

BURLEIGH DODDS SERIES IN AGRICULTURAL SCIENCE

Key issues in agricultural ethics

Edited by Professor Emeritus Robert L. Zimdahl
Colorado State University, USA



bd burleigh dodds
SCIENCE PUBLISHING

Contents

Series list	x
Introduction	xx
Acknowledgements	xxiii

Part 1 General

1	What is agricultural ethics and why does it matter?	3
	<i>Paul B. Thompson, Michigan State University, USA</i>	
1	Introduction	4
2	Key concepts: ethics and common morality	5
3	Common morality in agriculture and food systems	6
4	Topics in agricultural ethics	7
5	Methods in agricultural ethics	9
6	Agricultural ethics: why it matters	12
7	Can agricultural ethics be taught?	15
8	Conclusion	17
9	Where to look for further information	18
10	References	19
2	Approaches to ethics	21
	<i>Katie McShane, Colorado State University, USA</i>	
1	Introduction	21
2	Utilitarianism	23
3	Deontology	26
4	Virtue ethics	28
5	Competing theories or an ethical toolkit?	30
6	Conclusion	31
7	Where to look for further information	31
8	References	32

3	Institutionalizing agricultural ethics in US land-grant universities <i>Robert L. Zimdahl, Colorado State University, USA</i>	35
	1 Introduction	35
	2 Food production and 'productivism'	36
	3 Ethical standards	36
	4 Scientific challenges in agriculture	37
	5 Problems facing agriculture	38
	6 Agriculture's ethical dilemmas	38
	7 An ethical perspective on agriculture	40
	8 Acknowledgements	44
	9 References	45
4	Gender dimensions of agricultural ethics <i>Samantha Noll, Washington State University, USA</i>	47
	1 Introduction	47
	2 Current agricultural demographics	49
	3 Brief overview of agricultural ethics	50
	4 Agricultural ethics and gender dimensions	52
	5 Gender and development literature	53
	6 Gender dimensions in the global North	56
	7 Conclusion and future trends	59
	8 Where to look for further information	59
	9 References	61
5	Agricultural ethics - the farmer's perspective <i>Robert L. Zimdahl, Colorado State University, USA</i>	65
	1 Introduction	65
	2 Understanding farmers' constraints and motivations	67
	3 Environmental and social costs	69
	4 Agricultural issues	70
	5 Agriculture's image and change	71
	6 Public fear	73
	7 Conservation	75
	8 Sustainability	76
	9 References	79
6	Virtue ethics, Wendell Berry and agriculture <i>Wade Casey, Loyola University Chicago, USA</i>	83
	1 Introduction	83
	2 Introducing virtue ethics	84
	3 Wendell Berry and a virtuous agriculture	87
	4 Conclusion and future trends in research	93
	5 Where to look for further information	94
	6 References	95

Part 2 Ethical issues

7	Agriculture and the environment: ethical issues <i>Richard Bawden and Roger Packham, Western Sydney University, Australia</i>	99
1	Introduction	99
2	What has happened?	102
3	Why has it come to this?	103
4	Constraints to ethical awareness and moral action	104
5	The ability to make judgements	106
6	Applying these concepts in practice	108
7	Can environmental ethics help?	109
8	Ethics and worldview transformation	111
9	Worldviews, experiential learning and systemic development	112
10	A worldview of persistence	114
11	An Australian aboriginal perspective	116
12	Conclusion	117
13	Where to look for further information	118
14	References	119
8	Migrant labour in agriculture: ethical issues and challenges <i>Francesca Giarè, Patrizia Borsotto and Gabriella Ricciardi, Council for Agricultural Research and Economics (CREA), Italy</i>	125
1	Introduction	125
2	Importance of migrant workers in the agricultural and agri-food sectors	126
3	Migrants' rights in Europe	129
4	European agricultural policies and migrant labour	132
5	Conclusion	134
6	References	134
9	Sustainable intensification in agriculture: ethical issues <i>Alesandros Glaros, Philip Quarshie, Emily Duncan and Evan Fraser, University of Guelph, Canada</i>	137
1	Introduction	137
2	The imperative for sustainable intensification	139
3	Policy goals and ethical trade-offs	141
4	Pragmatic responses to intensification-related tensions	148
5	Conclusion	154
6	Where to look for further information	154
7	References	156

10	Key ethical issues in livestock farming <i>Natalie Thomas, University of Guelph, Canada; and Adam B. D. Langridge, Nipissing University, Canada</i>	165
	1 Introduction	165
	2 Overview of ethical theories and positions in animal ethics	166
	3 Overview of issues in animals in agriculture	173
	4 Conclusion	184
	5 Where to look for further information	184
	6 References	186
11	Ethical issues of developing new technologies in agriculture <i>Bart Gremmen, Wageningen University, The Netherlands</i>	191
	1 Introduction	191
	2 Ethics and developing new technologies	192
	3 Responsible research and innovation in agriculture	194
	4 Four ethical issues in developing new technologies in agriculture	195
	5 Ethics of genetic modification in agriculture	197
	6 Ethics of the toolbox of new plant breeding technologies	201
	7 Conclusion	204
	8 Where to look for further information	205
	9 References	206
12	Intellectual property rights in agriculture: ethical issues <i>Leland L. Glenna, The Pennsylvania State University, USA</i>	211
	1 Introduction	211
	2 Justification for intellectual property protection	212
	3 Changes in the crop seed sector	213
	4 Ethical considerations	216
	5 Other ethical concerns	219
	6 Positive versus native rights	220
	7 The ethical limits of markets	221
	8 Undermining institutional integrity: the university	222
	9 Undermining institutional integrity: science	222
	10 Contributive justice and problem-solving	223
	11 Conclusion	224
	12 References	226
13	Ethics of agricultural research <i>N. Yasemin Yalim, Ankara University, Turkey; Burçin Çokuysal, Ege University, Turkey; and Cemal Taluğ, Ankara University, Turkey</i>	231
	1 Introduction	231
	2 Agricultural research as a subset of scientific research	233
	3 The ethics of agricultural research: definition and scope	235

4	Ethical issues in agricultural research	240
5	Ethical problems related to the subjects of agricultural research	241
6	Ethical issues related to the management and financing of agricultural research	244
7	Ethical issues regarding the sharing of agricultural research results	247
8	Ethical issues that arise during the conduct of agricultural research	250
9	Theoretical basis for the ethical analysis of agricultural research	253
10	Conclusion	257
11	References	259
	Index	265

Introduction

Agriculture is facing unprecedented scrutiny for its social and environmental effects. Many of the key choices it must make are fundamentally about ethics. This volume explores key ethical debates surrounding agriculture and agri-food supply chains.

The chapters are divided in two parts: Part 1 provides a background on what agricultural ethics is, whilst also identifying current approaches to the field of ethics. Chapters also review how agricultural ethics has not been institutionalised in US land grant universities, gender dimensions of agricultural ethics, the farmer's perspective of agricultural ethics and the major aspects of the virtue ethics tradition, specifically drawing attention to Wendell Berry. Chapters in Part 2 give specific examples of ethical issues in agriculture, such as the environment, migrant labour and sustainable intensification. Chapters on key ethical issues in livestock farming, developing new technologies, intellectual property rights and ethics of agricultural research are also included.

Part 1 General

The book opens with a chapter that describes what agricultural ethics is and why it matters. Chapter 1 begins by first providing an overview of the key concepts of ethics and common morality, then moves on to review common morality in agriculture and food systems. The chapter also highlights some relevant topics in agricultural ethics, before reviewing the various social science research methods currently involved in analysing relevant agricultural ethics data. A section on why agricultural ethics matters is also included, focusing on how the outcome of agricultural ethics debates affect the work of those involved and why it is important for these people to strive to do what is ethical. A discussion on whether agricultural ethics can be taught is also provided.

The next chapter of Part 1 focuses on current approaches to ethics. Chapter 2 first describes the field of ethics, then moves on to analyse the current three main schools of thought in contemporary ethics through their own individual sections: utilitarianism, deontology and virtue ethics. For each school of thought, the chapter focuses on both the anthropocentric and nonanthropocentric theories involved and highlights their differences. The chapter then moves on to debate if whether these three schools of thought should be considered as competing theories or as part of an ethical toolkit where they can be used together.

Chapter 3 draws attention to lack of institutionalisation of agricultural ethics in US land grant universities. The chapter begins by providing an overview

of food production and 'productivism', the ethical position that characterises agriculture. It then moves on to review the ethical standards among people in agriculture and the current scientific challenges that agriculture faces. The chapter also highlights current problems facing agricultural systems, agriculture's ethical dilemmas and provides an ethical perspective on agriculture.

The next chapter provides an important overview of equity focused research aimed at better understanding women's contributions in food production. Chapter 4 specifically presents a detailed overview of gender-sensitive research in agriculture, since its initial development in the 1970s and 1980s. While women contribute substantially to agricultural production, there are unique challenges and barriers that affect women. The chapter includes an overview of research performed in gender and development circles, as well as work on the gender dimensions of agricultural in the global North. It ends by discussing emerging themes in the literature.

Chapter 5 looks at agricultural ethics from the farmer's perspective. The chapter first highlights the importance of understanding farmers' constraints and motivations as well as their responsibilities within the agri-food supply system. It moves on to review the environmental and social costs that occur as a result of agricultural production practices, which is followed by an overview of current agricultural issues faced by farmers. The chapter also addresses agriculture's image within society and how this can be changed, as well as the public fear associated with the effect of agriculture on the environment. Sections on the importance of conservation and sustainability are also provided.

The final chapter of Part 1 focuses on virtue ethics, Wendell Berry and agriculture. Chapter 6 begins by detailing the major aspects of the virtue ethics tradition, particularly as they are understood by Aristotle. The chapter then turns to Wendell Berry's thought and argue that Berry embodies well many of the facets of this tradition. It considers three virtues in Berry's thought: humility, generosity, and love. The chapter reveals by taking these virtues seriously, Berry offers the agricultural community a more sustainable path forward. Berry's advocacy of virtues in agriculture offers wisdom to researchers and practitioners alike which, the chapter argues, can ameliorate many present ecological and economic concerns.

Part 2 Ethical issues

The first chapter of Part 2 focuses on the ethical issues of agriculture and the environment. Chapter 7 begins by providing an overview of what has happened to the environment as a consequence of agricultural practices, then moves on to review how these practices have changed over the years. The chapter also reviews the constraints to ethical awareness and moral action,

the ability to make judgements in terms of agricultural practices and how its concepts can be applied in practice. A section on environmental ethics and how this could potentially help to improve the situation is also included, followed by an overview of ethics and worldview transformation. Worldviews, experiential learning and systemic development are also reviewed. The chapter also provides a discussion on the Australian aboriginal perspective of ethics, agriculture and the environment.

Chapter 8 examines the ethical issues and challenges of migrant labour in agriculture. The chapter first describes the importance of migrant workers in the agricultural and agri-food sectors, whilst also highlighting the policies regulating their role and conditions of employment. The chapter particularly focuses on migrant workers within the European Union (EU), using the example of Italy as a basis for discussion to illustrate issues and policies at a national level. It then moves on to review the ethical challenges in forming fair and sustainable policies to support migrant workers in agriculture and the wider agri-food supply chain.

The subject of Chapter 9 is the ethical issues of sustainable intensification in agriculture. The chapter begins by highlighting the importance of sustainable intensification in agriculture, then moves on to examine four policy areas, their goals as well as ethical trade-offs in relation to the use of sustainable intensification. The chapter focuses specifically on biodiversity versus competing land use, protein intensification versus human-animal relations, quantity versus quality of food and using land efficiently versus vibrant rural communities. A section on the pragmatic responses to intensification-related tensions is provided.

Chapter 10 focuses on the key ethical issues in livestock farming. The chapter addresses the practical application of animal ethics in agriculture as necessary for animal ethics and for those who work with animals in agriculture. The chapter also provides an overview of the main positions in theoretical animal ethics, then moves to frame a discussion of the continuum of positions on the moral acceptability of the use of non-human animals for human ends. It also outlines ethical issues arising from the use of animals in agriculture, organised into three groups: issues directly related to non-human animals, issues related to humans and society and issues related to the natural environment.

The final chapter of the book reviews ethical issues of developing new technologies in agriculture. Chapter 11 first examines the role of ethics in the development of radical new technologies in general. The chapter then analyses the Rights and Resources Initiative and how it can be applied in agriculture. Four potential ethical issues are also identified for developing new technologies in agriculture. The chapter also provides two examples of developing agricultural technologies that aim to change organisms, the first being genetic modification and the second the toolbox of New Plant Breeding Technologies.

Acknowledgements

We wish to acknowledge the following for their help in reviewing particular chapters:

- Chapter 3: Dr Donald Viney, Professor of Philosophy, Pittsburg State University, USA, Dr Wade Casey, Loyola University Chicago, USA and Dr Thomas Holtzer, Colorado State University, USA
- Chapter 5: Fargo Chamber of Commerce Distinguished Professor Emeritus David Danbom, formerly North Dakota State University, USA

Chapter 1

What is agricultural ethics and why does it matter?

Paul B. Thompson, Michigan State University, USA*

- 1 Introduction
- 2 Key concepts: ethics and common morality
- 3 Common morality in agriculture and food systems
- 4 Topics in agricultural ethics
- 5 Methods in agricultural ethics
- 6 Agricultural ethics: why it matters
- 7 Can agricultural ethics be taught?
- 8 Conclusion
- 9 Where to look for further information
- 10 References

1 Introduction

The title of this chapter illustrates the curious grammar of the word *ethics*. Native speakers of English commonly speak of ethics as something that people have or lack. In this sense, ethics are rules of behavior or patterns of conduct. Readers should notice the shift from the plural ‘are’ in the previous sentence to the verb ‘is’ in the title of the chapter. The meaning of the word ‘ethics’ changes from naming a collection of related practices, activities or principles to indicating a singular practice or activity. While this might seem like a trivial observation, it is indicative of a deeper confusion that has dogged the reception of Robert Zimdahl’s important work on agricultural ethics. This explains why there is a need for a chapter called ‘What is agricultural ethics?’

This chapter will work through some meanings of the word ‘ethics’ as it might be applied in the context of agriculture and food systems. Readers will arrive at my answer to the question ‘What is agricultural ethics?’ at the endpoint

* Paul B. Thompson, Professor of Philosophy, of Community Sustainability and of Agricultural Food and Resource Economics and W.K. Kellogg Professor Of Agricultural, Food and Community Ethics, Department of Philosophy, Michigan State University, USA

of this journey, but here is a start: Agricultural ethics is a specific discipline for inquiry into the myriad normative issues that interpenetrate every aspect of agricultural production and food systems. As understood in the specific sense developed here, agricultural ethics matters because some unique features in the institutionalization of agricultural science and education have created gaps in the thought processes that support policy and the innovation process for agricultural technologies. The chapter concludes with some remarks on teaching agricultural ethics.

2 Key concepts: ethics and common morality

The twentieth-century philosopher R. M. Hare (1919-2002) recognized a distinction between what he called *common morality* and philosophical ethics. Common morality, Hare said, is what your grandmother knew to be ethically correct. One does not need a philosopher to explain this. Everyone, Hare wrote, internalizes a set of rules or norms for regulating their own behavior and correlative expectations for the conduct of others. These norms are communicated and socially reinforced through words such as 'good', 'bad', 'right' and 'wrong' and through legal and religious institutions that codify and promote shared practice revolving around concepts of justice, virtue, honesty and loyalty. It is surprisingly difficult to account for the sources of these norms, but we should not doubt their existence or their binding authority over many domains of personal and social conduct. Similarly, the generally small cultural variations in a community's normative expectations should not obscure the core of shared norms in virtually every known human society. That is common morality (Hare, 1981).

Hare was hardly alone among philosophers and social theorists in holding such a view, but his understanding of the relationship between the cultural form of common morality and the activity of moral philosophers is helpful in the present context. As noted, most elements of common morality are stable across different cultural groups. These include norms of truth-telling and prohibitions against stealing, robbery and physical violence against others, except in well-specified contexts. However, there are both differences across cultures and change over time within any given society. As an example, slavery was seen as morally justified for a considerable period in Western history. By the time chattel slavery was the dominant source of labor in the agriculture of the American South, it was viewed as a dubious and regrettable but necessary practice. The perspective shifted finally to the judgment that slavery is morally unacceptable. This transition marks a change in the common morality that was of particular importance for agriculture. Hare argued that philosophical ethics plays a special role in these transformations. It is an activity that assembles and curates intellectual resources for questioning common morality on specific points. A

philosopher or social critic deploys these resources to offer rationally based assessments of how or whether changes in common morality are warranted.

Many contemporary philosophers would accept the notion that there is little point in questioning those aspects of common morality that seem to raise no disagreement, but they would also agree that philosophical ethics can be helpful both in challenging problematic aspects of common morality and in resolving that challenge in a manner that is ethically progressive. Hare used complex reasoning to support his judgment that there is one best way to pursue questions at the philosophical level (a form of utilitarianism). There is continuing debate among philosophers on this matter. Some agree that a well-specified ethical theory should rule over analysis at the philosophical level, whether or not they agree with the specifics of Hare's approach. Others, including myself, think methods in philosophical ethics cannot be specified much beyond a general commitment to the exchange of reasons and a good faith effort to understand and then accept, modify or rebut the views of those with whom you, at first blush, disagree. (A more detailed discussion of methods follows later in the chapter.) In either view, progressive approximation of the morally correct response is possible, and fallibility is a pervasive feature of the human condition.

Other philosophical views create barriers to the critique and evaluation of common morality in agricultural universities and research institutes. The influential economist Glenn L. Johnson (1918–2003) thought many agricultural scientists had adopted a flawed positivist philosophy of science. In this view, normative principles have no place in science, so agricultural scientists simply refuse to discuss ethical norms bearing on their science or the practice of agriculture (Johnson, 1976). The view is flawed because the statement 'normative principles have no place in science' is a normative principle. Scientists cannot follow it without doing what the principle itself says that they should not do (Thompson, 2004). Alternatively, the training of applied scientists (and I would add, especially social scientists) encourages them to adopt a stance of critical disengagement from disagreements about the ethics of farming practice. There may be good reasons for adopting this stance, but the model proposed by Hare shows that an ability to withhold the expression of one's moral commitments in certain instances does not imply that moral inquiry is impossible. Like any inquiry, moral inquiry can be frustrating and end in failure, but one would hope the practice of science would equip practicing scientists to deal with the possibility of this kind of disappointment.

By this point, readers may have guessed where this is all leading. On the one hand, people who work in agriculture and its supporting industries are subject to the expectations of common morality. They can be said to fail ethically when they do not meet these expectations. On the other hand, agricultural ethics is a form of philosophical ethics. It is the deployment of the analytic, argumentative and discursive tools of philosophical ethics to questions arising in agricultural

practices and in the science and policy domains that support the production, processing and distribution of food and fiber. As such, it differs from the ways in which common morality functions to regulate the conduct of farmers, researchers, public officials and others who fill various roles in the food system. Those of us who aim to practice the form of inquiry that constitutes agricultural ethics do not mean to suggest that our work is, in any respect, a replacement for common morality. Much of the time, talk of ethics in agriculture is going to advert back to common morality. No one needs a philosopher to come in and endorse the proscription of lying or theft. However, before considering why agricultural ethics matters, it will prove helpful to provide some examples of how common morality functions in agricultural situations.

3 Common morality in agriculture and food systems

Farmers, ranchers and people who work for input firms or companies that process and distribute agricultural commodities are expected to act in an ethical manner. They are not supposed to lie or steal, and they are supposed to engage in fair, respectful dealing when interacting with others. This is not exceptional; it is what is expected of everyone. However, people being what they are, such expectations are not universally fulfilled. Just as nearly everyone breaks the law by exceeding the speed limit now and then, almost everyone who works in food and agriculture probably commits small ethical failures now and then. Other failures are egregious and have serious consequences. Both types of failure lead people to call for renewed attention to ethics in food and agriculture, but it is doubtful that even egregious failures call for a philosophical form of agricultural ethics.

Violations of the common morality are revealed by journalists covering food and agriculture, by criminal investigators and by social scientists conducting studies of food and fiber production or other aspects of the global food system. For example, in 2014 Richard Marosi, a staff writer for *The Los Angeles Times* reported the abuse of field workers in the Mexican tomato export industry. The abuses included dangerous and unhealthy working and housing conditions, illegal withholding of earned wages and threats of violence (Marosi, 2014). In 2009, just 2 years after they had executed their chief food safety official on charges of corruption, the Chinese government revealed a conspiracy to contaminate supplies of infant formula. Thousands were sickened, and there were at least three deaths (Sharma and Paradkar, 2010). In 2020, a Scottish sheep farmer was convicted of contaminating jars of baby food as what he claimed to be a protest against unfair treatment by the food industry (Davies, 2020).

Listing examples of this sort could continue indefinitely. There are two points to note. First, these cases are not ethically complicated. It is easy to see that unethical conduct occurred. Second, such cases precipitate a call

for renewed attention to ethics. Such calls imply a decline in compliance with the norms of common morality or a measurable increase in the frequency or severity of violations. If true, such trends can have complex underlying causes requiring a multidisciplinary analysis and measured social experimentation with remedial measures. There may or may not be value in having someone regarded as a moral authority make pronouncements about the unethical nature of such conduct, and there may or may not be a reason to introduce training sessions and classwork for practitioners under the heading of ethics. One can imagine research projects and compliance tactics being introduced under the rubric of agricultural ethics. However, the specifically normative or ethical dimension of such phenomena is not in question. We are talking about ethics in the plural as something that people have or lack, not ethics in the singular as a form of normative inquiry.

The upshot is that the people who call for attention to ethics may not be calling for ethics in the philosophical sense Hare and many philosophers understand. A related phenomenon unfolded in bioethics. The term *bioethics* was popularized by Van Rensselaer Potter (1911-2001) in the 1960s. He saw bioethics as a form of interdisciplinary inquiry intended to address normative uncertainties posed by population growth, environmental decline and new reproductive technologies (ten Have, 2012). Following the creation of institutional review boards (IRBs) intended to curtail researchers' abuse of human and animal subjects, Potter's vision was sublimated by researchers who interpreted bioethics as research ethics and understood research ethics solely in terms of the compliance measures introduced by IRBs (Rollin, 2006). This is not to say IRBs were unnecessary or imply they do not address ethical issues. Nevertheless, the singular focus on the enforcement of ethically uncontroversial norms has obscured the role Potter expected a critically reflective inquiry into the normative dimensions of applied biological systems to play.

4 Topics in agricultural ethics

As departments of bioethics became institutionalized in medical schools, hospitals and biomedical research institutes, the term has become implicitly understood as oriented to medicine and public health. In fact, some of the questions Potter associated with bioethics are questions in agricultural ethics. For Potter, the tension between global population growth and resource depletion was central. He was clear in stating that decisions about converting land to agricultural use and intensification of food production require new forms of ethical analysis (Potter, 1971). The thought that global food production should be expanded by any means necessary *can* be supported by ethical principles, but it is also countered by the need to preserve uncultivated areas for the preservation of biodiversity. In addition, principles prioritizing the rights

Index

- 1930 Plant Patent Act 213, 214
- 1970 Plant Variety Protection Act 213, 214
- 1980 Bayh-Dole Act 215, 217

- Access to capital 146
- AGRICOLA 18
- Agricultural and Natural Resource Ethics 41
- Agricultural biotechnology 211, 212
- Agricultural ethics 4, 41
 - ethics matters 12-15
 - methods in 9-12
 - teaching 15-17
 - topics in 7-9
 - see also Individual entries*
- Agricultural Knowledge and Innovation System (AKIS) 133
- Agricultural research ethics
 - definition and scope 235-240
 - ethical issues during conduct of agricultural research 250-253
 - ethical issues in 240-241
 - ethical issues regarding sharing of agricultural research results 247-250
 - ethical issues related to management and financing 244-246
 - ethical problems related to subjects 241-244
 - overview 231-232
 - as subset of scientific research 233-235
 - theoretical basis for ethical analysis 253-256
- Agricultural science 15
- Agriculture and environment, ethical issues of
 - ability to make judgements 106-108
 - applying concepts in practice 108-109
 - Australian aboriginal perspective 116-117
 - consequence of agricultural practices 102-104
 - environmental ethics 109-111
 - ethical awareness and moral action 104-106
 - ethics and worldview transformation 111-112
 - overview 99-102
 - worldview of persistence 114-116
 - worldviews, experiential learning and systemic development 112-113
- Agroecological management techniques 244
- Agroecological research 241
- Agroecology 240
- American Medical Association (AMA) 31
- American Society for Animal Science 8
- Animal Liberation 8, 252
- Animal rights 39, 251-252
 - theories 27
- Animal welfare science 9
- Anthropocentric utilitarians 25
- Anthropocentrism 23, 109
- Applied ethics 22
- Aretaic ethics 10
- Artificial intelligence (AI) 78, 252
- Asia-Pacific Society for Agriculture and Food Ethics 18
- Autonomy/dignity 11

- Bayh-Dole Act 212
- Benevolence 11
- Bioethics 7, 18
- Bio-industrial production 238
- Biological patent 214
- Bovine growth hormone (BGH) 245
- Burley Tobacco Growers Cooperative Association 87

- Capital-intensive industrial production model 240
- Categorical Imperative 27
- Citizenship in science 74
- Climate-smart agriculture 138
- Code of ethics 31
- Collingridge dilemma 193
- Common Agricultural Policy (CAP) 133
- Common morality 4-6
 - in agriculture and food systems 6-7
- Competing theories 30-31
- Concentrated Animal Feeding Operations (CAFOs) 70, 175

- Consequentialism 107, 108
 Consequentialist theories 10, 23
 Conservation practices and programs (CPPs) 68
 Consolidated Act on Immigration and the Status of Foreigners 131
 Constitution of the European Union 253
 Contractarianism 169
 Cost-benefit analysis 24
 Courage 29
 Court of Justice of the European Union (CJEU) 201
 judgment 202
 CRISPR-Cas9 201-204
 Crop diversity 71

 Data ownership 250
 Deep Ecology 181
 Deontological ethics 10, 107
 Deontology 26-28, 30
 Desire-satisfaction utilitarianism 24
 Developing new technologies in agriculture
 ethical issues 195-197
 ethics and developing new technologies 192-194
 genetic modification ethics 197-201
 new plant breeding technologies toolbox 201-204
 overview 191-192
 responsible research and innovation 194-195
Diamond v. Chakrabarty 219
 Dichloro diphenyl trichloroethane (DDT) 248, 249
 Digital agricultural revolution 138
 Digital technologies 148
 Digital tools 148
 Dilemma of control 193
 Directive 2001/18/EC 202
 Directive on Corporate Sustainability Due Diligence 130
 Doctrine of the Mean/the Golden Mean 29
 Domestication-as-contract view 169
Dreaming 116
 Duplication 234

 Ecocentrism 109
 Ecological intensification 141
 Economic Research Service (ERS) 72
 Ecosystem engineers 105
 Environmental ethics 41
 Environmental pragmatism 152
 Environmental virtue ethics 29

 Ethical matrix 12
 Ethical toolkit 30
 EU Multiannual Financial Framework 132
 Eurobarometer 198
 European Convention on Human Rights (ECHR) 129, 130
 European Social Charter (ESC) 129
 European Society for Agriculture and Food Ethics 18
 European Union (EU) 202, 205, 215, 247
 Extrinsic normative standards 196

 Fabrication 234
 Factory farming 179
 Falsification 234
 Farmer's perspective
 in agricultural issues 70-71
 agriculture's image and change 71-73
 conservation 75-76
 environmental and social costs 69-70
 overview 65-66
 public fear 73-75
 sustainability 76-79
 understanding farmers' constraints and motivations 67-69
 Fertile crescent 103
 Fertilizer 71
 FieldScripts® 251
 Food and Agriculture Organization (FAO) 49, 53, 102, 137, 205
 Food security 144
 Food supply challenges 139
 Fortress conservation models 143

 Gender dimensions
 agricultural ethics and 52-53
 brief overview 50-52
 current agricultural demographics 49-50
 future trends 59
 gender and development literature 53-56
 in global North 56-58
 overview 47-49
 Gender empowerment 59
 Gender-focused programs 56
 Gender-sensitive programs 59
 Gene-editing technologies (CRISPR) 177
 Genetically modified (GM) crops 69, 70
 Genetically modified organisms (GMOs) 9, 140, 198, 199, 201, 202
 Genetic Intensification 141
 Genetic modification (GM) 39, 197
 Genome editing 202, 205

- German agricultural policy 76
 Germany 218
 Ghostwriting 234
 Global food production 7
 Globalization 237, 238
 GM-mammal 197
 GM-salmon 197
 Greenhouse gas (GHG) emissions 140
 Green Revolution 8, 224
 Greenwashes 138
 Gross domestic products (GDP) 47, 145
 Groundwater degradation 105
 Guest writing 235
- Hedonistic utilitarianism 24
 Holistic approach 237
 Human-centeredness 23
 Human ingenuity 44
- Incremental innovation 191, 196
 Indirect utilitarianism 30
 Industrial agriculture 90
 Industrial production 238
 Institutional review boards (IRBs) 7, 12, 14
 Intellectual property rights
 - contributive justice and
 - problem-solving 223-224
 - crop seed sector 213-216
 - ethical concerns 219-220
 - ethical considerations 216
 - ethical limits of markets 221
 - institutional integrity 222
 - science 222-223
 - university 222
 - intellectual property protection,
 - justification for 212-213
 - overview 211-212
 - positive vs. negative rights 220-221
 - social welfare 216-219
- Intergovernmental Panel on Climate Change 244
 International Union for the Protection of New Varieties of Plants (UPOV) 214
 Intrinsic normative standards 196
 Invisible farmers 53
 Irrigation 39
 Italian legal system 131
- Justice 11
- Kanyini* 116, 117
Kurunpa 116
- Land Ethic 182
 The Land Institute 94
 Legislative Decree 91/2014 132
 Legislative Decree 216/2003 131
 Livestock farming
 - continuum of moral consideration for
 - animals 170
 - abolitionism 171-172
 - animal welfarism 170-171
 - anthropocentrism and open use 170
 - ethical theories
 - deontology 167-168
 - ethical theories 166
 - theoretical dispositions in animal
 - ethics 168-170
 - utilitarianism 166-167
 - issues related to animals
 - industrial animal agriculture and
 - factory farming 175-176
 - livestock and
 - biotechnologies 176-178
 - use of animals 173-175
 - issues related to humans
 - food security 179-181
 - labour 178
 - moral injury and trauma 178-179
 - zoonotic diseases and
 - pandemics 181
 - issues related to natural environment
 - moral consideration for environment
 - and sustainability 181-182
 - pollution and greenhouse gas
 - emissions 182-183
 - species loss and biodiversity 183
 - overview 165-166
 - religious and cultural values related to
 - animals 172-173
- Livestock production 143
 Lock-in technology 200
- Market intensification 141
 MASIPAG 239
 Mean 29, 86
Me Medicine vs. We Medicine 223
 Metaethics 21
 Migrant labour in agriculture 39
 - European agricultural policies and
 - migrant labour 132-133
 - migrants' rights in Europe 129-132
 - migrant workers importance, agricultural
 - and agri-food sectors 126-128
 - overview 125-126
- MiR160 242

- Monoculture-based industrial production model 240
- Monsanto chemical company 245
- Moral evolution 37
- Moral goodness 104
- Moral philosophy 21
- Multidisciplinary and Innovative Methodologies for Sustainable Management in Agricultural Systems (MIMeSMAS) 235
- Mutation breeding 198
- National Agricultural Statistics Service (NASS) 72
- National Institutes of Health (NIH) 31
- National Rural Network (RRN) 128
- National Science Foundation (NSF) 31
- The National Sustainable Agriculture Coalition (NSAC) 94
- New plant breeding technologies (NPBTs) 197, 201, 202, 204
- Ngura* 116
- Nonanthropocentrism 23
- Non-governmental organizations (NGOs) 238, 239
- Non-human animals 174, 177, 178, 184
- Non-maleficence 11
- Normative ethics 22
- No-till agriculture 75
- 'One Health' approach 180, 182
- Open-use position 166
- Philosophical ethics 4-6
- Pioneer's Field360™ technology 251
- Plagiarism 234
- Plant gene editing 202
- Plant Variety Protection Act (PVPA) 214
- Polyfluorinated alkyl substances (PFAS) 105
- The Power of Common Sensitivities 238
- Practical ethics 22
- Principle of utility 166
- Principles of Ethical Conduct 31
- Principlism 11
- Production technology 71
- Public policy education 78
- PubMed 18
- Rational-desire-satisfaction utilitarianism 24
- Responsible Research and Innovation (RRI) 192, 194, 195, 204, 205
- Rubric 12, 14
- Salami slicing 234
- Self-plagiarism 234
- Silent Spring* 249
- Slavery 4
- Social science research method 9
- Soil erosion 105
- Subsistence farming 87
- Sustainabilism 106
- Sustainable Development Goals (SDGs) 55, 66
- Sustainable intensification (SI) in agriculture imperative for 139-141
overview 137-139
policy goals and ethical trade-offs 141-142
biodiversity vs. competing land use 142-143
protein intensification vs. human-animal relations 143-144
quantity vs. quality of food 144-145
using land efficiently vs. vibrant rural communities 145-148
pragmatic responses to intensification-related tensions 148-154
- Technocentric 112
- Technology treadmill 217
- Texaco company 248
- Tjukurrpa* 116
- Tomelo 203
- Trade-related Aspects of Intellectual Property Rights 214
- Turco-Napolitano Law 131
- United Kingdom (UK) 217
- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) 152
- United Nations Department of Economic and Social Affairs (UNDESA) 77, 127
- United States Department of Agriculture (USDA) 47, 50, 57, 58, 72, 214
- USA's Plant Variety Protection Act 220
- U.S. General Accounting Office (GAO) 245
- US land-grant universities, institutionalized agricultural ethics
agriculture's ethical dilemmas 38-40
ethical perspective on agriculture 40-44
ethical standards 36-37
food production and productivism 36

-
- overview 35
 - problems facing agriculture 38
 - scientific challenges 37-38
 - US Supreme Court 219, 220
 - Utilitarian ethical theory 165
 - Utilitarianism 23-26, 30

 - Virtue ethics 28-30, 107, 168
 - Aristotle 85-87
 - future trends in research 93
 - overview 84-85
 - Wendell Berry and virtuous agriculture 87-88
 - generosity 89-91
 - humility 88-89
 - love 91-93

 - Walytja* 116
 - Water scarcity 139
 - Well-being 23, 24
 - Widespread intensification 144
 - Work on hunger 51
 - World Watch Institute and Nourishing Planet 243
 - World Water Development Report (WWDR) 139