

CREATION, AGRICULTURE AND GENETIC MODIFICATION

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CREATION HAS THE INBUILT CAPACITY TO ASTOUND AND AMUSE US, TO CAPTIVATE AND CAUTION US, TO HUMBLE AND HELP US, TO INSPIRE AND TO INSTRUCT US. “In the beginning God created ... and he saw that it was very good” (Gen. 1.1, 31). We too are “fearfully and wonderfully made” (Ps. 139.14) and cast in the God-intended role of mutual interdependence with him, with each other and within the rest of creation as an integral part of our environment. This mutual interdependence is based on at least three guiding biblical principles (the 3Rs):

- Relationship – to God (Mk. 12.30), to each other as humans (Mk. 12.31) and to the rest of creation (Ps. 8).
- Respect – for the identity, sensitivity and boundaries for mutual blessing of all creatures, created “after their kind” (a recurring phrase in Genesis 1).
- Responsibility – to behave as vicegerents of God with justice, mercy and humility (Mic. 6.8) in respectful relationship towards all creatures and the living landscape, seascape, airspace and cosmos.

In agriculture and in more general environmental management, the Bible offers at least five behavioural mandates to inform the outworking of the 3Rs. First is dominion (but not domination), with complete authority to manage creation as God likes (Gen. 1.26–28). Second, priesthood (but not possessiveness), offering to God systems of management which “let everything that has breath praise the Lord” so that we too can in clear conscience “praise the Lord” (Ps. 150.6). Third, companionship (but not creature-worship), so that, for example, “the righteous has regard for the life of his beast” (Prov. 12.10), as encouraged too by St Francis of Assisi. Fourth, stewardship (but not slavery – either towards creation or of creation), whereby caring management is applied in the light of accountability ultimately to God (Lk. 16.2). Finally, teamwork (not tyranny), recognising that we are privileged to be commissioned with complementary roles as “fellow-labourers with God” who also desires to “tend us as his field, his husbandry” (1 Cor. 3.9) in order eventually to achieve his goal of kingdom blessing, of shalom (Is. 61.11).

Land is not “contextless space” to be “chartered for human convenience”; rather, it is “covenanted place” to be received as communal gift from God.¹ The earth is the Lord’s (Ps. 24.1) and we are given its tenancy (Ps. 115.16) in covenant relationship with him. This can only be understood biblically as we see Christ at the centre of creation.² The outworking of this has many facets. Below we shall consider briefly the challenging issues raised by genetic modification (GM).

GM IN A BIBLICAL, ENVIRONMENTAL-MANAGEMENT UNDERSTANDING

One only has to see pictures of Cruft’s Dog Show in London to understand something about genetic modification. Selective breeding goes back a long way (Gen. 30.37ff.) and genetic manipulation has been with us for centuries, ever since plant and animal domestication and selective breeding began some 6000 or so years ago. Thus, what is different about current genetic engineering? Why are genetically-modified organisms (GMOs) so controversial? Are the profound concerns that exist justified? Is it linkage with animal and human cloning possibilities (long established in crop production, e.g. potatoes from split tubers) which should cause most concern?³ How far is it right for us to alter God-given creatures, bearing in mind too that they undergo spontaneous mutation – genetic change – naturally? The need to think these things through certainly challenges us to rigorously apply the 3Rs above.

We stand at the brink of a potential surge in the GMOs revolution.⁴ While it must be appreciated that “genetic modification” covers a range of techniques and levels of intervention, it is generally of a different order by contrast with previous breeding technology. In the context of the 3Rs, there are four main practical issues to consider in relation to GMOs. First, is it *safe* to consume GM products?⁵ Secondly, how will the *environment* be affected by the release of unrecoverable genetic material?⁶ Thirdly, how will the *structure* of farming be affected? It is the larger businesses that tend to use GMOs.⁷ Finally, who would *control* GMOs? This is the big issue; the major biotechnology companies are trans-national corporations (TNCs) that often supply agrochemicals as well.⁸

Ethical concerns arise when we interfere in the normal nuclear processes of organisms.⁹ Some would argue that we have been doing this for centuries by the usual techniques of plant selection and breeding. Yet the situation is different, typically involving the crude, random intrusion of genetic material from otherwise unrelated species of both plants and animals. Furthermore, newly modified plants are being selected to match a package of chemical treatments and are liable to cross with wild species so bringing about biological contamination of the natural gene pool. Not all of this need be detrimental but the point is that the ecological consequences are unpredictable and irreversible. Herbicide-resistant GM oilseed rape has already caused problems in Canada because it cross-pollinated with wild species of plant.

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The Bible ... shows how Christian faith applies not only to our relationships to God and with to each other, but also to our relationship with the rest of creation. If we exclude this creationward relationship, we deny the fullness of the truth and diminish the relevance of what we preach.

NOTES

1 See W. Brueggemann, *The Land* (SPCK, London, 1978).

2 See C.E. Gunton, *Christ and Creation* (Carlisle: Paternoster, 1992).

3 Dolly the sheep cloned in 1996 by Professor Ian Wilmut at the Roslin Institute in Scotland and put down in 2003 pioneered the way (see Krauthammer et al, *Time* 149.10 (1997), pp. 42–55).

4 Yet a straight “yes or no” to GMOs cannot be simplistically given. For example, modifying sheep’s milk to secrete alpha-1-antitrypsin to treat cystic fibrosis or by adding microbes to secrete insulin both offer challenges to a simple “no” vote.

5 From 2001 *Monsanto*, while insisting that GM seeds are safe, has required all farmers who buy the GM seeds to sign a “technology agreement” which states that “in no event shall *Monsanto* or any seller be liable for any incidental, consequential, special or punitive damages”.

6 Pollen from GM oilseed rape has been found in bacteria within the guts of honeybees in Germany; see *The Ecologist* 31.1 (Feb. 2001), p. 15.

7 See V. Shiva, *Stolen Harvest: The Hijacking of the Global Food Supply* (Cambridge, MA: South End Press, 2000).

8 See D.C. Korten, *When Corporations Rule the World* (Bloomfield: Kumarian Press, 1996)

9 For a full discussion of many of these issues see D. Bruce & A. Bruce, *Engineering Genesis: The Ethics of Genetic Engineering in Non-human Species* (London: Earthscan, 1998), and D. Bruce & D. Horrocks (eds.), *Modifying Creation? GM Crops and Foods: A Christian Perspective* (Carlisle: Paternoster, 2001).

10 In the mid-West “grain basket” of the USA, some two-thirds of soya bean crops are already sown with GM varieties and well over 90% of maize crops which are alternated with them in intensive cropping sequences.

► The case for and against GM crops can be summarised as follows:

The case for

1. Multiple gene copies can be easily made for desirable characteristics – like biological photocopying, such as was shown to occur naturally within the genetic code of DNA by Watson, Crick and others in 1953.
2. Rapid breeding can accelerate the provision of improved crop varieties.
3. Wide species choice – genes from virtually anywhere can be drawn upon.
4. Reduced chemical use – though this claim in practice so far does not quite live up to expectations.
5. “Nutraceuticals” – scope to make medical, pharmaceutical and nutritional products.
6. Stress resistance – to suit dry or saline or other harsh environments where food is short.
7. Feed the world – GM may offer additional scope to increase outputs by breeding adaptable high-yield varieties.

The case against

1. Boundaries? – God created everything “after its kind”; While it is possible to produce frost-resistant crops by GM using genes from deep-sea fish, these species would never “fall in love and marry” naturally!
2. Safety? – meddling with component plants may threaten consumers with high allergenic susceptibility. For example, the introduction of nut genes into plants could put some lives at risk.
3. Environment? – once released, how do we recapture or control the destinations of GMOs. This is problematic.
4. Structure? – larger businesses dare not refuse to use GMOs for fear of losing their markets.
5. Control? – this is already alarmingly supranational and beyond democracy. Presently, control lies within TNCs whose individual power far exceeds the collective value of the Gross National Products of several countries put together.
6. Commoditisation – the rich variety of local foods are being replaced by standardised, blended ingredients with the use of GM sources already accelerating, e.g. fast food, GM soya and maize inclusions.¹⁰
7. Alternatives – some farmers do use sustainable, high yielding, energy-efficient systems which other

farmers can be encouraged to emulate through field meetings on each others’ farms.

The idea of farmers working together offers the best hope for food security worldwide since it strengthens farmers’ readiness for co-operation in managing land sustainably. It also allows them to supply food and other farm product locally to meet the needs in each place. There is a biblical imperative to work hard, to share the produce, to celebrate identity of people, of creatures, of food cultures and of place. Commoditisation of internationally branded products threatens all of this. GM offers a means to tighten the stranglehold of undesirable trends. When rightly applied, however, GM techniques can offer a tool for alleviation of suffering and cannot be ruled out of hand. We cannot “disinvent” GM techniques. We cannot opt out of making serious ethical choices – as with all other issues of life, we must act justly, love mercy and walk humbly with God (Mic. 6.8). The Bible offers an integrated gospel. It shows how Christian faith applies not only to our relationships to God and with each other, but also to our relationship with the rest of creation. If we exclude this creationward relationship, we deny the fullness of the truth and diminish the relevance of what we preach (a relevance that proves vital in grasping Christian truth in any setting, but which seems particularly clearly perceived by rural Africans).

The advent of greater use of genetic modification calls for discernment and caution rather than outright condemnation, because GM techniques vary in their severity and applications cover a range of motivations – some are welfare based, but some greed and power based. So what can Christians do in the light of the above discussion? First, we can pray and study biblical principles of creation and salvation, which are inseparable. Secondly, we can buy and support locally grown, ethically produced, fairly traded foods and natural goods. Thirdly, we can beware the growing links between commoditised, GM foods and indiscriminate trade that threatens both environmental protection and sustainable livelihoods worldwide by breaking the connection between identifiable species and place on a scale hugely unsurpassed in the previous history of plant and animal transfer and breeding. Fourthly, we can follow developments in GM and advocate for moderation of detrimental practices. Fifthly, we can seek to understand and pray for wisdom for those Christians engaged in responsibly researching and applying carefully controlled GM techniques for alleviation of human and animal suffering. ■