

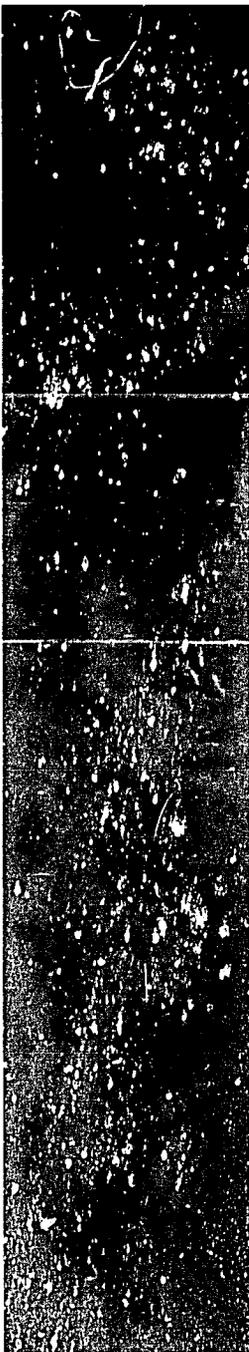
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issues in agricultural development*

Cash Crops, Food Crops and Agricultural Sustainability

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SUSTAINABLE AGRICULTURE PROGRAMME

This **Gatekeeper Series** is produced by the International Institute for Environment and Development to highlight key topics in the field of sustainable agriculture. Each paper reviews a selected issue of contemporary importance and draws preliminary conclusions of relevance to development activities. References are provided to important sources and background material.

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CASH CROPS, FOOD CROPS AND AGRICULTURAL SUSTAINABILITY

A frequently heard criticism of policies to promote export crop production in the Third World is that export-oriented agricultural development is less environmentally sustainable than food production for domestic consumption. However, recent evidence suggests that the main obstacle to sustainable agricultural development is the failure of any economic policy, whether promoting food crops or exports, to address adequately problems of natural resource management. Policies to achieve food self-sufficiency may therefore be neither inherently more nor inherently less environmentally sustainable than export-oriented agricultural development.

One major difficulty in analysing the sustainability of cash versus food crop production is that distinctions between cash crops and food crops are not clear cut. Often the terms "cash crops" and "export crops" are used synonymously. Strictly speaking, however, a cash crop may be sold at home or abroad and may be either a food or non-food commodity, whereas an export crop is a cash crop that is ultimately exported from the country producing it. The major non-food cash crops that are exported are cocoa, coffee, fibre crops, rubber, tea and tobacco. In contrast, the term "food crop" usually refers to domestic production of basic staples (cereals, pulses, roots and tubers). Although these are the principal subsistence crops, they are also

often marketed. For example, in Asia a sizeable proportion of rice and wheat, which are basic food staples, is sold for cash. Rice is a major export crop for Burma, China, Pakistan and Thailand.

Moreover, aggregate evidence suggests that, in most developing countries, expansion of cash cropping for export is not necessarily at the expense of staple food production. In general, countries tend to manage sufficient growth in both cash crops and staple food production or fail to achieve either (see Table 1). For example, in sub-Saharan Africa, constant or declining per capita food production has been associated with constant or declining shares of land allocated to cash crops. Over 1968-82, the majority of countries with positive growth in per capita production of basic staples have simultaneously expanded their area devoted to cash crops.

However, the amount of land growing both export and food crops in developing market economies has increased in the last ten years due to the bringing into production of "new" land, such as areas under forest or previously considered marginal (see Table 2). In some instances the expansion of cash cropping for export, such as in the southern Volta region of Ghana and the Cauca Valley of Colombia, may take the most fertile land and push food production and subsistence farming onto marginal lands. In other regions, government policies deliberately encourage the production of food crops in marginal areas often without simultaneously encouraging proper management techniques and agricultural practices that can

Table 1 Changes in production of cash crops compared with changes in production of basic food staples, by region, 1968-82

Growth in Share of Cash Crop Area in Total Land Use	Growth in Per Capita Food Production Per Year			
	Less than -1%	+/- 1%	More than 1%	Total
	(number of countries)			
Asia and Pacific				
Less than -1 %	1	2	1	4
+/- 1 %	3	3	5	11
More than +1 %	1	4	3	8
Total	5	9	9	23
Africa				
Less than -1 %	5 ^a	6 ^b	1 ^c	12
+/- 1 %	7 ^d	6 ^e	1 ^f	14
More than +1 %	4 ^g	3 ^h	2 ⁱ	9
Total	16	15	4	35
Latin America and Caribbean				
Less than -1 %	1	0	1	2
+/- 1 %	3	4	6	13
More than +1 %	1	2	2	5
Total	5	6	9	20
All countries				
Less than 1 %	8	8	2	18
1 %	13	12	13	38
More than 1 %	6	9	7	22
Total	26	30	22	78

Notes: The rates of change are annual changes in estimated trend lines.
Grains, pulses, root and tubers (in grain equivalents) are included.

- a Chad, Mali, Mozambique, Togo, and Uganda
- b Benin, Central African Republic, Congo, Nigeria, Sierra Leone, Upper Volta
- c Niger
- d Angola, Ghana, Guinea, Kenya, Malawi, Morocco, and Somalia
- e Burundi, Ethiopia, the Ivory Coast, Liberia, Senegal, and Zaire
- f Tanzania
- g Egypt, Madagascar, Mauritania, and Zambia
- h Cameroon, Rwanda, and Zimbabwe
- i Sudan and Tunisia

Source: Joachim von Braun and Eileen Kennedy, Commercialization of Subsistence Agriculture: Income and Nutritional Effects in Developing Countries. Working Papers on Commercialization of Agriculture and Nutrition, No. 1 (International Food Policy Research Institute, Washington D.C., 1986)

Table 2 Harvested areas under basic food and export crops
(million hectares)

	All developing countries		Africa	
	1974-76 (average)	1984	1974-6 (average)	1984
Food:				
Cereals	301.9	322.2	69.7	70.9
Roots and tubers	20.7	23.1	11.2	13.0
Pulses	<u>46.9</u>	<u>51.3</u>	<u>11.7</u>	<u>12.6</u>
Total	369.4	396.5	92.6	96.4
Export:				
Cotton	20.2	20.7	4.0	3.9
Coffee	8.6	10.1	3.3	3.3
Cocoa	4.4	4.9	3.2	3.3
Tea	1.0	1.3	0.1	0.2
Tobacco	2.3	2.2	0.3	0.3
Sugar	11.4	15.0	0.5	0.6
Palm Oil	3.9	4.8	0.7(est)	0.9(est)
Rubber	<u>5.6</u>	<u>6.5</u>	<u>0.2(est)</u>	<u>0.2(est)</u>
Total	57.4	65.5	12.3	12.7

Source: Compiled from the U.N. Food and Agriculture Organization Production Yearbook 1984, (FAO, Rome, 1985) plus additional FAO figures

reduce environmental and soil erosion problems. For example, in Haiti pricing policies that have encouraged the growing of maize and sorghum in hilly areas at the expense of coffee and other tree crops have increased soil run-off and erosion. Similarly, throughout the Third World, the planned extension of maize, sorghum and millet into dryland areas has tended to exacerbate

problems of soil erosion and exhaustion. In sub-tropical (e.g., West African) conditions, land under these and other annual food crops may be more susceptible to erosion than under other forms of vegetable cover (see Table 3).

Table 3 Vegetal cover factors (C) for erosion in West African conditions

	C, representative annual value
Bare soil	1.0
Dense forest or culture with a thick straw mulch	0.001
Savannah and grassland, ungrazed	0.01
Forage and cover crops: Late planted or with slow development	
First year	0.3-0.8
Second year	0.1
Cover crops with rapid development	0.1
Maize, sorghum, millet	0.3-0.9
Rice (intensive culture, second cycle)	0.1-0.2
Cotton, tobacco (second cycle)	0.5
Groundnuts	0.4-0.8
Cassava (first year) and yams	0.2-0.8
Palms, coffee, cocoa, with cover crops	0.1-0.3

Source: Robert Repetto, "Economic Policy Reform for Natural Resource Conservation", World Resources Institute, Washington, DC, September 1986

The input requirements of increased food and cash crop production may also have important ecological impacts, particularly where inappropriate use of these inputs is encouraged by government subsidies. For example, in Indonesia subsidies for fertilisers has reached 68% of world prices; as a result, consumption of fertiliser increased by 77% (12.3% per year) over 1980-85. The current rate of consumption, 75 kg per ha of arable land, is much higher than in other Asian countries (e.g., 32 kg in the Philippines and 24 kg in Thailand), and is encouraging inappropriate application and wastage. Similarly, pesticide subsidies of 40% and irrigation subsidies of 87% in Indonesia are encouraging wasteful use of these inputs.

In addition to imposing a financial burden on Third World governments, inappropriate input subsidies for fertiliser, pesticides and irrigation can impose considerable external costs in terms of agricultural pollution and resources depletion. Some of these can be considered user costs - in terms of the losses in future agricultural productivity to the cultivator of pesticide resistance, misallocation of input investment or inappropriate use, and any constraints imposed by future scarcity (e.g. water). For example, in Indonesia the total losses in irrigated rice production from the 1986/87 outbreak of brown planthopper attacks is an estimated \$300 mn. Other important externality impacts from inappropriate use of agricultural inputs include the effects on human health, fishing activities and biological diversity of pesticide misuse; problems of groundwater contamination and

eutrophication of surface water from fertiliser run-off; and the diversion of scarce water supplies to irrigation from other valuable uses (e.g., industrial purposes, domestic use, fish ponds, etc.).

Thus agricultural output and pricing policies that do not take into account the possible environmental impacts and displacement effects of increased production may lead to a less than optimal allocation of natural resources, including arable land. This is a common problem not only with policies to promote export crop production but equally with policies to achieve food self-sufficiency. In particular, the environmental implications of agricultural input subsidies are rarely considered in the design of agricultural policies, yet the user and externality costs of these impacts are often quite high. For marginal lands, the choice of crop and farming system must be suitable for the given agro-ecological conditions and economic needs of farming households; too often, production-led policies for both food and export crops are designed without sufficient knowledge of these conditions and their economic implications. If sustainable agricultural development is a desirable objective, then these natural resource management concerns must be adequately addressed by agricultural policy.

Further Reading

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