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The social structure of food production

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Content

SR17 The social structure of food production

1 Introduction

The social structure of food production influences who does what where in what ways. By looking at who has access and control over the key productive resources – natural capital, human capital, built capital and financial capital – we can see how key social resources – cultural capital, social capital and political capital – can be mobilised to make food production more inclusive or more concentrated. Geography, ethnicity, gender and class are all key elements in the social structure of production. The degree to which productive resources are controlled by a specific social group, such as rich men of European heritage, influences what is produced, how it is produced, where it is produced and what is available in what market at what price. Different parts of the world, different ethnic groups, men and women, rich and poor manifest different cultures of food and agriculture, what is valued, and what is possible to change. Cultural hegemony is when the norms and values of one group set the rules and standards applied to all. It also reinforces and even exacerbates the current social structure of agriculture.

2 Current structure of production

Average farm sizes in Europe and North America have increased substantially in the last decades. In Asia, Latin America and in some highly densely populated countries in Africa, average farm sizes decreased significantly in the late 20th century, although they were already very small by the 1950s (Eastwood et al. 2006; Anriquez and Bonomi 2007). But averages conceal vast and growing inequalities in the scale of production units in all regions of the world, with increased concentration in larger industrialised production systems in grains, oil crops, sugar, fisheries and horticulture. Small, labour-intensive household production systems are marginalised and disadvantaged with respect to resources (natural, financial, built and political) (Flora and Flora 2008) and market participation (IAASTD 2009). North America, Europe and, to a certain extent, Latin America have seen the consolidation and centralisation of agriculture and food systems, particularly with amalgamated markets for inputs, raw agricultural products and food retailing (Hendrickson et al. 2008). Land ownership is becoming more concentrated by class and geographic region, with economic and political elites in wealthy countries buying land for both speculative and energy production purposes. People of colour, who may be the ethnic majority where the land is located, are further excluded from access to land for the production of food that can be consumed locally or regionally. This differentially impacts women farmers, who are the majority of the small agricultural producers worldwide.

3 Food sovereignty and food security

As we look towards the year 2030, the norms and values that guide policies and practices will influence the well-being not only of farmers and farm workers, but also of all eaters on the planet. Some scholars present the emerging conflict of values that will impact the social structure of agriculture as the clash between an emphasis on *food security* and *food sovereignty.* Food security seeks to overcome inequalities in the social structure of agriculture and non-agricultural populations to increase the productivity of agriculture and fisheries and to international trade, to move food to people. Thus policy encourages increased productivity of a few crops and animals through increasing genetic potential and responsiveness to inputs in areas of high potential (the temperate zones). To allow distribution of agricultural products, policies emphasise lowering trade barriers. The dominant international thrust to increase food production has been to stimulate trade and improve value chains, and it has been enhanced by technology and its transfer.

Food sovereignty has emerged as a social movement for localisation at a community and regional scale. Social justice and improving the opportunities for all to produce and consume with dignity food commensurate with their local culture are part of the justification for the local approach (Schanbacer 2010). Food sovereignty recognises the importance of local participation 'as a process that seeks to expand the realm of democracy and regenerate a diversity of locally autonomous food systems. It is a transformative process in which fundamental change is a central issue for the individuals and organisations involved. It involves a deep awareness of alternative worldviews and the possibility of doing things differently' (Pimbert 2009: 2).

While these two emphases are often juxtaposed as top-down versus bottom-up approaches to agriculture, one favouring a concentrated social structure of agriculture and the other favouring a more equal distribution of agricultural resources, some have suggested that they can be complementary (Flora 2010). However, food sovereignty has much greater implications for a more inclusive structure of agriculture, with a focus on citizen participation and social justice, implying that access and control of agricultural production and distribution are more distributed by geographic area, gender, ethnicity and class. At best, food security is neutral in its implications for the structure of agriculture, although many large producers in such places as the Midwest of the USA use food security in the face of rapid population growth as justification for further concentration of land, germ plasm and marketing in order to 'feed the world'.

4 Industrialisation of agriculture and the social structure of production

Industrialisation of agriculture involves increasing differentiation of who does what where in the production of food, fish and fibre. Division of labour means that certain actors become specialised in particular limited tasks. Agriculture has industrialised more slowly that the rest of the economy, because of the disjuncture between production time and labour time (Mann and Dickinson 1978). The time between planting and harvesting, and the equivalents in fisheries and animal agriculture, made production in the past extremely dependent on seasons, with differential demands for labour depending on a natural production cycle. Many of the investments in agriculture are attempts to overcome this disjuncture, which are often very capital intensive. Such investments are often favoured by government tax policies. This then favours those who already have access to capital, often leaving out women, the poor and excluded ethnic groups (even when in a majority, as in Latin America and Africa).

As industrialisation occurs, ownership is separated from management. Management separates manual field and processing work from the mental work of buying and selling and deciding what should be planted where and when. Both manual and mental work are broken down into smaller and smaller segments. Thus, those who do a particular task often without knowledge of what is done by other segments of the value chain or where one's own labour and product fits with the whole. More inputs come from off the farm and more of the processing occurs off the farm. Industrialisation has led to specialisation in a few crops, with a decrease in diversity on any given farm.

As ocean, river and lake pollution and global warming increase, catch fisheries, often carried out by individual fishers or small firms, has been dramatically reduced. On the one hand, the capital investment required for deep-sea fishing will make it prohibitive for more traditional fishers, despite their intimate knowledge of the water ecosystems. As fish and seafood production turns towards aquaculture, the technology and genetics required for adequate gain and environmental protection also limits participation of small-scale fishers. Some fishers may be re-articulated into the industry through employment in aquaculture, but others will suffer permanent displacement.

5 Globalisation

Industrialisation of fisheries and agriculture enables global distribution and procurement of the agriculture and fisheries products. Rich countries with low agricultural potential buy large areas of land to plant oil palm or grain to meet their national needs, displacing local producers and their communities (McKenzie 2008; Nyari 2008; Cotula et al. 2009).

Globalisation is typified by the increased integration and concentration at almost all stages of the production and marketing chain, with functional and regional differentiations. Global transnational corporations that are vertically and horizontally integrated have increased power over consumers and agricultural producers and fishers. Globalisation is characterised by growing investments in agriculture, food processing and marketing, and increasing international trade in food facilitated by reduced trade barriers (FAO 2003).

These globalised agriculturally-based products are broken down into discrete ingredients in industrial production, including but not exclusive to food production. While women may serve in management positions in the transnational corporations that own land in developed and increasingly developing countries, subsistence and local producers will continue to be primarily female. Field work and processing will continue to be gendered and racialised, with vulnerable workers recruited from parts of the world where small production has been replaced by industrial row or tree crops.

The production of fish by wild catches or fish farming have become concentrated over time, particularly as stocks of fish close to shore decline, making it necessary to have larger vessels and heavier equipment (both capital intensive) to locate and harvest wild fish. Fish farming is increasing in importance in both the global North and South, with the potential of genetically modified salmon increasing the advantage of highly capitalised fish farms in the North, and potentially undermining the opportunities for indigenous fishers to harvest and market their fish (Kulver and Castle 2008).

Industrialisation and globalisation of agriculture have increased the volume of food produced and the degree to which that production is traded, but it has also increased inequality within the agricultural and fisheries sectors. Examination of the current and future social structure of food production requires examination of social *disparities.* How and by what are cultural values, traditions and social equity (including gender equity) currently impacted and what will the situation be in the future, given alternative policies?

6 Concentration of production

There is a high degree of concentration in the production of crops, livestock and seafood worldwide with industrialisation and globalisation of agricultural systems. A combination of technology and policy developments is required:

- appropriation (the transformation of discrete elements of agricultural production into industrial activities and their re-incorporation into agriculture as inputs)
- substitution (the replacement of agricultural products with industrial ones)
- expropriation (through courts and proprietary genetics).

7 Appropriation and the structure of agricultural production

Appropriation is the replacement of previously natural production processes by industrial activities (Goodman et al. 1987). An example of this is the use of hybrid seed, which must be purchased each time, rather than depend on a strong legal system to enforce intellectual property rights (Louwaars et al. 2005). Open pollinated varieties have advantages for small farmers, and often require fewer purchased inputs, but do not have the same yields. However, for family livelihoods, they are often more advantageous and are favoured by those championing food sovereignty.

The rapid development of the bio-fuel complex is an example of appropriation. While there is no doubt that replacements for petroleum-based energy must be found, often the efforts create more problems than they solve. The development of the bio-fuel industry has led to increased concentration and specialisation of production. Vast areas in the Americas and in Africa and Asia are now sown in monocultures, such as palm oil, corn and sugar cane that are harvested to create alternatives to petroleum products. In Africa and parts of Asia, land grabs by international companies and outside governments has taken over land previously worked by smallholders for the production of industrial inputs. The result has impacted food availability but also, even more importantly, food distribution.

8 Substitution and the structure of agriculture

Substitution replaces natural products in the food system with industrial products. For example, tropical products (sugar, palm oil) are displaced by agro-industrial byproducts (high-fructose corn syrup, margarine) and cereals are rendered functionally equivalent, such as in feedstuffs and biotechnology feedstock (Goodman et al. 1987).

9 Expropriation and the structure of agriculture

The creation of intellectual property rights has become an increasingly important source of competitive advantage and accumulation in the production and trade of agricultural goods. Globalisation has resulted in national and local governments and economies ceding some sovereignty as agricultural production has become increasingly subject to international agreements, such as the World Trade Organization's Agreement on Agriculture (WTO 1995; IAASTD 2009).

Transgenic crops have impacted the structure of agriculture in Canada, the USA and in Southern Cone countries of South America, as well as many countries in Africa and Asia. To date, most of the thrust has been to develop crops resistant to pests, by inserting the *Bacillus thuringiensis* (*Bt*) gene, and resistant to herbicides including Roundup Ready™ and Liberty™ (Pechlaner 2011).

Transgenic crops make it easier to farm more land with less labour and management. In the global North, an ageing cohort of land owners and heirs of land owners rent out their land to those who wish to farm, with short-term leases lessening land managers' attention to soil and water quality. The use of genetically modified seeds that resist some pests and pesticides have cut back on rotations, once used to manage pests, and have forced surrounding farm lands to use the intensive production strategies to protect themselves from pesticide drift that kills non-genetically modified crops.

10 Cultural capital: norms, values and identity in food production

The skills and knowledge necessary to fish, herd and grow crops successfully in a particular place are often passed from mother to daughter, father to son. These complex production systems are highly related to place, depending on both local knowledge and outside science to produce successfully. They represent embodied knowledge that links people to the land and water (Carolan 2011). A shift in control of land results in a shift in land use from diversified local crops to large-scale monocropping, leading to a migration of small holders, which breaks the link between place and the practice of food production. The displacement of culture and place often results in environmental degradation and social disorganisation.

For males in particular, working directly with the environment as a farmer, herder or fisher has traditionally been the anchor of their male identity. The loss of that option for male livelihood generation had severe impact on several generations of rural households, from the North American Indians of the Great Plains losing the buffalo as a result of European male slaughter of the animals to the loss of timber and mining jobs in various parts of the world. Barlett (1993) discusses the differences among agricultural producer households that are known for what they produced versus what they consume, which impacts both the gender division of labour in production and the pressures towards accumulation by wealthy families who find identity in what they consume, implying male prowess through relations to capital rather than to the land. Chiappe and Flora (1998), in their North American study of the differences between conventional and sustainable farming, observe that male gender identity is strongly conflated with the role of the farmer in conventional farming. It is useful to consider why farming, in Europe as well as North America, is so strongly identified with masculinity, and the implications of this for women's agency (Liepins 2000; Saugeres 2002). Sustainable farming system contests the masculinity of farming and ranching (Peter et al. 2000; Farnworth and Huchings 2009).

Access to land is essential for identity, livelihoods and food security of small-scale primary producers, which tend to be in the global South, ethnically distinct from the owners of the land and machinery, and often female. As access to land traditionally used for cultivation or herding or to fishing ground is limited or denied by state or market forces, there are cultural as well as economic implications. In contrast, for industrial agriculture and fishing firms, access to the resource is important, but the particular place of access has no particular meaning. Land in Africa and in indigenous communities in the Americas often has important spiritual value, providing a basis for social identity and networks, and as a catalyst for the collective sense of justice. In this sense, purely economic calculations are unlikely to do justice to local perceptions about proposed land deals (Cotula et al. 2009).

Climate change increases the vulnerability of agriculture. In situations where temperature and precipitation are much more irregular – with unexpected periods of drought at different times of the year or too much moisture falling at one time as rain, rather than snow, resulting in flooding and the washing away of crops, homes, irrigation systems and farm-to-market roads.

Farming, ranching and fishing in traditional places helps encourage new generations to follow in their parents' chosen way of life. But when that role is changed to that of hired worker only, replacement for the labour that once controlled, either individually or collectively, the means of production is problematic. Immigrant labour becomes a major part of this work force. Among more affluent farmers, the risks inherent in volatile weather, prices and policies encourage them to dissuade their children (particularly sons) from engaging in agricultural production or fishing. Children do return to the farm in industrial systems when they can introduce complexity and new, integrated enterprises. We found that Italian farmers whose children could bring back their advanced knowledge of speciality products or new ways of production or marketing and introduce it on the farm were more likely to remain. Similar experiences are related in the USA.

Food security stressed the volume of production, whereas food sovereignty looks at the cultural diversity of production, providing very different attractions for the next generation of farmers.

11 Social capital and the social structure of agriculture

Social capital is made up of the interconnections among groups and individuals. Norms of reciprocity, collective identity, working together and mutual trust are all parts of social capital. For agriculturalists and fishers, it can be bonding (connections to people like themselves engaged in similar activities in similar ways) or bridging (connections to groups and individuals that are different). These are then are combined in different ways that have implications for the social structure of production and the development of successful livelihood strategies (Figure 1).

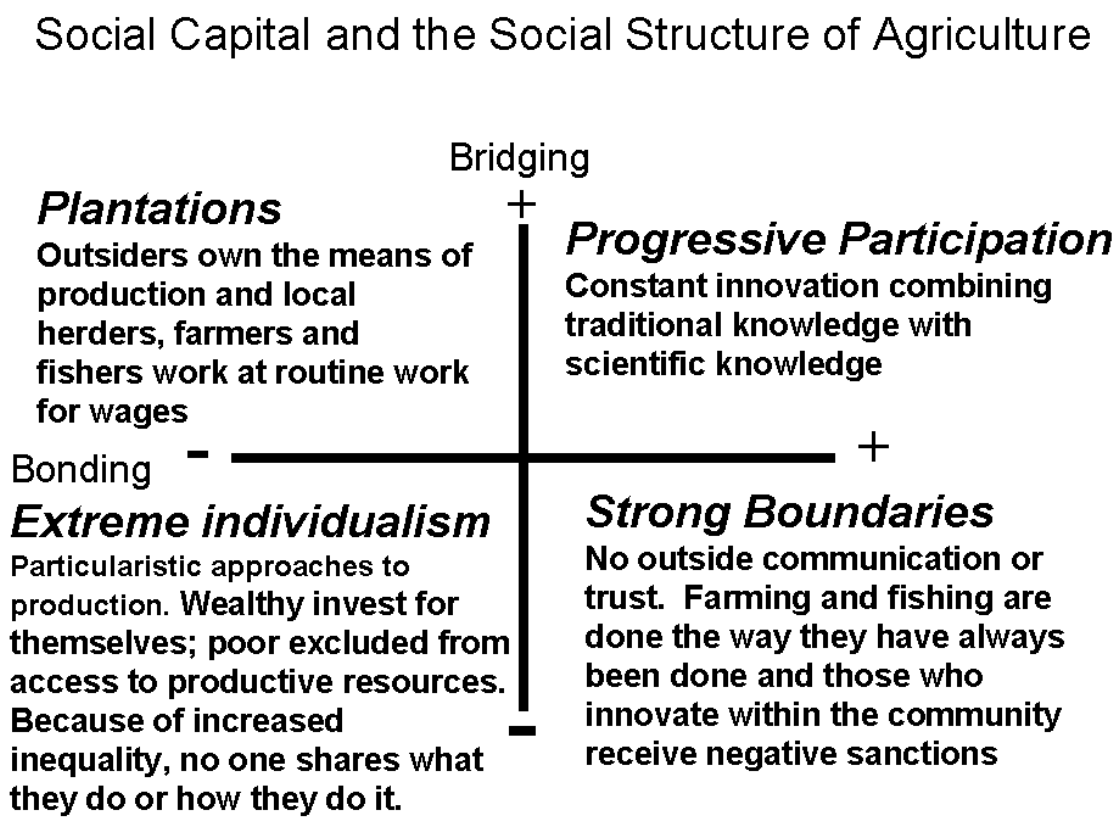

Figure 1: Social capital and the social structure of agriculture
Modified from Flora and Flora (2008).

Food sovereignty looks to build high bridging and high bonding capital (contrary to the view that food sovereignty means cutting off a community from outside influences). Industrial agriculture prefers high bridging and low bonding, as that allows maximum control to make the process efficient and minimum resistance from those actually doing the work. Food security sees the importance of bridging social capital in the creation of new value chains that reduce the transaction costs of getting food from high-input, high-output producers to low-income consumers.

12 Human capital and the social structure of food production

Human capital consists of the knowledge, skills, health and self-efficacy of each individual. As food production becomes more capital intensive, outside experts serve to increase human capital by teaching what Latour (1987) refers to as 'immutable mobiles', compared with the skills and abilities learned through working in a particular place and learning from one's peers and elders (Flora 1992). Human capital is developed in concert with natural capital in terms of the understanding of local natural systems and is a critical aspect of food sovereignty. For example, selecting and producing one's own seeds not only represents a fundamental rejection of the 'commercial and industrial productivist system', but is also a quest for autonomy, peasant identity and meaning (Pimbert 2009).

While both industrialisation and globalisation require a high level of education and knowledge on the part of scientists and managers to increase food security, food sovereignty seeks to increase the knowledge and skills of all who participate in the food system. Both food security and food sovereignty require knowledge-intensive systems, but the sources and types of knowledge are different, with knowledge of built capital (technology and machines) dominant in enhancing food security and social and cultural capital enhancing food sovereignty.

13 Political capital, conventions theory and the social structure of agriculture

Political capital is the ability to mobilise norms and values to influence the rules and regulations that encourage certain activities and constrain others. These rules and regulations can be highly contentious. Building on the work of French institutional economists concerned about the coordination of value chains (Thévenot 1995), scholars (Murdoch et al. 2000; Barham 2002; Raynolds 2004) have identified four conventions that have been applied at different times and places for coordinating value chains. Conventions consist of norms and value, standards of uniformity, rules and institutions to apply and enforce those standards (Table 1).

Convention	Features	Examples
Market	Based on competitive pricing at all levels: production, transportation, processing, retailing; distance good travels limited only by transportation costs	Commodity grain value chains are an imperfect example because there are often industrial criteria applied at the wholesale grain, processing, transportation and retail

	relative to other competitor products	
Industrial	Standards of efficiency and reliability linked to formal testing and standards	Value chain involving confined animal feeding operations (CAFOs)-packing plant-grocery chain complex that includes some vertical integration
Domestic	Trust and place based; hence short value chain	**appellation d'origine controllee** direct marketing
Civic	Worth of goods assessed in terms of their societal benefit	Fairtrade coffee; non-local organically certified goods (shade toward industrial convention)

Table 1: Conventions as ways of coordinating value chains
Modified from Murdoch et al. (2000).

In some commodity value chains, such as bio-fuels, the market convention is in place, often disguised as the civic convention of mitigating climate change. Agricultural products, in the form of carbohydrates or vegetable oil, are broken down into component parts and used as inputs for industrial products. National governments compete to put in place policies to allow bio-fuel firms to produce more bio-fuel ingredients at lower costs through a wide variety of incentives and subsidies. Most global food markets are driven by the industrial convention stressing efficiency, a shift from the commercial convention of commodity agriculture which focuses primarily on price (Reardon and Timmer 2006).

In the global North, the imposition of grades and standards by both the public and private sector has disadvantaged small producers, as the multinational food firms have the resources to help determine those standards, based on industrial conventions. This leaves only direct marketing for small producers, as the new 'scientific' criteria for food safety favour the large and the mobile.

However, there are counter-movements (localisation) that seek to substitute different norms and values to determine the standards, which in turn determine how things are produced by whom. For example, civic conventions urge policies to consider environmental impacts, worker well-being, and a fair return to farmers and farm workers. Food security is associated with the commercial and industrial conventions, whereas food sovereignty is associated with the domestic and civic conventions as means for producing and distributing food.

Two major tendencies have legitimised the industrial conventions: the industrialisation of agriculture and globalisation. Both are, in part, a result of policies at national and international levels and are likely to continue into the future.

14 Policies and policy choices

Highly productive natural resource areas in the 21st century are often associated with high disparities in the social structure of production of agriculture and fisheries. Often the richest agricultural areas, such as the Mississippi Delta in the south of the USA and the San Joaquin Valley in California, also exhibit very high levels of rural poverty. Policies that have increased the disparities in agriculture and fisheries include rapid depreciation of capital investments, subsidies based on volume of production, subsidised water systems that differentially serve large farms, and privatisation of publicly constructed water systems. These policies are often supported by the conflation of agricultural profitability with the well-being of rural people. Yet many rural people, particularly those with small holdings or small boats or landless agricultural workers or fishers without equipment, are disadvantaged by the policies that favour the sector and focus on agricultural production as the highest and best use of public resources. In transferring models of development from the global North to the global South, the focus on food security and production has greatly reduced the access to small producers to a wide range of crops and livestock adaptable to fragile ecosystems and the vagaries of weather and climate change.

The progressive expansion of commercial–industrial relations in agriculture has put further strain on many small-scale farmers in developing countries who must also contend with direct competition from production systems that are highly subsidised and capital intensive, and thus able to produce commodities that can be sold more cheaply.

Three phenomena related to globalisation have particularly disadvantaged small farmers and fishers as they increasingly dominate food chains:

- supermarkets and wholesalers
- grades and standards
- export horticulture.

Policies – both public and private – contribute to the accumulation of wealth and the exclusion of small producers, including women and people of colour, in agriculture and fisheries, as they favour a productionist approach. These mechanisms of vertical coordination based on industrial conventions favour large farms (Faiguenbaum et al. 2002; Henson and Reardon 2005; Reardon and Timmer 2006), except when small farmers get special assistance through subsidies, micro-contracts or phytosanitary programs (cf. Minten et al. 2006; Minten and Reardon 2008).

Regulations and the conventions under which they are developed and enforced will have a large impact on the social structure of agriculture around the world (Otero and Pechlaner 2010). Decreased access to land and capital will lead to an increasing rural proletariat unless mechanisms are in place to privilege such access.

Policies that impact the social structure of agriculture are not just related to subsidies for inputs, price supports for outputs, and government underwriting of exports and trade. Other policies, such as international trade and economic policy and the provision of human services, can make it easier to either recruit or retain the next generation of farmers and fishers or increase the push to urban areas.

In both the global North and South, an export focus increases the instability of food and fish production, as international competition, shifting exchange rates, and transportation costs can all make for price volatility, which disadvantages small producers and those that are not vertically integrated and able to coordinate profit centers in the value chain.

15 Counter-trends that influence the social structure of agriculture

While technology coupled with governmental protection has favoured the large and the mobile in agriculture, there are counter-trends that allow alternative social and economic structures of agriculture to emerge. Local food systems and multi-functional farming and fishing goals will open new opportunities through shorter value chains through new market, state and civil society partnerships. At least some agricultural research will be directed toward agricultural and fishing systems which, while complex, adapt to climate change and environmental deterioration through constant adaptation and innovations that are locality specific. These systems will often be relegated to the less fertile and flat land, leaving the fertile plains to large-scale producers and requiring constant innovation among those producing diverse foods for local and regional markets. These systems are likely to engage more educated men and women with closer ties to a variety of consumers.

Counter-trends to increasing inequality in the structure of agriculture are led in the global North by the ‘locavore’ movement and in the global South by movements seeking food sovereignty. These groups offer a set of norms and values to counter those of the commercial and industrial conventions. They articulate building on norms and values that correspond to the domestic and particularly the civic conventions.

16 Conclusions

Concern with equity requires intensive sustainable agricultural approaches that are inclusive of smallholders, ethnic minorities and women. Increasing depletion of energy and other natural resources makes attention to sustainable agriculture essential for the future. A productionist food security approach can conceivably co-exist with increasing food sovereignty, which stresses wider participation in food production based on cultural and ecological context, if it does not divert more land and water from smallholder farmers, fishers and herders.

Staatz and Dembélé (2007) call for a reversal in the massive underinvestment and significant disinvestment that has taken place in the past in small-scale agriculture. Such investments must be multigenerational and contextual, based on the wide range of ecosystems and cultures around the world. The principles of sustainable ecosystems should lead the research agenda. Collaborative approaches that include farmers, outreach workers and researchers will be locality specific. But the upfront costs of building that capacity will pay off in adaptive systems management in response to resource scarcity. A balance between producing for growing urban populations and the livelihood strategies of rural people must be negotiated. A transparent system of research, outreach and learning is critical (Flora 2010) to producing a more equitable and effective social structure of agriculture and fisheries.

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