-food.org/-news/1999-10-31.html

US Environmental Protection Agency (EPA) toxicologist, Dr Suzanne Wuerthele also warns:

> "This technology is being promoted, in the face of concerns by respectable scientists and in the face of data to the contrary, by the very agencies which are supposed to be protecting human health and the environment. The bottom line in my view is that we are confronted with the most powerful technology the world has ever known, and it is being rapidly deployed with almost no thought whatsoever to its consequences." http://www.gmwatch.eu/10-reasons-why-we-dont-need-gm-foods

Hundreds of other scientists have signed a variety of statements of concern about the future of food security and GM risks, hazards and costs. These voices must also be heard so good policies are developed on the future of sustainable food and farming.

UN Human Rights Committee

Both IAASTD and Frontier Economics have identified the problem of affordability of privately owned R&D for developing (food insecure) countries. In India, promotion of expensive GM seeds by chemical companies and the Indian Government has increased suicide rates among poor indebted farmers. In 2008 the UN Committee on Economic Social and Cultural Rights criticized the Indian government for promoting patented GM seeds to poor farmers, as this was a factor increasing the number of farmer suicides, particularly among cotton farmers - over 200,000 in the previous decade.

The Committee wrote:

> "29. The Committee is deeply concerned that the extreme hardship being experienced by farmers has led to an increasing incidence of suicides by farmers over the past decade. The Committee is particularly concerned that the extreme poverty among small-hold farmers ... has been exacerbated by the introduction of genetically modified seeds by multinational corporations and the ensuing escalation of prices of seeds, fertilisers and pesticides, particularly in the cotton industry." They recommended that the Indian government provide to farmers generic seed which could be legally saved and shared. CESCR also urged the Indian government to review the Seed Bill 2004 in light of its obligations to ensure the rights of their citizens to food and to reduce farmer dependency on multinational corporations.
>
> "69. The Committee urges the State party ... to enable farmers to purchase generic seeds which they are able to re-use, with a view to eliminating their dependency on multinational corporations. The Committee also recommends the State party to review the Seed Bill (2004) in light of its obligations under the Covenant and draw the attention of the State party to paragraph 19 of the

Committee's General Comment No.12 on the right to adequate food (1999)." - UN Committee on Economic, Social and Cultural Rights.

Rural communities in Australia, especially including indigenous people, also experience very high rates of despair and suicide. Government policies and R&D are needed to ensure fair incomes for family farmers to keep them on the land feeding, housing and clothing Australia and caring for our environment.

Seed Treaty

Australia is a party to the UN FAO International Treaty on Plant Genetic Resources in Food and Agriculture (Seed Treaty). Article 9 of the treaty recognizes the enormous contribution farmers have made to the development and maintenance of agricultural biodiversity over millennia and contains provisions meant to ensure governments protect farmers' rights. Parties to the Treaty, including Australia, agreed in 2009 to: "Encourage member countries to review all measures affecting Farmers' Rights and remove any barriers preventing farmers from saving, exchanging or selling seed;" This should apply as much to Australian farmers as any others, yet the Australian government and agribusiness are using patent and plant breeders 'rights' laws to lock growers and gardeners into varieties that can't be saved, exchanged or sold

Conclusion

Healthy rural economies are based on healthy rural ecologies and communities, not produced in corporate laboratories. Rural R&D should be complementary to valuing rural communities' provision of ecosystem services such as water conservation and water quality maintenance, food security, soil health, carbon sequestration in soils, and biodiversity conservation. These are the basis of productivity and are misnamed when referred to as 'non-productivity related'. Allocating financial resources for payments for ecosystems services on land and farms such as water and biodiversity conservation, carbon sequestration and healthy soils is essential and these should be recognised by governments as the basis of rural productivity and economic viability. R&D priorities and processes should also be amended to reflect these imperatives for future food and fibre security and sovereignty.