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# The ethics of sustainable agricultural intensification





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# Foreword

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Since the Neolithic Revolution, growing human populations have developed a variety of strategies to intensify agriculture. During 10 000 years of intensification, humans have introduced different technological adaptations of basic natural resources in order to sustain growth in agricultural production. Societies have in fact defined themselves by the way and degree in which they have succeeded in increasing agricultural production. While intensification has made it possible to support a world of 6 000 million people, it can result in degradation of the earth's natural resource base. This paper provides a definition of intensification that allows for more open and informed dialogue on the ethical dimensions of sustainable agricultural intensification.

At the World Food Summit in 1996, countries committed themselves to halve the number of hungry in the world by no later than 2015. This goal was reaffirmed in the United Nations Millennium Declaration in 2000 and, in 2002, it was reiterated by the World Food Summit: *five years later*.

The commitment made is profoundly ethical, and a related moral imperative is to seek sustainable agricultural intensification in ways that do not degrade the natural resource base, while also taking into account the need to improve the livelihoods of the millions of people who work the land, particularly in developing countries.

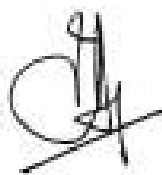
We have the skills to make the policy and technological choices to achieve the sustainable intensification that will be required over the next century, as the world's population size stabilizes. Nevertheless, these choices are difficult. Governments and their policy planners, as well as producers and consumers, must grapple with the ethical dimensions of intensification. How are we to identify and choose among the alternative paths forward to avoid many of the negative effects associated with intensification?

In addition to the risk of degrading natural resources, intensification has important socio-economic consequences, particularly in relation to rural livelihoods. In making the relevant policy decisions, planners must identify and evaluate alternative strategies, in terms both of their immediate and longer-term impacts and of their implications for the societies and communities involved. Actors at the grassroots level deserve a framework enabling them to take decisions and action that contribute to the common good. We must honour our commitment to provide viable production alternatives before we accuse poor households of

damaging the environment in pursuit of mere subsistence. As Mahatma Gandhi said, “To the millions who have to go without two meals in a day...God can only appear as bread”.

*The ethics of sustainable agricultural intensification* is the third study in the FAO Ethics Series. It explores a systematic approach to practical ethical analysis applied to intensification, and aims at integrating ethical principles into the basket of policy tools adopted by planners working to achieve the World Food Summit goal. Human food needs provide the basis for a *utilitarian* argument for intensification, while the moral concept of *virtue* addresses people’s duty to work for the good of society. A *rights-based* analysis then reveals how individuals’ pursuit of such good can be constrained by the rights of others. These three approaches can help us articulate, debate and ultimately assume ethical responsibilities concerning the intensification of agriculture.

FAO intends to continue advancing the dialogue on the ethics of food and agriculture, as it forms an ineluctable part of humanity’s core commitment to feeding the world. •



**Jacques Diouf**  
FAO Director-General



FAO/20216/L. DEMATTERS



FAO/19632/G. BIZZARRI



FAO/21028/R. FAIDUTTI



# Introduction

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Over the 10 000 years since the Neolithic Age, human population growth has been correlated with intensification in food production systems, primarily agriculture, which has also greatly modified the world's ecosystems, for better or for worse. Given the present and

anticipated increases in world population, not to mention current and projected environmental problems and ecological stress from agriculture, further agricultural intensification will be needed. What ethical issues have been (or might have been) raised in connection with past episodes of agricultural intensification? Who can make a difference in directing the course of future intensification, and what ethical responsibilities do these potential actors bear?

Any answer to these questions will be complex. It will involve sophisticated analyses of the historical and natural processes that have influenced and continue to influence episodes of agricultural intensification. It will also involve an account of the social, economic and psychological underpinnings of both individual and collective action, and this account will need to be woven into detailed factual analyses of the land, climatic and genetic endowments in specific places. The focus in this ethics paper is just one element of the problem: the way that ethical concepts and terms can be used to articulate the normative dimension – what *ought* to be the case with respect to human purpose and conduct whenever episodes of intensification occur. Although several examples from the history of intensification are discussed, the paper does not attempt to provide an exhaustive or representative survey of ethical issues that have been raised in connection with intensification. Neither does it offer a general or universally applicable answer to any of the questions above, much less to the comprehensive question, “What ought to be done with respect to intensification?”. Instead, the focus is on building capacity for debate and analysis of these ethical questions, with the expectation that specific answers will be the result of more focused inquiries conducted by people with more proximate access to and knowledge of circumstances that are relevant to specific cases.

Debate and analysis of ethical issues are difficult for several reasons. In many cultures, ethical norms are deeply embedded in traditions and religious practices, while in others they are thought to be highly personal. With global issues, the multiplicity of cultural, linguistic and ethical traditions means that one cannot draw upon a common set of terminology or working assumptions. Activities that require coordination to specify or achieve goals or to implement ideas and concepts may be described as “social”, “economic” or “political” rather than ethical, leading to a situation in which questions about what “ought to be” are not recognized as ethical ones. As social science has evolved to analyse activity in these domains, the scientific practice of focusing on data collection and the formulation of refutable hypotheses



concerning relationships among data has tended to push aside explicit attention to underlying normative concerns or assumptions. The ethical dimension of such questions can be obscured by implicit and unquestioned assumptions. Each of these factors complicates the articulation, defence and critique of ethical issues.

It is therefore useful to undertake planning and analytical exercises in which ethical questions are the primary focus. The goal here is to provide a basic conceptual framework in ethics that will aid in the articulation and justification of norms for intensification, although this framework will also be applicable in other areas. As already stated, this paper does not endorse a particular set of answers to the ethical questions that arise from intensification. Instead, conceptual tools that allow these questions to be articulated and discussed are presented and examples are given for illustrative purposes. A short discussion on intensification is followed by the presentation of a general framework for organizing and considering ethical issues. This framework is then used and developed in a series of discussions about the ethical issues associated with agricultural intensification. •



# Agricultural intensification

**A**gricultural intensification can be technically defined as an increase in agricultural production per unit of inputs (which may be labour, land, time, fertilizer, seed, feed or cash). For practical purposes, intensification occurs when there is an increase in the total volume of agricultural production that results from a higher productivity of inputs, or

agricultural production is maintained while certain inputs are decreased (such as by more effective delivery of smaller amounts of fertilizer, better targeting of plant or animal protection, and mixed or relay cropping on smaller fields). Intensification that takes the form of increased production is most critical when there is a need to expand the food supply, for example during periods of rapid population growth. Intensification that makes more efficient use of inputs may be more critical when environmental problems or social issues are involved. In either case, changes caused by intensification are to be understood conceptually in contrast to extensive adjustments, which involve increases or decreases in the amount of inputs used. Historically, the most common and effective extensive adjustment in agricultural production has been to increase or decrease the area of land planted.

For the purposes of this discussion, the contrast between intensification and extensive adjustment is intended to indicate the contrast between two broad strategies that human beings have had for affecting their food supply, rather than concepts applicable to economic or technical analysis of specific cases. The technical specifications and measurement of intensification or extensive adjustment in any given case are actually quite complex. Changes in the productivity of one input are likely to be accompanied by adjustments in the amount of other inputs. This complexity notwithstanding, there is little doubt that agricultural intensification has been a prerequisite to human civilization.

The Neolithic technological revolution was built on collecting, concentrating, selecting and harvesting plant and animal species in an organized fashion, with the aim of having more products closer to hand and easier to convert into nutrition. The domestication of farm animals and the development of crops, in the context of ever more productive farming systems, enabled the human population to grow and towns and villages to develop, having governments, laws, trade and economies with specialized employment.

*Applying fertilizer to a maize crop*



FAO/14519/D DEBERT

As agricultural production became more efficient, so populations increased. Historians have argued whether higher populations drove technological development, or whether technological development made higher populations possible. Nevertheless, throughout this development, most societies were chronically malnourished, or prey to episodic famine. Relatively high transport costs meant that most societies relied on local production, except when water transport made imports possible. Classical Athens was largely fed from the Crimea, and Rome from Egypt and southern Spain. For more than 95 percent of the history of civilization, food has been scarce for nearly all people. This has meant low life expectancy, susceptibility to disease and little capacity to face wars, droughts, floods and other human and natural catastrophes. Food scarcity and social disorder brought about major migrations of people and caused wars and massive cultural disruption.

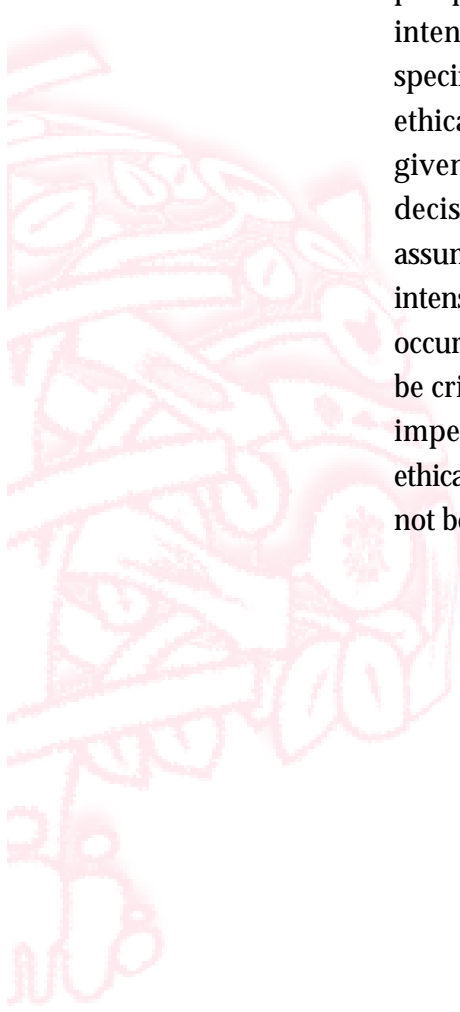
Conversely, when scarcity was relieved, major cultural advances were made. About 1 000 years ago, new varieties of rice were taken to southern China from the Champa Kingdom (now Viet Nam). These were not sensitive to photoperiod, and produced two crops a year instead of only one. When these varieties were grown, the intensive techniques that had developed slowly in China to increase productivity per unit of land, although requiring more labour, resulted in dramatic production gains. The subsequent rice surplus triggered changes across various sectors of China's economy, stimulating the construction of roads, canals, dams, ironworks, grain storage facilities and the production of weapons. For five centuries southern China experienced sustained economic growth and had favourable trade terms for silk, spices and technology with late Mediaeval and early Renaissance Europe.

The agricultural revolution in the early modern United Kingdom greatly increased agricultural productivity. It relied heavily on techniques based on horse power, soil-supporting crop rotations, land drainage and grazing systems, which were developed on the European continent in the very densely populated and often scarcity-ridden Low Countries (the present-day Benelux). When these innovations were applied to larger areas at lower human population densities, a significant surplus was produced, which made the Industrial Revolution possible. At the same time, the harnessing of energy sources became more efficient. The late eighteenth century saw improved water mills and windmills, the use of sea coals and the development of steam engines. Transport costs fell, making it economically viable, for example, to ship bones long distances for use in fertilizer. Internal combustion and hydropower later greatly increased returns to labour and the availability of products such as nitrogen fertilizers.

However, any technology exists within a social and political system. The way that this British agricultural surplus was generated, controlled and distributed under the restrictive Enclosure Acts forced most of the rural population off the land to serve as industrial labour. The result was high food insecurity and a structural form of urban poverty, where families no longer had access to land or to traditional rights such as

commons and gleaning. Yet the growing surpluses allowed greater specialization, provided capital and cheap labour for industrialization in Europe and drove the long, violent European nineteenth century. They also resulted in much larger markets in food to supply a burgeoning population, which produced many more goods and services than at any time in previous history. However, the costs paid in human suffering by three or four generations of impoverished families were considerable.

An understanding of the ethical issues involved in intensification can take both a prospective and a retrospective outlook, and ethical standards for evaluating intensification can take either a broad outlook on the general trend of events or a specific focus on the particular responsibilities of key actors. There are three general ethical questions to be posed. First, it is possible to ask whether intensification in a given situation is good or bad, all things considered, without pointing to specific decisions or activities undertaken by particular people or organizations. Second, assuming that intensification is a good thing, how should the burdens and benefits of intensification be distributed? Third, who is responsible for seeing that intensification occurs and that it follows an ethically acceptable path? Beyond these questions, it will be critical to deploy the resources of the natural and social sciences to identify the impediments to intensification, as well as to identify factors that would make an ethically justified form of intensification become ethically problematic, but that task will not be attempted in the present paper. •

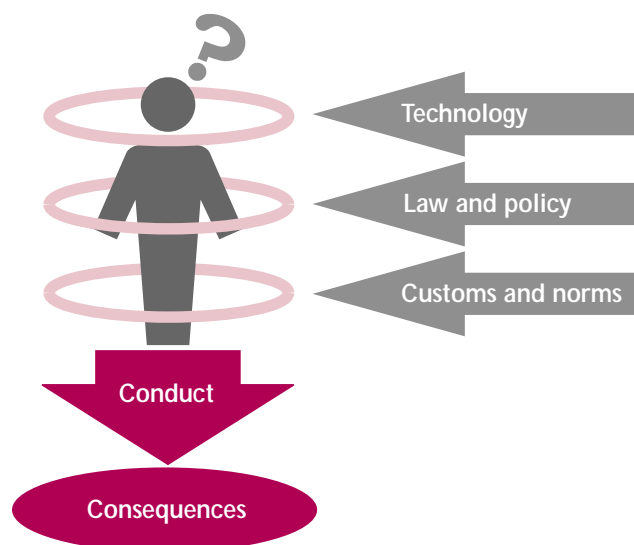


# An ethics framework

The word “ethics” refers to principles or standards that define behaviour, action or rules for action that is considered to be right, good and proper. A framework for organizing the enormous variety of ethical standards that have served in this role throughout human history can be developed from a simple schema of human action. Individuals, associations or the designated

agents of organizations can each be characterized as *actors*, represented by the shadow person shown in Figure 1. Actors considering or initiating action do so under a set of constraints, represented by the rings encircling the shadow person. These constraints determine which action or behaviour is possible, and are of three kinds. First, some constraints determine the physical universe of possibility. Characters in science fiction novels may be able to dematerialize and transport themselves to other places, but human beings cannot. Constraints that determine the physical limits of possible actions represent *technology*. Second, *law and policy* limit the universe of possible behaviour and action that an actor will consider. Third, individuals and associations constrain their behaviour according to *customary norms* that often lack any legal or official sanction, yet may function very effectively to limit the universe of possible alternatives for action. For example, people from Western societies will spontaneously queue for service, although in most instances this norm lacks legal reinforcement. Together, these three types of constraint

FIGURE 1  
Elements of human action



make up the *opportunity set*, the class of actions or behaviours that are effectively available to any potential actor.

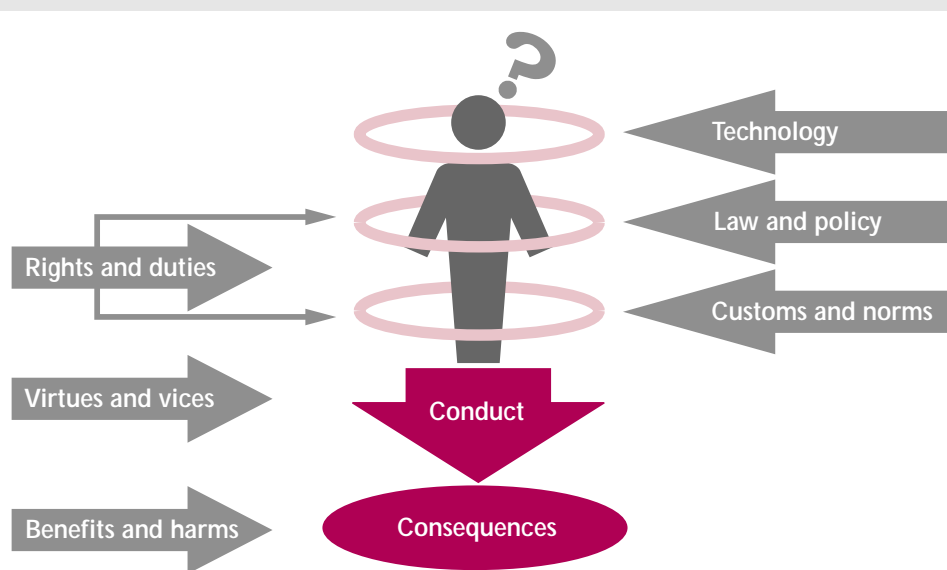
Eventually, the actor will select one possible course of action from the opportunity set and will engage in conduct. Conduct indicates the behaviour performed, including both physical motions and symbolic or meaningful behaviour. Conduct may be quite complex, and it is not unusual to characterize a long series of acts or behaviours performed over time as a single action. Because conduct is an active response to an actor's opportunity set, it is indicated by an arrow in Figure 1. Clearly, the significance of behaviour and the interpretation of the relatedness of multiple acts depend heavily on the broader social context. There may be room for differences of opinion about what, exactly, constitutes conduct in a given instance. For the present purposes, conduct is inclusive of all acts understood as components in an actor's performance of an action. One primary goal in offering this definition of conduct is to distinguish conduct from the *consequences* of the agent's behaviour, which can be understood to be the effects of the action on the natural world, particularly on other people and associations, represented by the oval in Figure 1. The term "consequences" here designates especially changes in the health, wealth and well-being of affected parties (including the person who acts) that are caused by the initial action. As with conduct, there may be differences of opinion about what these consequences are, especially when consequences are indirect or are remote in space and time. Notwithstanding these possibilities for difference in interpretation, Figure 1 represents a very simple picture of human action as conduct performed under constraints and producing consequences or outcomes.

Three distinct ways in ethical principles can be developed to determine whether an action is right, good and proper. First, it is possible to see the ethical validity or correctness of an action as a function of its consequences. Increases in the health, wealth and well-being of people are generally characterized as *benefits*, whereas adverse effects on health, wealth and well-being are characterized as *harms* or *costs*. Right, good or proper actions will tend to be seen as those that have achieved the best balance of benefit and harm relative to other possibilities in the actor's opportunity set. Second, it is possible to see the ethical validity or correctness of an action in terms of its consistency with an ideal set of constraints. These constraints may be articulated either as *duties* that the actor must discharge, or as *rights* held by others, which the agent must respect. Rights and duties are generally correlated, however, so that if one person has a right, others have a duty to respect it, while having a duty means that others have a right to expect that the duty will be discharged. Finally, it is possible to see the ethical validity or correctness of an action in terms of conformity to certain types of conduct. Instances or patterns of conduct that are ethically right, good and proper are *virtues*, while those that are wrong, bad or improper are *vices*. This third pattern of ethical evaluation lends itself particularly to expressions of ethical judgement that emphasize the character of

the actor, so that not only is the act virtuous, but also the person who reliably acts in virtuous ways.

In summary, a simple analysis of human action indicates three patterns of argument or discourse for articulating, stipulating or defining actions as right, good and proper. Each pattern tends to place the focus or emphasis of ethical inquiry in a different place and many philosophers have developed entire moral systems based entirely on one of these three approaches. In many instances ethical disagreements arise from one party's tendency to formulate a rationale for the evaluation of an action in language and concepts that emphasizes one of the three patterns, while another party emphasizes one or both of the other two. Nevertheless, it is possible for there to be significant differences in approach even within each of the three broad patterns, and many of history's most notable moralists have tended to develop accounts of ethical evaluation that involve considerably detailed discussion of one framework. For simplicity, arguments that interpret the ethics of an action as a function of benefits and harms (or costs) will be called *consequentialist*. Arguments or claims that understand what is right, good and proper as determined by rights or duties will be called *rights-based* and statements that stress the conduct and character of the agent will be called *virtue-based*. It will prove useful to discuss each general approach in slightly more detail while discussing the main topic of intensification. •

FIGURE 2  
Types of ethical discourse





# When is intensification ethically good? A utilitarian model

**A**gricultural intensification is a process that occurs when individual human beings, communities or organizations take actions of one sort or another. The ethics framework previously discussed can be applied to the actions of individuals, associations and organized corporate bodies. The framework illustrates three ways in which questions about the justifiability and ethical acceptability of any particular course of conduct might be posed and analysed. Applied to agricultural intensification, these become questions that might be pertinent to the acts of farmers, input suppliers, technology developers, or to any number of public and

private agencies whose activities affect the productivity of agricultural inputs. Such questions might be asked by a person or group evaluating their own options and might also be posed as part of a general discussion and debate about what actions should be taken by governments, international agencies or, indeed, any actor in the food system. Since policies are, in fact, actions taken by governments or other organizations, it is possible to evaluate the institution of any policy that would affect intensification in much the same way as one evaluates any ordinary act. The first ethical question is to determine what it is about intensification that makes it a good thing, something to be encouraged or brought about in a particular set of circumstances and, correlatively, what circumstances might make intensification an ethically bad thing.

Consequentialist ethical approaches provide the most straightforward and obvious way to evaluate an entire system of food and fibre production. The consequentialist understands what is right, good and proper to be determined by the impact of the

action or policy on health, wealth and well-being. Intensification is, in the prototypical case, intended to increase the total amount of food available without increasing the use of inputs. Since food is material to human life and health, the production of more food can be considered a beneficial impact, especially under the circumstances of food scarcity that have been too typical of human history. As noted, intensification is associated with periods of human population growth. Without a correlative growth in food

*Intensification is associated with periods of human population growth*





supplies, food scarcity causes hunger, disease and starvation. Using the framework previously described, many individuals and groups consider options and undertake conduct that has the outcome (consequence) of increased food supply. The benefits associated with increased food availability provide the elemental argument for intensification, and this argument is consequentialist in its moral logic. In the simple case where new technology or farming methods allow a farmer or landowner to produce more food, consequential reasoning shows why this is ethically a good thing.

As already stated, European agricultural intensification immediately prior to the Industrial Revolution was accomplished not only by applying a package of new production technologies to farming, but also by the Enclosure Acts, which disestablished a system of rights and duties that permitted commoners to live on and farm lands as long as their crops were shared according to an ancient formula. The framework applies not only to the conduct of individual farmers and landowners, but also to the political activity that led to this policy change. Was enclosure ethically justifiable? The British philosopher John Locke (1632-1704) posited the following argument to show that it was:

... He that encloses land, and has a greater plenty of the conveniences of life from ten acres, than he could have from an hundred left to nature, may truly be said to give ninety acres to mankind; for his labour now supplies him with provisions out of ten acres, which were but the product of an hundred lying in common.<sup>1</sup>

Here the disestablishment of the old system of commoner rights and duties is portrayed as justified in light of the increased benefits (conveniences) accruing from enclosure. Although this style of thinking is not typical of Locke, the passage implies that any system of rights and privileges is justified, given the efficiency with which it supplies human beings with provisions.

Efficiency is particularly important in the most common form of consequentialism, *utilitarianism*. Utilitarians assume that the values associated with consequences can be quantified to produce a ranking system for all possible courses of action (or *options*) available to an agent. They also assume that the value of benefits and harms can be added and subtracted. Such a ranking system produces a class of optima such that no option in the opportunity set yields greater total value (although there may be more

<sup>1</sup> J. Locke. 1690. *Second treatise of Government*. In C.B. McPherson, ed. 1980. Indianapolis, USA, Hackett Publishing. Locke's philosophy is not consequentialist, but contractarian. He believed that people had a natural right to appropriate goods (including land) found in nature, and that others had a duty to respect this property right, which was grounded both in the nature of things and in the social contract forming the basis of civil society. It is thus likely that he understood the phrase "give ninety acres to mankind" in an almost literal sense, and saw the justification of enclosure in terms of a kind of expansion of the commons, rather than in starkly utilitarian terms. Nevertheless, it is difficult to interpret this particular passage as anything more than a consequentialist moral argument.

than one option that is optimal). According to the utilitarian standard (e.g. the *utilitarian maxim*), the right, best and proper action or policy must be a member of this class of optima. This is popularly stated as: Act so as to produce the greatest good for the greatest number of people. Thus, the most efficient approach to producing benefits or avoiding harms is the course of action most thoroughly justified by ethics. Utilitarianism has been an implicit ethical philosophy for agricultural science, which has sought to “make two blades of grass grow where one grew before”.

One critical and often overlooked aspect of the utilitarian approach is the need for a complete accounting of costs and benefits. The green revolution involved new seed varieties that were more responsive to nitrogen fertilizers, which are, in most settings, a purchased input. Hence, a simple utilitarian approach weighs the benefits of increased yields against the costs of seeds and fertilizer. If benefits outweigh costs, the green revolution is justified. Yet other shifts accompanied the new technology, and many critiques of the green revolution can be articulated entirely within the framework of a utilitarian/consequentialist ethic. Within the first decade of the green revolution of the 1970s, which led to aggregate increases in rice production across Asia, large-scale insect pest outbreaks and plant disease epidemics destabilized food production, supplies and prices.

Only after three boom and bust cycles and pest outbreaks did governments begin to move away from simplified, centralized pest control policies that relied on insecticides and vertical host plant resistance towards decentralized integrated pest management that built on local ecological processes to realize production potential. With the concentration of farm animal processing facilities, the chances of large-scale epizootics occurring (such as foot-and-mouth disease) increase exponentially because of the more extensive movements of animals between pasturage, feedlots and abattoirs, and contacts with animal offal and excrement. Feeding livestock with products derived from their own species creates routes for infection by diseases associated with prions.<sup>2</sup> Short-rotation forest plantations increase wood (especially pulpwood) production but at the same time increase vulnerability to specialized pests and diseases. Fast-growing dwarf coconut varieties increase short-term yields but are more frequently at risk from diseases previously found in limited geographic areas. In fisheries and aquatic production systems, exotic species are commonly introduced. These often initially increase total production, but can unexpectedly change trophic relationships and disrupt ecosystems, as did the Nile perch in Lake Victoria. Intensive salmon hatcheries have been criticized for reducing the genetic adaptability of natural populations. These problems testify to the need for completeness in thinking through the costs and benefits of intensification. •

<sup>2</sup> Prion-associated diseases include kuru, scrapie and bovine spongiform encephalopathy (BSE). The infection route and aetiology of BSE and the variant of Creutzfeldt-Jakob disease that has been linked to BSE are still a matter of investigation.

# When is intensification ethically good? A rights-based model

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John Locke's rationale for enclosure makes no mention of rights, but the language of rights might be used to develop a rationale for arguing that efficiency-seeking public policies (such as enclosure) are ethically wrong in certain circumstances. Simply stated, policies are unjustified if the changes they endorse violate or override important rights. Among the rights that might be violated are property or occupancy rights, if enclosure forces people who hold such rights off the land, or subsistence rights, if the effect of enclosure is to put some people in a position where their rights to food and shelter are not met. Yet the ethical principles behind these rights are complex.

A rights-based approach to ethics (sometimes referred to as *deontology*) proceeds by stipulating or deriving a set of basic rights and duties that agents must perform without regard to the consequences that might arise in any particular case. A rights-based approach to intensification is more concerned as to whether the actions that result in higher food production are consistent with these rights and duties than in their eventual effect on human welfare. Several methods have been put forward for identifying these rights and duties. The German philosopher Immanuel Kant (1724-1804) developed complex philosophical arguments for a master principle he called the *categorical imperative*: never act in a way that treats another person solely as a means to an end. For a Kantian, rights and duties can be traced back to this principle, which tells us always to respect other people's capacity for freely choosing their life plans. The problem that a Kantian would have with Locke's argument for enclosure is that it seems to treat the commoners (whose rights are violated) simply as a means to the larger end of increasing food production.

Kant's deontology came at the end of a longer tradition of *natural law theory*, which held that the basic rights and duties forming the main content of the (ideal) moral law are evident to any rational person, and have hence invested great effort into rational argument for certain approaches to the configuration of rights. Kant argued that every human being wants to be treated as a free, autonomous agent, and that consistency requires people to treat others in the same way. For other philosophers, going back to Thomas Hobbes (1588-1679), rationality was understood simply as enlightened self-interest. The purpose of rights is to protect people's ability to act on their own enlightened self-interest. Hobbes believed that any rational person would agree to live in accordance with certain rights and duties, if only they could have a reliable expectation that everyone else would do the same. This approach is sometimes

characterized as *contractualist* in light of the way that rights and duties are described as being grounded in an implicit agreement (or social contract) among all members of society.<sup>3</sup>

While a Kantian might argue that enclosure treated commoners as a mere means to a larger social goal, a contractualist might say that enclosure violated the social contract. In either case, the problem with enclosure from a rights-based perspective was that commoners had a right to use these lands. As such, any plan to exclude them from the land could not be justified unless it included some provision for obtaining their agreement. This would require involvement of the commoners at some stage of the enclosure process, and their involvement would need to be such that each rights holder had the opportunity to give or withhold their agreement voluntarily to the plan. Perhaps they could be convinced that they would be better off, or perhaps they would be enticed to accede to such use of the land in exchange for compensation. These details might vary considerably on a case-by-case basis, but what is critical from a rights-based perspective is that respect for the individuals affected by enclosure requires that they be accorded a role in the intensification process that is fully consistent with their rights. Either version of rights theory provides a starting-point for questioning whether intensification is good simply because it produces more benefits (in the form of greater food production) than costs (in the form of losses for the minority).

Either approach to rights implies that the exclusion of commoners from decision-making is unacceptable, but a Kantian might in addition note that the effect of enclosure was radically to impoverish commoners and their descendants. For a Kantian, such conditions of poverty make it impossible for a person to exercise rational free will; the circumstances of need are so great that people in dire poverty are effectively coerced into enduring humiliation and deprivation. As such, key subsistence rights, including the right to food, become minimal conditions that must be met if all people are to be treated with the moral respect to which they are due. Thus, any situation in which people are so poor that they cannot freely exercise their innately human capacity to choose a life plan involves an ethical wrong. Methods of intensification that place people in such circumstances cannot be endorsed from a rights-based perspective. •

<sup>3</sup> Although similar in important respects, Kantian deontology and Hobbesian contractualism provide important different rationales for justifying rights. In both versions of rights theory, the ethical significance of a right resides in the way that it protects human freedom. For Kantians, an individual's freedom is an expression of the ability to plan and order one's own thoughts and actions rationally, while for contractarians freedom means simply that others do not control or limit one's action. In Kantian philosophies, preserving the entitlements owed under the system of rights is a form of showing respect for another's need to plan and order his or her own life, but rights can also be seen as being based on the social contract.

# Utilitarianism and rights-based ethics: further issues

The basic tension between utilitarian consequentialism, on the one hand, and rights-based ethics, on the other, underlies many issues associated with agricultural intensification. For decades, researchers from developed countries have harvested germplasm from farmers and local markets in the developing world. These researchers have used the germplasm in breeding programmes to develop higher-yielding varieties as well as searching for other valuable genetic traits. Many of those who collected seeds were shocked when critics suggested that their work failed to respect the rights of people from the developing world. From a utilitarian viewpoint, the increased yields of new varieties more than justified the collection of germplasm, and researchers saw no ethical issue in using seeds they had collected this way. However, critics asserted that researchers had failed to show proper respect for the rights of indigenous farmers whose forebears had saved seed for centuries. Purchasing seed in village markets, critics affirm, gives the buyer an implied right to use the commodity good for food, or possibly for replanting, but farmers could not be interpreted to have given up rights to further development of their germplasm without a careful and explicit process to inform them of its true value and to ensure that they had given consent. Some critics argue that because of the collective and collaborative nature of seed development in traditional agriculture, only someone who represents the collective interests of all growers would be in a position to undertake such a negotiation.

Today, some opponents of genetically engineered crops argue that individual consumers should not be forced to eat these crops against their will. Advocates of genetically engineered crops see them as a safe and effective tool for increasing the efficiency of farm production and believe that their opponents' claims are an unjustified barrier to adopting them. While this debate often involves factual disputes about the



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*Local scientists at a training session on the collection of germplasm in vitro*

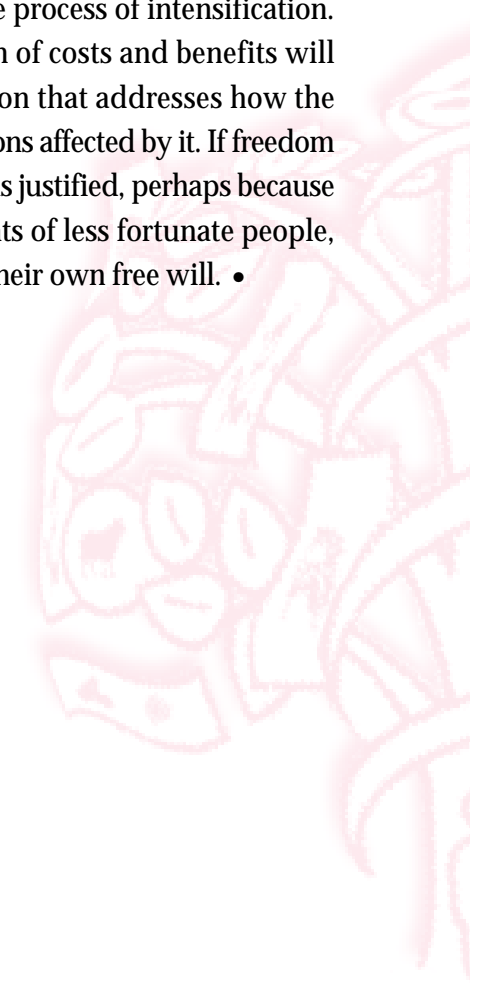


safety of these crops, the underlying ethical structure of the debate pits the rights-based claims of the opponents against the utilitarian reasoning of the advocates. Why? Irrespective of the safety or risks associated with genetically modified (GM) crops, opponents are claiming that the companies promoting these technologies have placed food consumers in a position where they have no opportunity to reject them. Rather than rebut the claim that consumer rights are at stake on its merits, advocates have often argued that if the crops are safe (as they claim), then consumers have no basis for rejecting them, since rejecting GM crops is an action with real costs but no real benefit. Thus, opponents try to meet a rights claim with a utilitarian argument, and the ethical issues fail to be enjoined.

A similar point of tension arises in debates over the green revolution technologies. When higher yields are associated with purchased inputs, those with access to capital will have an advantage over those without. One can interpret losses experienced by poorer farmers as additional costs and weigh these, too, against benefits from higher yields. The study *New seeds for poor people* by Michael Lipton and Richard Longhurst (1989) is a particularly exhaustive and theoretically sophisticated attempt to assess the green revolution varieties from a utilitarian standpoint. The authors conclude that, over time, these technologies have been, on balance, beneficial to poor people. However, these arguments do not necessarily address concerns that rights may have been violated, or that cultural traditions may have been lost as a result of green revolution strategies. How might rights be affected? It is possible to see any transition from a situation in which people can feed themselves and meet their needs to one in which they cannot as a violation of their rights. Even if such transitions have benefits that outweigh the cost, they would not be seen as justified if there are even a few individuals whose rights to subsistence are jeopardized as a result of the changes.

This is only a cursory introduction to the way that rights arguments should figure in an overall evaluation of the green revolution. Yet one of the problems that has arisen in debates over the retrospective impact of green revolution varieties is that those who draw their ethical norms from utilitarian thinking seem to be ignoring ethical claims that draw upon the language of rights. In doing this, people create an impression of, at best, insensitivity to the full range of ethical concerns relevant to intensification (which should also include virtues, discussed later) and, at worst, arrogant dismissal of arguments that are inconvenient for the case they wish to present. When people who hold influential positions for future attempts to meet food needs dismiss alternative arguments in this way, they engage in a use of power that is itself ethically questionable. As such, it would be valuable to launch retrospective studies that make an explicit attempt to acknowledge the full range of concerns that have been or might be brought to bear on evaluating green revolution intensification, in part as preparation for more open and informed debates on the questions that must be addressed if world food needs are to be met in the twenty-first century.

These cases are complex and deserve a more careful analysis than these summary statements can provide. The point here is simply to note that, in both cases, a utilitarian/consequentialist rationale is met with counterclaims that assert rights. Someone assuming that utilitarian models are appropriate will respond to these assertions with further arguments reciting the costs and benefits of alternative arrangements, but to the extent that these rights are thought to be moral rights, rights protecting the dignity of involved parties, recitation of further costs and benefits will simply miss the point. What is being claimed is that there is a need to respect affected parties by involving them fully and non-coercively in the process of intensification. From the perspective of rights-based ethics no recitation of costs and benefits will justify a failure to do this; what is needed is a justification that addresses how the process of intensification influences the freedom of all persons affected by it. If freedom is being constrained, it must be shown that this constraint is justified, perhaps because it is required in order to show proper respect for the rights of less fortunate people, or perhaps because the people agree to the constraint of their own free will. •



## When is intensification ethically good? A virtue-based model

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The utilitarian/consequentialist and rights-based approaches are both theoretically well-developed articulations of ideas used every day by people who are attempting to determine the correct or proper course of action. However, it may be more typical for people to associate ethics with less systematic ways of thinking. For example, many people may address ethical questions by asking themselves how some exemplary person would act in a given situation. This exemplary person might be a family member, a revered and respected member of the community, a religious leader or perhaps even a person from legend or history who is not even

known as a real flesh-and-blood individual. In any case, one draws upon a mental image of how a good person would act in the situation at hand. By doing this, one understands the ethics of the situation in terms that refer directly to the conduct that is being performed (see Figure 2 on p. 8), rather than either the rights-based constraints or the consequences of the action.

The philosophical possibilities for developing this general approach to ethics are numerous. The Greek philosopher Aristotle (384-322 BC) did so by developing a catalogue of both positive and negative exemplary types of conduct, or virtues and vices, respectively. He theorized that all human tendencies had appropriate forms of expression in moderation but could become vicious if not held in check. A good person is one who strikes the mean position among these tendencies. Moderation (or temperance) itself thus became the sovereign virtue for Aristotle and many of his followers. Today, many types of ethical theory that emphasize conduct, rather than rights and duties, on the one hand, or consequences, on the other, are referred to as Aristotelean or, more accurately, virtue theories. Although some philosophers have believed that virtues and community traditions are relatively undeveloped sources of ethical insight, better articulated by emphasizing rights and duties on the one hand, or consequences on the other, others have argued that this domain of ethical ideas or source of ethical insight cannot be eliminated.

Aristotle also believed that one's tendencies (as well as one's abilities to regulate them) are a reflection of the sociocultural environment in which one lives and is raised. Thus an exemplary Greek might have a moral character quite different from that of someone who had not lived in what was, in Aristotle's day, a culture almost unique in its egalitarianism, its emphasis on education and its ideals of citizenship. One contemporary school of ethics that stresses the social roots of exemplary conduct is called *communitarianism*. Here, the articulation of ethical norms and standards is likely



to call attention to the norms, practices, traditions and institutions that are particularly characteristic of and valued by a particular community, rather than particular virtues and vices. Like Aristotle, contemporary communitarians emphasize the need to have a social environment, a form of community life, that will give rise to exemplary conduct and that will allow people to appreciate the ways of life that such forms exemplify.

Agricultural ways of life have figured prominently in some of the most influential articulations of virtue and vice. The ancient Greeks themselves developed a form of agriculture based upon rough terrain, varying soil types and a Mediterranean climate. Their farms were a diverse mixture of grain production and pastoral livestock, but with heavy reliance on tree and vine crops. The mix of crops and long growing season provided steady work for fairly small households all year round, while the trees and vines involved lifetime investments for smallholders. Military historian Victor Davis Hanson argues that this pattern of agriculture gave rise to unique forms of military organization and tactics as well as the political culture of the city-state. The relatively large proportion of the population controlling property and the nature of their stake in the land made them both fierce defenders of egalitarian political forms and equally fierce warriors who could be relied upon for phalanx manoeuvres requiring discipline and loyalty. These character traits, so critical to the success of Greek city-states as political and military entities, were thought to emerge naturally in a farming population of smallholders. In contrast, the large-scale plantation-style irrigated agriculture common among the Greeks' military rivals relied on stratified societies of slaves and masters who did not develop the requisite virtues.

The idea that forms of agriculture were seminal sources for community practice and national culture reached its culmination in the intellectual cultures of seventeenth and eighteenth century Europe. These ideas were especially influential for those who framed the United States Declaration of Independence and Constitution. In his *Notes on the State of Virginia* (1781–84), Thomas Jefferson, third President of the United States famously wrote:

Those who labor in the earth are the chosen people of God, if ever he had a chosen people, whose breasts he has made his peculiar deposit for substantial and genuine virtue. ... The mobs of great cities add just so much to the support of pure government, as sores do to the strength of the human body.

Jefferson's key idea was that smallholding farmers would have a greater stake in the stability and success of the new nation than either manufacturers or their labourers, since both of the latter could pull up stakes and leave when difficulties arose. As President, Jefferson went on to set a course for the development of the United States as an agrarian nation, negotiating the Louisiana Purchase to ensure ample lands for future generations of American farmers and authorizing the (Meriwether) Lewis and

(William) Clark expedition to determine the suitability of these lands for cultivation and transport.

Jefferson's plan was not, of course, an episode of intensification, as his strategy called for extensive expansion of American farming rather than a transformation designed to increase yields or use resource inputs more efficiently. Nevertheless, his view is important because it shows that ideas about how farming systems and methods produce virtues such as citizenship and community solidarity have had a profound influence on political developments in the past. Plans for intensification that substantially alter the pattern of land tenure, or that change the basic practices of farming thought to be critical to the formation of exemplary patterns of conduct or community identity are almost certain to provoke moral protest. Indeed, the most memorable protests against British attempts at enclosure are not tracts arguing that rights have been violated, but literary efforts such as Oliver Goldsmith's poem, *The deserted village*, lamenting the loss of small village cultures thought to be particularly characteristic of the British national character:

Ill fares the land, to hast'ning ills a prey,  
Where wealth accumulates, and men decay:  
Princes and lords may flourish, or may fade;  
A breath can make them, as a breath has made:  
But a bold peasantry, their country's pride,  
When once destroy'd, can never be supplied.<sup>4</sup>

The Old Order Amish communities established throughout Europe and now dispersed around the globe provide another example of a philosophy of agriculture that relies heavily on virtue ethics. The Amish emphasize a very high degree of family and community integration together with independence from the outside world. They derive meaning from their ability to live together at a particular place with a great stability of practice over generations. Agriculture is important because Amish communities see dependence on outsiders as a potential threat to their ties to one another. The Amish are notoriously suspicious of modern technologies, largely because they see their effects as weakening social relations among members of the local community. Nevertheless, Amish farmers are known for both high yields and ecologically sustainable farming methods. From an Amish perspective, intensification would not emerge as an ethically important goal, and intensifying practices that weakened community bonds – either by tempting members away from the household or by increasing dependence on the outside world – would be resisted. However,

<sup>4</sup> Oliver Goldsmith. 1770. *The deserted village*. Accessed online at: [www.ucc.ie/celt/online/E750001-001/](http://www.ucc.ie/celt/online/E750001-001/).

### Intensification: implications for reservoirs and fisheries

The twentieth and twenty-first centuries have seen an unprecedented increase in the creation of reservoirs throughout the world. The two major purposes of dams have been the production of hydroelectric power and storage of water for irrigation. Nevertheless, damming a river to create a reservoir has a major impact on water flow, the aquatic environment and life. From a utilitarian perspective, the costs associated with these impacts (as well as the actual direct costs of building a dam) are justified where the benefits from hydroelectric power and irrigation are greater. Arriving at the optimal relationship between costs and benefits generally involves compensatory measures that mitigate the costs associated with the impact on fisheries.

To the extent that hydroelectric power and irrigation water address problems of poverty and need, there can be a strong rights-based argument for building dams. Yet reservoirs often involve the most dramatic and irreversible transformations imaginable. From a rights perspective, the key issue is that an effort to address human rights to basic energy and food needs may come into conflict with existing land use and riparian rights. Rights arguments might be raised against dam construction when it seems that affected parties either have not or cannot be feasibly brought into decision-making. Others might argue that important traditions, communities and ways of life are lost both when dams involve the flooding of native homelands for large communities, and when traditional fishing methods can no longer be practised. These latter concerns appeal more to the ethics of virtue and vice; they suggest that what is important is being able to live in a traditional way and to engage in traditional practices. But dangers to fish stocks can come from water pollution and from overexploitation by fishing communities themselves. Here, an existing or traditional pattern of rights may be permitting conduct that has significant adverse consequences.

An additional problem is that the distribution of benefits from intensification, hydroelectric generation or irrigation may not reach those rural communities most affected by the increased development. Fishers are usually from a poor sector of society and are often ignored in decision-making.

intensification would not be seen as an evil in itself, and increases in yields that could be attained by more effective use of household labour might be deemed entirely acceptable.

These few examples illustrate how thinking in terms of virtues provides an entirely different point of view from which to evaluate intensification. From the perspective of a virtue theorist, agriculture's role in forming both personal and national character provides the basis for evaluating policies and technologies that transform the food system. Periods of intensification would be justified only if they reinforce this role and would be opposed if they tended to weaken it. The actual forms that a virtue

perspective might take will be highly variable and will depend upon cultural traditions and history. Thus, while utilitarian/consequentialist and rights-based approaches in ethics point towards ethical standards that might be applied to virtually any agricultural system, the specific content of a virtue approach is likely to be highly dependent on local culture and may vary from one cultural setting to another. •



## How should burdens and benefits be distributed?

Utilitarian evaluation, as described previously, is notoriously insensitive to the distribution of benefits and harms across society. As a result, the question as to how burdens and benefits are distributed is raised in acknowledgement of the widespread feeling that improvements in efficiency and general welfare can come about in a very unfair manner. One possible response is simply to argue that, in questioning whether intensification is fair, we are calling for the methods and processes to be evaluated in terms of their consistency with a

concern for human freedom (e.g. an appeal to human rights), or with respect to their impact on traditions and community integrity (e.g. an appeal to virtues). Thus, one might say that utilitarian thinking provides a basis for saying why, other factors being equal, intensification is a good thing, while rights and virtue approaches sensitize us to the other issues that must be attended to in order for intensification to be fully justified.

However, it is also possible to address the question in more classically consequentialist terms. Doing so requires one to develop and defend criteria that can be applied to the way that costs (or burdens) and benefits that are the outcome (or consequence) of intensification are distributed among those affected. The standard utilitarian view suggests that distribution is not important because it is the net or average impact that matters. Yet one could argue that only outcomes in which no one is harmed are ethically acceptable. Another possibility is to minimize the chance of the worst possible outcome, an approach that may reflect the implicit decision strategy of poor societies trying to fend off the risk of total starvation. Another view, adapted from the philosopher John Rawls (1921–2002), is to recommend the option that has the greatest expected value<sup>5</sup>

for the poorest group within society. This approach allows one to develop ethical justifications that favour the interests of poor or marginalized people over those who are better off.

Although rights theory is sometimes offered as an answer to questions of

<sup>5</sup> Consequentialism is frequently used in connection with analytical techniques that allow one to assign a probability to several different possible distributions of benefit and harm that might ensue after the selection of a given act or policy alternative; thus, an expected value can be prospectively associated with each act or policy in the opportunity set.

*Intensive livestock farming provides food for growing populations but raises food safety, equity and animal welfare issues*



### Intensification: implications for livestock

Intensification in the livestock sector could produce more food for growing populations, but there are ethical issues relating to livestock's resource use, food safety and quality, equity and animal welfare. Pollution of land, water and air from intensive livestock production and processing in both developed and developing countries has become a widespread phenomenon, often acting as a vehicle for disease transmission. Moreover, there are direct issues associated with the transmission of diseases and general food safety. Overconsumption of animal products also carries a number of human health risks. While an increase in the consumption of animal products in developing countries would be highly desirable in combating malnutrition, it would not necessarily be wise for these countries to follow the dietary practices of wealthy nations. Livestock consume about one-third of total grain production, with associated pressure on land and other natural resources, and use of fossil fuel. It is possible to ask whether this grain should be fed to animals rather than people. These environmental and food safety risks represent a catalogue of the possible costs that must be weighed against the benefits associated with the intensification of livestock production. However, it is also possible to address these questions in terms of rights and virtues. Do people have a right to eat what they want even if their diet is found to be risky? Do people have rights to be protected from environmental and food safety risks and, if so, should this protection stress constraints on producer behaviour, or informing and educating consumers as to the nature of the risks? Do traditional dietary practices thought central to people's cultural identity ever override the risk/benefit comparisons conducted in a utilitarian manner?

There are, furthermore, ethical issues about the distribution of benefits. While growth in demand for animal products seems to offer opportunities for the rural poor, to date the large majority of these rural people have not been able to take advantage of such opportunities. Thus, there are important ethical issues about the fairness of efforts to intensify livestock production, and the effects that such efforts have on traditional rural communities. Intensification in the livestock industry also involves a set of issues that concern animals themselves. If unregulated, intensification of livestock production is associated with animal management practices that do not allow the expression of natural behaviour. Should these issues be addressed in terms of welfare trade-offs between human beings and animals, or is it plausible to argue, as some have, that duties and constraints on human behaviour should be recognized as amounting to animal rights?

distributive justice, difficulties also arise within the rights-based approach. In particular, rights-based thinking is occasionally confronted with situations where rights seem to conflict. For example, the Universal Declaration of Human Rights notes that all persons have a right to food. If one encounters a situation in which the only way to secure this right is to violate other rights, such as property rights, which rights have priority? As

in the case of establishing the validity of rights, resolving conflicts among rights will require use of philosophical arguments that support rights-based views. Henry Shue's *Basic rights* argues that rights have an internal principle of order that can be used to resolve conflict. Some rights (such as the right to education or to vote) would not be meaningful unless more basic rights (such as the right to food and personal security) were already secure. Shue argues that basic rights should be secured for all before less basic rights are secured for a few. Shue's approach does not rely on cost-benefit thinking as a "tie-breaker", yet few would resist combining principles from utilitarian/consequentialist thinking with approaches from rights theory.<sup>6</sup>

Virtue-based approaches typically address distributive issues either through the idea of community – so that community solidarity comes into play when a few individuals may be put in a position where unreasonable burdens are placed upon them – or as components of a specific virtue, such as charity. In some settings, culturally sophisticated mechanisms for sharing burdens can be imbedded in social norms that would be articulated in the standard terminology of cultural identity, community and personal virtue. However, some articulations of virtue have been particularly insensitive to social inequalities. Virtue-based thinking (often with religious backing) can be used to rationalize enormous inequalities in defense of a given social order. It is no accident that the word "aristocracy" derives from "Aristotle". •

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<sup>6</sup> Indeed, one of the most sophisticated versions of utilitarian thinking (R.M. Hare's two-level utilitarianism), argues that the traditions of rights provide important sources of moral insight; only when we are very sure that the consequences of our actions are fairly narrow and can be predicted accurately should cost-benefit considerations be allowed to override a traditional rights-based claim. (See Henry Shue. 1980. *Basic rights*. Princeton University Press. 2nd ed. 1996.)



## Who is responsible for ensuring that intensification occurs?

The 1996 World Food Summit recognized that the then world population of 5.8 thousand million had 15 percent more food per capita than the global population of 4 thousand million only 20 years earlier. The productive potential of technological improvement was demonstrated in the green revolution of the 1960s, where improved varieties resulting from scientific breeding, largely in the international public sector, coupled with investment in irrigation, mineral fertilizers and institutional infrastructures, raised food production and productivity, particularly in rice and wheat in Asia. But the uneven success of green revolution

technologies, with little uptake in Africa particularly, and its unforeseen social consequences, showed that sustainable intensification was not just a result of technological development but of government policy, and social and economic forces. In the last decades, falling transport costs, together with the development of global markets and growing trade liberalization, have given new focuses to the challenge of ensuring a steady reduction in poverty through securing and maintaining adequate long-term production levels as well as conditions of adequate access to food. There are major new factors to consider, including changes to the biosphere resulting from global warming, the as yet unproven potential of the new biotechnologies, unprecedented urbanization and the reality of a world economy without a global economy or global society.

Utilitarian/consequentialist and rights-based approaches in ethics have tended to portray responsibility in very general terms: *everyone* has the responsibility for acting in ways that produce the greatest good for the greatest number, or in accord with duties to respect other people's rights. Thus, if intensification is considered to be a good thing, everyone is responsible for doing whatever he or she can to make sure that it is achieved. Australian philosopher Peter Singer has published a number of essays in which he puts forward this argument exactly, at least with respect to responsibility for ending hunger. However, this view has been the subject of some criticism. It seems to impose an overwhelming responsibility on ordinary people, as if one cannot divert one's time and resources to enjoy life while someone else is hungry. Furthermore, it creates a situation in which nothing is actually done: if something is everyone's responsibility in general, it tends to be seen as no one's responsibility in particular. Singer has acknowledged that this may in fact be a weakness of the utilitarian philosophy that he has advocated.



### Intensification: implications for forestry

At present, most wood production comes from natural and semi-natural forests, which cover 95 percent of the world's forest area. Human interventions in forests may aim at very different objectives, not exclusively targeting increases in industrial wood production, but also non-wood forest products and the provision of conservation, protection, recreational and other environmental and social functions. Total demand for wood products is increasing globally and the yield productivity of forest plantations is higher than that of natural forests. However, a major ethical question regarding the intensification of forests is whether it is acceptable to clear natural forests to establish forest plantations. According to current estimates, about 50 percent of newly established forest plantations relied upon the clearing of natural forests, particularly degraded and/or secondary natural forests. These decisions generally stress criteria of optimization typical of utilitarian ethical decision-making.

In the case of natural forests, intensification is not a common concept or priority. Some of the reasons for this relate to ethical concerns. Natural forests are managed for a multitude of functions to provide a large range of products and services (non-intervention, like absolute protection of a conservation area, is a management option). This multipurpose strategy limits options for intensification and specialization on largely utilitarian grounds, but different groups of people have different expectations of natural forests, frequently seeking to harvest different products of the forest or trying to obtain different services from it. The equation "specialization + intensification" often creates conflicts between these groups. Such conflicts raise questions about who participates in decision-making and when formal criteria for involving affected parties need to be specified. Furthermore, in natural and semi-natural forests, management cycles are much longer than in agriculture and require a series of step-by-step, long-term practices. The purpose of forest management can change markedly over time. Changes in the way that forests contribute to lifestyles, community and cultural identity and the broad patterns of social organization are difficult to articulate in the traditional utilitarian language of costs and benefits.

Ethical ideas that stipulate particular responsibilities for people who have special roles – such as teachers, holders of public office, technical experts and parents – have more typically been articulated in the language of virtue and community solidarity. Thus, community leaders are people who have assumed or been appointed to a particular social station that entails special duties. A virtuous leader therefore assumes duties that are not those of the ordinary person, and in traditional societies such leaders would also have the authority to ensure that these duties are carried out. Consequently, in a traditional society, leaders might be acting rightly even when they order people to do things that might not be consistent with a modern conception of rights. Military

leaders, for example, can order citizens to sacrifice their lives for the greater good of the community, and one can easily imagine situations in which changes in land use or farming practice might be ordered as part of a leader's performance of special responsibilities.

In modern societies, social roles are often highly rationalized so that particular agencies are formed to take over roles that might have been understood as components of a leader's virtue in traditional societies. Thus organizations such as the Food and Agriculture Organization of the United Nations (FAO) have been assigned an explicit social mission that entails a responsibility to ensure that food needs are met. The report of the 1996 World Food Summit makes the case for a new round of intensification, and places responsibilities on national governments, with organizations such as FAO having major responsibilities for coordinating and facilitating that work. However, officers within FAO have an ethical challenge in meeting this responsibility. On the one hand, traditional models for interpreting the responsibilities these officers have been delegated to carry out stipulate ethics of virtue, and many expect these people to act as virtuous and authoritative leaders, especially when working in traditional societies. These traditional ways of understanding ethical responsibilities provide an implicit basis for acting ethically to discharge official responsibilities. On the other hand, the rationale for forming organizations such as the United Nations has largely been articulated in utilitarian or rights-based terms, and this language places significant constraints on the authority of officers who occupy posts within these organizations. Thus, the exercise of these role responsibilities requires ethical resources that may exceed those on which the mandate of an organization's authority is based. •

## Conclusion

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Population growth provides the basis for a utilitarian argument for intensification, and traditional virtues of leadership might provide an ethic for pursuing intensification for the good of society. In modern societies, the authority to pursue such good is constrained by the rights of others. It is critical, therefore, to articulate the ethical rationale for undertaking projects of intensification in terms that draw upon each of the traditions available for specifying and critically evaluating an ethical responsibility. Omitting any one of these ways of framing ethical issues results in a weakened capacity to articulate, debate and ultimately assume ethical responsibilities that may arise in connection with population growth and the attendant imperatives for intensification. •





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FAO/10995/J VAN ACKER



Agriculture will need to be further intensified in order to meet a growing world population's demands for food and agricultural products. Yet intensification in itself, if not properly managed, carries the risk of degrading natural resources and leading to decreased food security. It can also have important socio-economic consequences, particularly in relation to rural livelihoods. In making policy decisions with the aim of achieving sustainable agricultural intensification, planners must therefore identify and evaluate alternative strategies, in terms both of their immediate and longer-term impacts and their implications for all social groups concerned. There is therefore a clear ethical dimension to such policy formulation.

This issue of the FAO Ethics Series explores three possible approaches to an ethical analysis of agricultural intensification strategies. Human food needs provide the basis for a *utilitarian* argument for intensification, while the moral concept of *virtue* addresses people's duty to work for the good of society. A *rights-based* analysis then reveals how individuals' pursuit of such good can be constrained by the rights of others. Fostering debate around these approaches helps us to articulate and, ultimately, to assume ethical responsibilities for the intensification of agriculture.

