GM Crops and Foods: Promises, Profits and Politics

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Gene Ethics

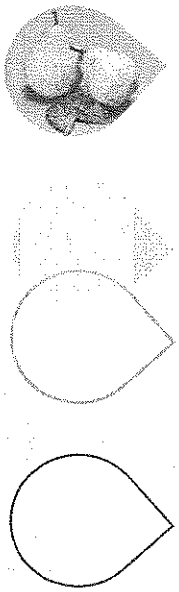
The cruelest lie about Genetically Manipulated (GM) crops and foods is that they can 'feed the world'. GM companies use empty promises of bountiful, designer foods to foist GM onto reluctant governments, farmers and shoppers. The UN says there is now enough food to feed everyone but our social priorities and conflicts allow a billion people to starve. GM technology cannot right this injustice, but false promises take scarce resources away from finding durable solutions to feeding, housing and clothing us all. Independent scientific evidence also shows that some GM foods may pose risks to human and animal health and the environment, but industry censorship hides the truth. Since commercial GM canola seed was first sold in some Australian states in 2008, GM contamination is imposing extra costs and losses on farmers and the food industry. Australia also risks losing its unique competitive advantage as the main supplier of GM-free grains to world markets. Farmer Protection laws that make the owners and users of GM responsible for their products have growing support. A more precautionary, open and scientific regulatory regime on all GM plants, animals and micro-organisms is also needed.

GM Promise to Feed the World is a Cruel Hoax

The cruelest lie about GM crops and foods is that they can 'feed the world' (Bell et al. 2010).

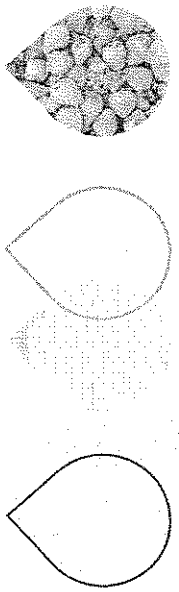
GM and agrichemical company Monsanto launched commercial GM soy, corn, canola and cotton in 1996, in the USA, with two novel traits – herbicide tolerance (so crop plants over-sprayed with herbicide are unharmed, while weeds are killed) and in-built insect toxins – Bt (*Bacillus thuringiensis*) toxin produced in the plants kills the caterpillars of *Lepidoptera* moths that eat it. In 2011, the main commercially available GM varieties are the same four broadacre crops, containing the same two GM traits. Over 90% of GM crops are still grown in North and South America, with around 70% of these being Monsanto's Roundup® tolerant soybean (ISAAA 2010) predominantly used for animal feed and biofuels.

'Failure to Yield', a report by the Union of Concerned Scientists (UCS), analysed official data from all the GM crops grown since 1996 and found, with a minor exception of some Bt corn, that GM crops yielded less than the top conventional varieties. UCS concluded that traditional breeding had contributed much more to crop yield gains than gene manipulation (UCS 2009), refuting claims that GM crops are needed or able to 'feed the world'.



United Nations Food and Agriculture Organization (FAO) figures show that since the first commercial release of GM crops in 1996, the number of starving people in the world has climbed from 788 million (FAO 2008a) to 1.02 billion in 2009 (FAO 2010). The UN special Rapporteur on the right to food, Jean Ziegler, also reported that: 'the world already produces enough food to feed every child, woman and man and could feed 12 billion people, or double the current world population' (FAO 2008b). Everyone could eat well if the available food were fairly distributed and not wasted, but global trade sends food to market where it is most profitable, and where geopolitics dictates.

In 2008 the World Bank and the United Nations (UN) published the International Assessment of Agricultural Science and Technology for Development (IAASTD), a vision for future farming and secure food supplies. The 400 scientists involved in the three-year project recommended core changes in agricultural practices and systems to assuage soaring food prices, hunger, social inequities and environmental catastrophe. They proposed a global shift from oil-dependent industrial agribusiness to sustainable farming systems, with research and development to augment local traditional knowledge and help farmers optimise use of soil and water resources.



The IAASTD report also concluded that GM crops have no useful role to play in solving climate change, biodiversity loss, hunger or poverty. Fifty-eight countries adopted the IAASTD's findings but the GM companies that helped set up the review rejected them. The Australian, United States and Canadian governments also 'did not fully approve the Executive Summary of the Synthesis Report' (IAASTD 2008a).

Misallocated Resources

Despite the lack of evidence that GM crops can alleviate world hunger, a disproportionate amount of funding still goes into GM crop research and deployment. For example, the Alliance for a Green Revolution in Africa (AGRA) claims it will 'feed the world' with a gene revolution that uses industrial monocultures of GM crops, animals and microbes. Their emphasis on gene technology to solve the political and social problems of Africa echoes the first Green Revolution in the 1950s and 60s, where private business interests funded and deployed new technology to maintain the influence of industrially developed countries over newly independent Asian nations. They replaced permanently sustainable, biodiverse, farming systems with industrial monocultures dependent on trade and constant inputs of expensive, non-renewable, oil-derived products from developed countries.

As Dr Vandana Shiva, scientist, philosopher and eco-feminist – author of more than 20 books and over 500 papers in leading scientific and technical journals, says:

> The Green Revolution was based on the assumption that technology is a superior substitute for nature, and hence a means of producing limitless growth, unconstrained by nature's limits. ... It was based not on the intensification of nature's processes, but on the intensification of credit and purchased inputs like chemical fertilisers and pesticides. ... not on self-reliance but dependence ... not on diversity but uniformity.' (Shiva 1993)

AGRA's donors and supporters include the Ford, Rockefeller and Gates Foundations, international banks and finance institutions which also have substantial commercial interests in the GM industry. For instance, on 28 August 2010 *The Seattle Times* reported (O'Hagan 2010) that the Bill and Melinda Gates Foundation owned $27.6 million worth of Monsanto's shares, including 500,000 shares recently purchased for $23.1 million (US Securities and Exchange Commission 2010).

The Bill and Melinda Gates Foundation also funds the Donald Danforth Plant Science Centre in St. Louis Missouri, where Monsanto is headquartered, to: 'secure the approval of African governments to allow field testing of genetically modified banana, rice, sorghum and cassava plants that have been fortified with vitamins, minerals and proteins' (GM Watch 2010). Danforth's Paul Anderson says:

> We need to start making plans for how these product developments are going to be carried out in our countries of interest and how these products are going to meet the regulatory requirements of those countries. (*Saint Louis Post-Dispatch* 2009)

Industrial agriculture in Africa, including GM crops, would dismantle Africa's integrated, biodiverse, ecological farming systems and cultural practices, alienate more community land, and reduce farm labour when little alternative employment exists. First world economies would gain even greater access to cheap cash crops, animal feed and biofuel feedstock, further reducing the capacity of African communities to feed their people the diverse, balanced and nutritious diet of fresh local foods essential for good health.

Professor Walden Bello, professor of sociology and public administration at the University of the Philippines and executive director of Focus on the Global South, reports that Africa exported 1.3 million tons of food a year in the 1960s. After being subject to international development loans and free-market fundamentalism, also part of AGRA's agenda, Africa now imports nearly 25% of its food (*The Nation* 2009).

Hunger Ignored

GM crops would intensify hunger by diverting resources away from the quest for genuine food security and sovereignty through the development and maintenance of sustainable ecological agriculture systems, for this and future generations.

As a cure for hunger, corporate interests prescribe more of their own profitable technologies and chemicals, including GM crops, animals and microbes. But the main causes of hunger and starvation are speculation, unfair terms of trade, landlessness, US and EU farm subsidies, poverty and debt, war, environmental degradation, and social upheavals. More technology cannot solve these systemic social problems yet the cost of developing GM technology diverts resources away from the development of durable solutions. For instance, former Chief Scientist Prof Jim Peacock claims 'Monsanto alone spends $1.1 billion per year ($3 million a day) in research' (Tribe 2010).

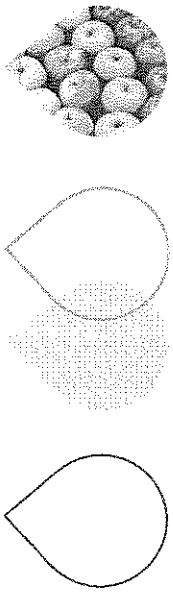
North Dakota State University economist, Dr William Wilson, says 'From 1990 to 2009, major companies have collectively spent some US$45 billion on crop protection R&D, with each allocating significant sums to GM "seeds and traits".' (Wilson 2011)

Official Communiques Confirm Government and Corporate Ties

Insights into the close ties between the United States Government and the global promotional activities of its GM crop industry are provided by three US Government cables on the WikiLeaks website. One (WikiLeaks Madrid 2008) shows US and Spanish officials proposed forcing Europe to adopt GM crops and foods. Senior Spanish officials favoured the option of inflating food prices and: 'noted that commodity price hikes might spur greater liberalisation on biotech imports.' Soon after, food prices rose so sharply around the world that *The Economist* magazine announced that the real price of food had reached its highest level since 1845 (Kauffman 2008).

As a result of food price increases, 250 million more people starved. The US Senate Committee on Homeland Security and Governmental Affairs found unrestricted speculation in food commodities had caused soaring prices. Pope Benedict told the UN World Summit on Food Security that, 'Hunger is the most cruel and concrete sign of poverty. Opulence and waste are no longer acceptable when the tragedy of hunger is assuming ever greater proportions.' (Catholic News 2009) In April 2009, a WikiLeaks cable from Secretary of State Hillary Clinton to American embassies in Africa headed 'Food Security and Agriculture', says a State Department priority is to encourage African government 'acceptance of genetically modified food and propagation of genetically modified crops' (WikiLeaks State 2009).

Further evidence of the role of the US Government in attempting to force the adoption of GM crops on Europe is provided by another



diplomatic cable (WikiLeaks Paris 2007). It recommends the Bush Administration use diplomatic and trade sanctions to force GM products into Europe, over the policies of governments and citizens who want the precautionary principle applied. The US Ambassador to France recommended that the US:

> [R]einforce our negotiating position with the EU on agricultural biotechnology by publishing a retaliation list (that) causes some pain across the EU since this is a collective responsibility, but that also focuses in part on the worst culprits. ... Moving to retaliation will make clear that the current path has real costs to EU interests and could help strengthen European pro-biotech voices. In fact, the pro-biotech side in France – including within the biggest farm union – have told us retaliation is the only way to begin to turn this issue in France.

Thus, key French and EU businesses looked forward to benefits from GM products regardless of the aspirations of their fellow citizens.

In Iraq too, US policy on GM crops protected and promoted US trade and corporate interests ahead of feeding people. Amidst violent chaos and suicide bombings, the US Government's Coalition Provisional Authority (CPA) chief Paul Bremer issued the '100 orders' of US-mandated legal changes in 2004. They included 'Order 81' (Order 81) that required Iraqi farmers to comply with US-style intellectual property laws and plant variety protection, mainly for US corporate and GM seed varieties. No protection was accorded to Iraqi farmers' own varieties and they were prohibited from reusing, propagating or reproducing protected seed.

The war in Iraq destroyed the country's seed industry, putting the country's domestic food supply at risk. The FAO said Iraq had a relatively stable and functioning public-sector controlled seed industry before the war in 2003 (Jackowski 2005).

The Revolving Door of Influence Peddling

The 'revolving door' between American corporations and governments is a mechanism for influence over government policy and decision-making. Senior company executives create close ties to politicians, regulators and elected officials everywhere and in some cases enter government to make public policy themselves. For instance, senior Monsanto people have entered key spots in the US Department of Agriculture (USDA), Environmental Protection Agency (EPA), and Food and Drug Administration (USFDA) where they set policies on GM crops and foods, even over the objections of these agencies' own experts. They later return to the employ of associated companies (Phelps 2010). The Biotechnology Industry Organisation named present US Secretary of Agriculture Tom Vilsack Governor of the Year for services to the GM industry when he governed Iowa and he is founder and former chair of the US Governor's Biotechnology Partnership.

The West Australian Government also embraced foreign corporate interests when it recently allowed Monsanto to acquire 19.9% of WA public plant breeder, InterGrain, for $10.5 million (Intergrain 2010). Intergrain produces 40% of Australia's wheat seed, bred over decades by Australian farmers and governments. This deal would allow Monsanto to insert its GM traits into the best Australian wheat varieties and claim ownership of the GM varieties. The Office of the Victorian Premier and the Queensland Government are both members of the Biotechnology Industry Organisation (BIO 2011) a US-based organisation that promotes its corporate members' GM products around the world. The Victorian Government aspires to be the largest hub of GM research and development in the Asia Pacific region and signed a public private partnership (PPP) with Dow AgroSciences at the BIO trade show in Atlanta Georgia, in 2009 (Caples 2010). The Queensland trade commissioner to the USA makes a priority of biotechnology promotion (Sharah 2008).

Australia and GM Canola

In Australia in 2002, the Commonwealth Office of Gene Technology Regulator (OGTR) granted Monsanto and Bayer commercial licences to sell canola that tolerates being sprayed with the herbicides Roundup (glyphosate) and Liberty

(glufosinate), respectively. The licences imposed no restrictions or conditions, such as buffer zones, segregation systems or monitoring regimes on the licensees or their agents (OGTR 2010a, 2010b). However, all state governments imposed moratoria on the sale of the seed and declared their jurisdictions GM-free zones for marketing reasons, under Section 21 of the *Commonwealth Gene Technology Act 2000*. These GM canola bans were lifted in New South Wales and Victoria in 2008, and in Western Australia in 2010 but Tasmania, the Australian Capital Territory and South Australia will remain GM-free until at least 2014.

Those ending their bans ignored the aspirations of a majority of Australians who want to remain GM-free. For example, the Swinburne National Science and Technology Monitor found that over half of the 1000 people questioned were uncomfortable with GM plants and about two-thirds expressed similar unease about GM animals being used for food (Thyer 2008).

To convince governments and farmers to support lifting the commercial GM canola bans in Australia, the GM industry mobilised some scientists and academics from public or jointly-funded institutions, along with handpicked agronomists, medical and weed scientists and farmers. They advanced the GM crops and food case in the news media, as well as government and industry-hosted forums. Pro-GM groups with preferential media access included the free market think tank the Institute of Public Affairs (IPA), Australian Environment Foundation, Producers Forum, Ausbiotech and Agrifood Awareness (AFAA).

Croplife Australia (part of the global Croplife promotional GM network), Grains Research and Development Corporation (funded by Australian grain growers and taxpayers) and the National Farmers' Federation (Australia's peak farming body) set up AFAA in 1999 (AFAA 2011a). AFAA represents:

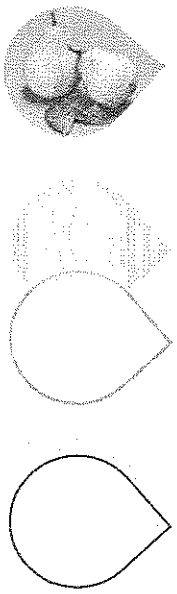
> [T]he developers, registrants, manufacturers and formulators of plant science solutions for use in agriculture ... an industry initiative, established to increase public awareness of, and encourage informed debate and decision-making about gene technology. (AFAA 2011b)

AFAA prepared the GM industry's main lobbying document to overturn the GM canola bans. It was the Single Vision, a statement that claimed to be 'Delivering market choice with GM canola' (AFAA 2007) to all farmers, GM and GM-free. The proponents and endorsers of the Single Vision included the chief executives and managing directors of nine transnational GM corporations, including the GM canola licensees Monsanto and Bayer, AFAA's three founding groups, some Australian companies and grain supply chain organisations.

Australian governments also uncritically backed GM crops and foods, even without clear scientific or commercial results from the billions of public dollars spent on GM over the past 25 years. For instance, the Federal Government funded Biotechnology Australia to promote GM from 2000 until 2008, then established the National Enabling Technologies Strategy (NETS) in 2008 with a $38.2 million budget, to back GM and nanotechnologies (NETS 2011).

GM Assault on Organic

Roundup tolerant GM canola was just 8% of the Australian canola crop in the 2010 season but has already imposed extra costs and risks on all growers. Steve Marsh, a National Association for Sustainable Agriculture Australia (NASAA) certified organic grower near Kojonup in Western Australia, lost his certification and premium markets when a neighbour's windrowed GM canola blew over 60% of his farm in November, 2010. Both NASAA and the state Department of Agriculture have confirmed positive GM tests on the wind-blown material. If Steve sues the neighbour who grew the GM crop, Monsanto says it will back the GM grower. The WA Pastoral and Graziers Association has also started a GM support fund.



In a stark turnaround, WA Agriculture Minister Terry Redman now says: '... zero per cent thresholds (of GM in organics) are unrealistic in biological systems' (AAP 2010) and wants the organic industry to allow GM contamination in

its supply chains. But in March 2010, when he ended the state's GM canola ban, the Minister said: 'Trials proved GM and non-GM canola can be segregated and marketed separately' (Redman 2010b). 'The report on the trials indicated there were 11 minor events and all were managed appropriately and segregation from paddock to port was achieved' (Redman 2010a). He ignores the domestic organic standard AS6000, agreed by all governments and the organic industry, which sets zero tolerance for any GM contact with organic food.

This farm contamination incident makes US Ambassador Stapleton's cable (Wikileaks Paris 2007) highly relevant. He wrote:

> [T]he draft biotech law submitted to the (French) National Assembly and the Senate for urgent consideration, could make any biotech planting impossible in practical terms. The law would make farmers and seed companies legally liable for pollen drift and sets the stage for inordinately large cropping (separation) distances. The publication of a registry identifying cultivation of GMOs at the parcel level may be the most significant measure ... Further, we should not be prepared to cede on cultivation because of our considerable planting seed business in Europe.

These are the safeguards that should be enacted in Australian Farmer Protection laws, but our governments stoutly resist these most reasonable proposals. Instead of serving the needs of our local, Asian and European customers, our governments generally align with US policy on biosafety, food labelling, GM crop assessments and other key policies. Neither Australia nor the USA has signed or ratified the Biosafety Protocol, the first and only protocol to the Convention on Biological Diversity, which attempts to ensure the safe international transfer, handling and use of GM organisms (Convention on Biological Diversity 2011). Farmer Protection laws would make GM technology owners and their licensees strictly liable so that farmers like Steve Marsh could recover their losses and extra costs when GM contamination occurred, without having to sue under the common law.

GM-Free Competitive Advantage Lost

Australia is fast losing its unique competitive advantage as the only large-scale seller of GM-free canola into world markets. Australian governments are complicit, under the direct influence of our GM competitors, the USA, Canada and their corporations. Of the 20 countries that grew canola in 2006, 18 required GM-free local production and preferred GM-free imports. The Rural Industries Research and Development Corporation said:

> In 1990, Australia hit the global stage as an exporter of canola seed, and rapid growth led to our exports exceeding two million tonnes in 1999/2000. Our annual exports have now stabilised at around one to 1.5 million tonnes, and our main export markets are Japan, China, Pakistan, Europe and Bangladesh. (RIRDC 2011)

The rise in Australian canola exports was largely due to Canada losing the European market when it began growing and exporting GM canola.

State governments are shirking their legal responsibility to protect farm produce markets for all growers. The demand for Australia's GM-free canola is so strong in Europe that Co-operative Bulk Handlers (CBH) marketing manager, Peter Elliott, says Europeans will buy 90% of WA's conventional canola production at a 5% premium over GM canola this year – up to $25/tonne.

> When you're growing GM, at the moment you need to compete against Canada, but when you've got non-GM you get a free kick into Europe and some markets in Japan. There's a massive advantage to be growing non-GM this year, because Europe has been so aggressively buying up all the non-GM tonnage. (Bita 2010)

Kangaroo Island Pure Grain in GM-free South Australia is just one company benefiting from strong local and international demand for its non-GM canola and non-GM canola honey for which its growers are earning premiums (KI Pure Grain 2011).

Hidden GM Risks and Hazards

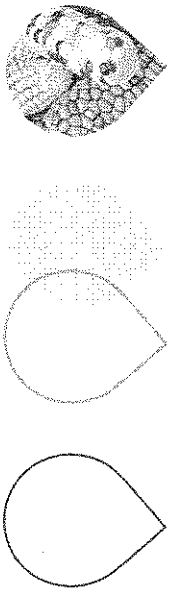
No holds are barred in the corporate quest for GM domination of farming and food. *The Scientific American* journal (August 2009) and *Nature Biotechnology* (October 2009) report that GM companies prohibit independent researchers from accessing the GM material needed for environmental and health research, and censor adverse findings. Despite the hurdles, several published papers show some GM soybean, corn, canola and other food crops harm experimental animals and may therefore pose risks to people who eat them.

For instance, an Australian National University team found that CSIRO Plant Industry's GM field peas, containing a gene from a bean, made foreign proteins that provoked immune and inflammatory responses in mice (Prescott et al. 2005). French researchers also concluded that rats fed three different kinds of GM maize showed 'significant' signs of liver and kidney damage (de Vendomois 2009). The *Committee for Research and Independent Information on Genetic Engineering* (CRIIGEN) revealed a lack of scientific consensus on the food safety assessment studies used in the approval process for MON810 GM corn (CRIIGEN 2008). Stanley Ewen and Arpad Pusztai of the Rowett Institute, Scotland, also found damage to the intestines and immune systems of rats fed GM potatoes (Ewen & Pusztai 1999).

Those who publish data challenging claims that GM food and crops are safe are often vilified or shunned by members of the scientific establishment associated with the GM industry. They sow doubts about the expertise, credibility and motives of GM critics. Celebrated science historian, Naomi Oreskes asserts the need to

> [R]oll back the rug on this dark corner of the American scientific community, showing how ideology and corporate interests, aided by a too-compliant media, have skewed public understanding of some of the most pressing issues of our era. (Oreskes et al. 2010)

Oreskes argues, for instance, that campaigns against government action on global warming use the same tactics as the tobacco lobby and are run by the same small coterie of influential senior scientists. These scientists assume the mantle of general experts, to isolate and ostracise scientific dissenters and whistleblowers (ABC Radio National 2010).



Many scientists who publicly voice their concerns about GM suffer the loss of their professional standing, jobs and careers, as a warning to others who may disagree with the corporate sponsors of science. Occasionally they are vindicated in court. On 18 January 2011 de Vendomois' colleague Gilles-Eric Seralini won his action for defamation against the French Association of Plant Biotechnologies (AFVB).[1] Seralini was subject to a smear campaign in response to several scientific papers published by his group, which found serious statistical and other faults in Monsanto research. AFVB chairperson Marc Fellous had accused GM's scientific critics of being 'ideological' and 'militant' but the trial revealed that his claim to be a 'neutral' scientist was tainted by his ownership of GM patents through an Israel-based company. Other AFBV members were also shown to have links with agribusiness companies (CRIIGEN 2011).

Precautionary Regulation

Science corrupted by corporate motives and influence is an unsound basis for the licensing of novel GM organisms for commercial release into open environments. As an antidote, responsible governments and regulatory systems must apply the Precautionary Principle that places the burden of proof for the safety and efficacy of GM products onto GM proponents, not on the critics, regulators or the general public (Cole 2005).

Our regulatory systems should disallow commercial confidentiality. Unlike the patent system, which requires protected information to be made publicly available so other researchers can also engage in innovation, regulatory regimes allow key data submitted with commercial GM applications to be hidden from challenge, discussion and critical evaluation.

Credible peer-reviewed research data that strictly conforms to scientific principles should be required to back up commercial GM applications.

1 [Association Française des Biotechnologies Végétale] (AFBV).

Instead, governments influenced by the ideology of minimal surveillance and self-regulation establish weak 'science-based' and 'case-by-case' regulatory regimes that do not comply with the core tenets of the scientific method and sound scientific inquiry. Regulatory systems should set benchmarks and standards *a priori* for the quality, duration, scale and scope of the scientific evidence required for the assessment of new GM products.

Independent centres of excellence on biosafety research should also be set up to produce robust, replicable and refutable data for analysis. The Centre for Integrated Research in Biosafety at the University of Canterbury New Zealand and its Biosafety Assessment Tool (University of Canterbury 2009) may serve as a useful model for Australia which lacks any such programs.

Conclusion

GM crops cannot deliver on their false promises of plentiful food and fibre. Despite the expenditure of billions of dollars of public and private money over the past 30 years, the promises of commercial GM crop varieties with increased yield, drought-tolerance, salt-tolerance, enhanced nutrition, a nitrogen-fixing grain, longer shelf life or other traits have not come true. These empty claims divert scarce research and development resources from the key task of creating sustainable, ecological farming and food production systems that can feed, house and clothe everyone well, in perpetuity. With oil and phosphate reserves diminished and global climate changing, amending industrial agricultural practices and securing food sovereignty must be a national and global priority.

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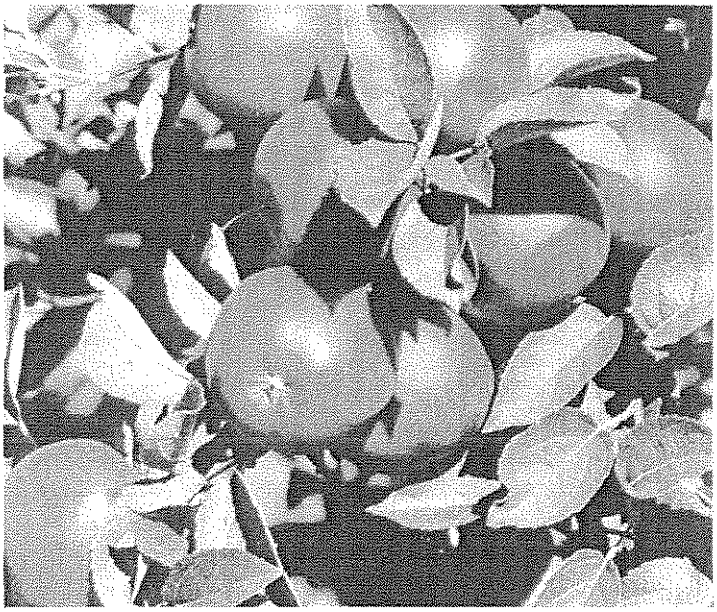

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