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Christopher L. Delgado

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CHRISTOPHER L. DELGADO¹

Only two years ago it was possible to characterize policy debates about short-run growth in food production in Africa as an emerging issue where all means were acceptable to increase the aggregate supply of food, provided that it was done quickly. Policy debates about long-run issues at the time concerned the relative merits of strategies based on "getting prices right" versus greater emphasis on increased government expenditure in agriculture (Delgado 1984; Delgado and Mellor 1984). Fortunately, better rains and policy changes have substantially alleviated the aggregate food supply situation in most of Africa since then. On the analytical side, the "prices right" faction has come to recognize the importance of also cutting agricultural production costs as a necessary part of improving incentives to farmers.² African farmers have been and continue to be faced with rapidly escalating costs, especially the opportunity cost of farm labor in terms of off-farm work (Delgado and Mellor 1984). Furthermore, much of the heat has been taken out of the "prices right" position by the fact not only that food prices have risen substantially in Africa in the past few years, but also that national governments' ability to control food prices has been largely eroded.³

In sum, the emergency situation has abated in most, if not all, areas of the continent. This has led to greater consideration of short-term initiatives in terms of long-run objectives, and vice versa. There is also a greater willingness among analysts to consider the key role that providing public goods plays in cutting agricultural costs. Examples would be roads, agricultural research, extension, input supply systems, and so forth.

Much of this support for public investment in agriculture is based on the recognition that in sparsely populated areas, or areas

with a relatively low value of agricultural output, the private sector around the Third World has tended to be slow to provide supplies and services, such as fertilizer and other inputs—at least in the initial stages of development (Mellor, Delgado and Blackie 1987: pt. 3). The private sector may have to wait even longer before it becomes economically viable to recoup expenditures on research and extension. Some vital goods in especially short supply in Africa, such as rural roads, may remain in the province of government forever.

Another point to consider is that the present willingness of policymakers who count to devote significant resources to food production is perhaps greater now than at anytime since the early 1960s.⁴ Past experience suggests that this favorable consideration of the problems of agriculture will pass unless some solid successes can be demonstrated in a reasonable period of time.⁵

The evolution of a consensus on strategy for promoting food production through greater use of market forces for pricing and increased public investment leads to three crucial sets of questions for food production policy: what to do, when to do it (particularly how to sequence myriad interventions); and, how to evolve a policy advice structure that enables interventions to be continuously monitored, evaluated, and changed to take account of rising knowledge and changing constraints. The evolution of policymaking structures themselves is a larger political question that goes beyond the scope of the discussion here; the salient point is that better policy cannot be made if it cannot be understood in a dynamic world. The most responsive political structure still requires analyses of the economic ramifications of decisions to favor one set of interventions over another, if only because the second round of political outputs is likely to come from the first round of economic impacts. Policymakers need to know the consequences of promoting one region or crop over another, beyond the input of the immediate interest groups concerned.

Because there is so much to do in African agriculture, because in a sense it must all be done at once, and because, relatively speaking, there is so little to do it with, a very tight set of priorities is required. While we can draw upon existing knowledge to speculate about these priorities, it is especially important to draw upon what is known about how efficient priorities are determined and set to boost food production, and then how they are maintained. It is not just a question of having a set of priorities; it is having both the "right" set and having them in the areas that count. In terms of ensuring sustained growth in aggregate food production, the former is largely

determined by increasing the knowledge base about the latter and ensuring that the output is constantly funneled into the policy process.

If individual countries are serious about accelerating their food production, they must decide upon the type of farmers that they wish to provide incentives to, set regional and commodity priorities, and concentrate resources along functional lines to ensure success at a few key things. As resources expand from success, the list of things to do can be enlarged. The alternative to a few well-informed priorities is to dissipate a small amount of resources among a very large number of different areas, commodities, and tasks, in an environment for agriculture that is especially difficult. Piecemeal solutions are likely to be overwhelmed by the magnitude of the physical problems faced, the rapid growth of nonagriculture as Africa comes into the mainstream of world affairs, and the lack of knowledge about what to do (Delgado and Mellor 1984; Mellor, Delgado, and Blackie 1987).

Critical Choices in Getting Food Production Moving

Smallholder versus Large Farms

It is unlikely that more than 5 percent of current African food production comes from large farms (Mellor, Delgado, and Blackie, 1987: chap. 28). In that sense, a 3 percent growth of productivity of smallholders is equal to a 60 percent growth of productivity on large farms. Conversely, production strategies that maintain large farm output through subsidies would require twenty times more resources if applied to smallholders. Since the proportion of smallholders to large public or private farms varies by country, so will the arithmetic. But the main point remains that an agricultural development strategy that is serious about having an overall impact must be addressed to smallholders and it must be able, in a reasonable period of time, to pay for itself.

Many governments, particularly in eastern and southern Africa where production bimodalism is more pronounced, have tended to regard support to large farms as a production policy and support to smallholders as an income distribution policy. In reality, it should be seen the other way around if a real impact on production is desired. Recent experience in Zimbabwe suggests that this change in view is occurring. At independence in 1980, a small, highly efficient and well-serviced large farm sector supplied 95 percent of the marketed

surplus of maize, the country's major food crop. When smallholders were given access to infrastructure, seeds, and fertilizer, it took just three years for them to capture half of the maize market, despite the fact that the large farm sector continued to receive the same support from the government as before.

Given significant government support in terms of items that cut production costs—such as roads, research, extension, cheap labor, input supply, and marketing assistance—smallholders in Mali, Ivory Coast, and Kenya have also rapidly increased the value of farm output. This is fully consistent with experience in the Asian Green Revolution (Mellor, Delgado, and Blackie 1987: chap. 28).

Not only can smallholders increase production when given the incentives previously reserved for large farmers, they can often do so at lesser cost (Johnston 1986). Furthermore, growth in smallholder incomes provides a market for locally produced goods and services that the large farm sector cannot provide. Finally, given that poverty is frequently a rural phenomenon in Africa despite relatively easy access to land, a vigorous smallholder sector will have widespread positive effects on net welfare.

Regional and Commodity Priorities

Rapid growth in smallholder food production, whether in Asia, Africa, or the U.S. cornbelt, has largely been an increased response to already favorable conditions. In India, production in the Punjab took off while Maharashtra stagnated. The smallholder success stories in Africa alluded to above all occurred on good land with reliable rainfall. Such areas tend to be well populated, cutting the overhead cost per capita of investment; the technical constraints that must be overcome by research to raise yields are also less.

Concentrating resources regionally has the advantage that it helps ensure some success somewhere, an important factor at the present time when agriculture—especially the smallholder kind—is on trial. By so doing, it also increases the aggregate supply of food, which is of clear advantage to the nonfood-producing poor.

To a large extent, agricultural development is collinear with increasing commercialization of rural areas. Market outlets provide a vent for surplus, enable farmers to capture the benefits of specialization, and provide a stimulus for local nonagricultural employment. A key operating hypothesis, consistent with evidence from Asia, is that success is more likely in moving one small region

at a time intensively than in disbursing investment over a larger region extensively all at once.

On the other hand, the political ramifications of favoring one section of a country over another are especially severe in Africa, given the political importance of ethnic boundaries. The choice may be one of uneven development among regions versus no growth at all.

Regional and commodity priorities are not independent. The same arguments in favor of concentration of resources for success apply to limiting the number of commodities promoted by policy. Agricultural research and extension in Asia have tended to be interdisciplinary, but coordinated along commodity lines. In Africa, research and extension tend to be organized along problem areas, such as pests, soil fertility, and water conservation. The latter may be a reflection of the generally more difficult technical problems posed by crop production in many areas of Africa.

Yet, precisely because of the complexity of moving African farming systems, it is especially important that an interdisciplinary research effort covering all the problem areas be mounted and that the effort be funded over a long period of time at levels consistent with a reasonable hope of success. As a practical matter, it may only be possible to support effectively coordinated work at this level for a very small number of commodities and regions.

It is particularly striking that the international research system, the Consultative Group on International Agricultural Research (CGIAR), which includes only 16 percent of all agricultural research on the continent, is working on twelve commodities in sub-Saharan Africa. CGIAR breakthroughs in Asia involved only two commodities, and that came with substantial investment over time, and help from national research services.

In speculating about ways to concentrate resources by commodity in order to have a chance to do an adequate job, it is instructive to examine past trends in food production by commodity and region. Five commodities—millet, sorghum, maize, cassava, and rice—together accounted for 69 percent of all major food crops produced in the late 1970s, and 71 percent of increases in food production over the 1961–1980 period. Table 2.1 shows that the relative importance of specific commodities varies greatly by major region. Millet and sorghum are aggregated as one commodity because of the difficulty of separating them the way that statistics are typically reported to FAO.⁶

Table 2.1 also shows the share of total increments to production of major staple food crops represented by the major commodities.

Table 2.1. Distribution of Production and Sources of Growth of Priority Food Crops in Sub-Saharan Africa 1961-1980

	Share of All Major Food Crop Production 1961/65	1976/80	Regional share of 1976/80 Pro- duction of Each Crop	Share of total increase of all major Foodcrops 1961/80	Annual Growth Rates 1961-1980 ^b Yield Harvested Area	
<u>Sub-Saharan Africa</u>						
Maize	18	20	100	29	1.0	1.7
Cassava	17 ^a	19	100	21 ^a	-0.5	2.5
Millet/Sorghum	27	23	100	9	-0.2	0.9
Rice (husked)	5	7	100	12	0.8	2.8
(Four crops total)	(67)	(69)	(100)	(71)	(0.2)	(1.9)
<u>By sub-region and crop</u>						
<u>West Africa</u>						
Maize	8	9	19	14	0.4	0.9
Cassava	13 ^a	15	35	16 ^a	0.1	1.5
Millet/Sorghum	40	37	64	16	-0.7	1.1
Rice (husked)	4	7	50	27	1.2	2.7
(Four crops total)	(65)	(68)	(38)	(73)	(0.2)	(1.4)
<u>Central Africa</u>						
Maize	14	13	11	11	-0.9	3.4
Cassava	43 ^a	44	39	46 ^a	-0.4	2.2
Millet/Sorghum	11	8	6	2	0.1	0.9
Rice (husked)	1	2	6	4	0.0	7.2
(Four crops total)	(69)	(67)	(18)	(63)	(-0.4)	(1.8)
<u>Eastern and Southern Africa</u>						
Maize	33	37	70	45	1.4	1.7
Cassava	12 ^a	13	26	12 ^a	-0.8	3.6
Millet/Sorghum	16	14	30	9	1.5	0.0
Rice (husked)	7	7	44	9	0.8	2.3
(Four crops total)	(68)	(71)	(44)	(75)	(0.9)	(1.9)

Sources:

Paulino (1986) and other FAO data compiled by ICPRI's Food Data Evaluation Program.

Notes:

^aEstimated by multiplying the share of all roots and tubers by the share of cassava in 1976/80 root and tuber production in each sub-region.

^bGrowth rates for four crops are weighted by shares in 1976/80 production.

In West Africa, although the overall share of rice in food production was low in the 1976-1980 period (7 percent), it accounted for the largest single share in increments to production (27 percent). However, the share of millet and sorghums (37 percent) gradually declined after the early 1960s despite the fact that they still constituted the single most important source of food in the 1976-

1980 period. In both central and eastern and southern Africa, however, the respective share of the preponderant staple in 1976–1980 was high and increasing: cassava in central Africa (44 percent) and maize in the east and south (37 percent).

These results suggest that a minimal research program to cover sub-Saharan Africa would have to at least include millet and sorghum, cassava, and maize. Presumably the focus of activities in semi-arid areas should be on sorghum, for which a number of exciting breakthroughs are in progress, as in Hageen Dura in Sudan (Axtell). The table also suggests that the small yield growth that has occurred has primarily been in sorghum and maize.⁷ On the other hand, cassava cultivation area has expanded rapidly continent-wide. In sum, sorghum and maize have shown the best overall record on yield and production increase, while cassava is increasing in importance due to area expansion, primarily into forest areas.

Yet, it would be shortsighted to omit rice from the list of priority crops. Rice's contribution to the increments to output over the 1961–1980 period (12 percent) is considerably larger than its share of output (7 percent) at the end of the period. This relationship is especially evident in West Africa, where rice output grew at 3.6 percent per annum over the twenty-year period. Despite this production growth, rice imports still grew at 11 percent per annum in West Africa over the same period.

Rice consumption is beginning to grow at the expense of millet and sorghum in West African diets, and this trend is expected to continue with income growth and further urbanization (Delgado and Mellor 1984).

Functional Priorities

The emphasis on concentrating resources on higher potential regions should not be confused with integrated rural development of the type embodied by large comprehensive projects on small land areas. Rather, the goal of policy should be to alleviate a few key constraints in areas where little else is holding back agricultural production. Thus, while regional priorities must be chosen, only a few key interventions should be emphasized within regions, at least until new constraints on production growth become evident and the resources are forthcoming from growth to alleviate them. It is precisely because public investment should be a catalyst and not a substitute for private investment that it should not attempt to alleviate all constraints at once.

The prioritization of public investment on economic grounds

should start with areas where a single element is holding back sustained growth. This situation might exist because of the noncapturability of benefits, as in the case of public goods such as roads. It could come about because of moral hazard and the high covariance across farms within a given region of yield risks, as in the case of rural credit schemes. It could stem from the diseconomies of small-scale operations in remote areas, as in the case of input supply systems. Or it could be the reflection of poor policy in the past, as in the case of both input and output marketing controls. In the latter case, one or several of the other types of problems are also likely to obtain. It then becomes imperative to make the complementary public investments, such as transportation infrastructure, to allow policy reform through market liberalization to work.

In much of sub-Saharan Africa, it is likely that the main element holding back food production is lack of viable technical packages ready for application outside irrigated areas (Vallaey's et al. 1987). A very notable exception is maize production in highland areas, where the complex of factors determining actual fertilizer use is probably a more critical problem. Where fertilizer is a constraint, policymakers are in the unusual position of being able to rapidly increase food production through reform and public investment. Given the need to maintain the attention of key policymakers, considerable emphasis should be put on understanding why fertilizer use in sub-Saharan Africa is so low relative to other developing areas.

Fertilizer. Sub-Saharan Africa accounted for only 2.5 percent of inorganic fertilizer use by developing countries in the early 1980s (Desai 1986), despite having roughly 11 percent of the agricultural population and 16 percent of the agricultural land of all developing countries (FAO). A first priority is to invest in national institutions that can effectively monitor fertilizer use in areas of good technical potential, and make informed judgments as to why use is not expanding as rapidly as elsewhere in the Third World. Second, fertilizer of the right sort must be available to farmers at the right time, along with complementary inputs such as credit. Asian experience suggests that the private sector is slow to provide fertilizers when activity levels are low (Desai 1986), but rapidly expands operations when agricultural growth occurs, accompanied by government provision of good roads (Wanmali 1983; 1985).

Agricultural Research. Many authors, rightly so, have emphasized the importance of agricultural research in Africa. Research on food crops expanded rapidly in the 1970s, in no small

part due to a reorientation of foreign assistance support in that direction. Yet, at the same time, national research systems became more fragmented geographically and functionally. Although expenditures on research over the decade rose to the point that many nations approached the standard target of devoting 1 percent of agricultural GDP to research, much of the latter was fragmented among production projects and microstations. As has been well documented elsewhere, individual researchers frequently were assigned to work on a broad spectrum of commodities over a multi-year period; poor work conditions and low incentives led to gaps in the most scientifically productive middle ranks of researchers (Idachaba 1980; Eicher 1986; Jha 1986).

Another problem that accompanied growth of support for agricultural research over the 1970s was the guiding view that research in Africa should be adaptive, that it should use the technologies and varieties available elsewhere. In practice, this has not always worked well, especially because of pests and diseases, as Spencer demonstrated convincingly for rice in West Africa. The West African Rice Development Association screened 2,000 Asian high-yielding rice varieties over seven years; only two did as well as local varieties.

A variant of this problem stems from recognizing the particular complexity of African farming systems, especially in the less humid areas. The sharply peaked nature of rainfall, relatively lower water retentiveness of soils, and steeply sloped supply curves for agricultural labor in these areas of Africa, relative to south Asia, for example, lead to the relatively much greater importance of seasonal labor bottlenecks in Africa (Delgado and Ranade 1987). These can have major implications for the overall profitability of innovations, thus encouraging a well-placed concern for the farming systems implications of technologies. However, the basic problem of the noncompetitiveness of low productivity agriculture faced with a rapidly growing nonagriculture can only be solved with technologies that greatly increase *average* returns to labor as well as *marginal* returns. Such increases are only likely to occur as a result of basic breakthroughs on the biological side, of the type normally associated with major increases in yields per hectare. The latter involve substantial attention to basic—strategic—research issues as well as to adaptive research.

The policy response to recognizing some of these problems has been rapid and incomplete: expenditure on agricultural research in West Africa fell from .9 percent of agricultural GDP to roughly .65 percent from 1980 to 1984 (Oram 1986). The external funders of

agricultural research have quit doing things that were bad for the long-run strengthening of national systems, but have not reinvested the funds saved in a logical manner. This would be to strengthen national systems along lines already well established in other areas of the world in an earlier time period. This involves support over the long term for stable research teams of an interdisciplinary nature, but organized around a single commodity and coordinated from a single location (Eicher 1986; Mellor, Delgado, and Blackie 1987).

Rural Infrastructure. A strategy to boost agricultural production through improvement of incentives on the cost side needs to give priority attention to the improvement of rural infrastructure. The latter can be understood in both the broad sense of social overhead capital, including service structures and institutions, and the more restricted sense of centrally provided grid infrastructure. Sub-Saharan Africa is short on both, relative to other developing areas.

Given tight resources and the need for priorities, public investment should concentrate on providing the basic grid of roads and communications (and irrigation where costs permit it). Where major infrastructural investment of this type occurs, the private sector can then mobilize a much larger set of private resources to provide most other services (Wanmali: 1983, 1985).

Large countries such as Nigeria and Zaire had from 2 to 3 km. of roads per km² of land area and million rural inhabitants in the early 1980s. The comparable figure for Kenya was 6 km./km²/million rural people, while those for Korea, Malaysia and Chile *at the end of the 1960s* were 31, 45, and 13, respectively.

Ahmed and Rustagi (1985) examined marketing margins from studies in Nigeria, Sudan, Malawi, Kenya, and Tanzania, on the one hand, and India, Bangladesh, Indonesia and the Philippines on the other. They found that marketing margins were on average twice as high in the African cases, and that 40 percent of the difference between the African and Asian examples was due to transportation costs alone.

The point is driven home for the SADC countries by Koester (1986) who shows the enormous differential between export and import parity prices in that region. Table 2.2 shows that although the share of land transport costs within Africa is highly variable among destinations, they are on average very high. In the case of Zambia, half of the import parity price for maize, the principal food staple, is due to intra-African transport costs. Koester (1986) also makes the point that such high transport costs prevent the world market from providing a stable set of opportunity costs for domestic resources

Table 2.2. Differentials Between Import and Export Parity Prices for Maize in the SADCC Countries Attributable to Intra-African Transport Costs 1983/84

(a)		(b)	(c)	(d)
-----U.S.\$/metric ton-----				
-----%-----				
Country and Location	Import Parity Price	Export Parity Price	Amount of Difference between (a) and (b) attributable to intra-African transport costs	(c) as a % of import parity
Botswana (Gaborone)	244	65	104	43
Lesotho (Maseru)	227	82	70	31
Malawi (Blantyre)	213	96	42	20
Mozambique (Tete)	214	95	44	21
Swaziland (Manzini)	199	110	14	7
Tanzania (Arusha)	213	96	42	20
Zambia (Lusaka)	254	55	124	49
Zimbabwe (Harare)	214	95	44	21

Source: Calculated from tables 17 and 18 of Koester (1986). The import and export parity prices are for trade with countries outside Africa. The differential between import and export parity prices for maize landed in East African ports in 1983/84 is assumed, following Koester, to be US\$75/metric ton.

used in cereals production. Domestic cereal prices are thus subject to wide year-to-year fluctuations in the absence of intraregional trade and stocking, leading to considerable risk for both producers and consumers.

Irrigation infrastructure is also much less widespread in sub-Saharan Africa than elsewhere in the developing world, perhaps because of excessively high development costs and relatively lower natural potential. Kenya and Senegal, countries experiencing population pressure and with large agricultural areas subject to severe climatological risk, had only 2.1 and 3.4 percent, respectively, of arable area under irrigation in the early 1980s, compared with 33 percent of arable area in Korea and 9 percent in Malaysia in the mid 1960s (FAO Production Yearbooks).

Given the major outlays involved in providing rural infrastructure, considerable attention must be given to setting priorities within the overall activity. The goal, as elsewhere, should be

to alleviate a constraint where the returns to investments in alleviating the constraint are not easily capturable by private investors, yet the other elements in production growth are ready to go and overall social returns are high. The principal consideration is the availability of proven technology to produce for a market served by the proposed infrastructure. A policy of building roads in the desert "to open areas up" where neither technology nor market is available is highly questionable.

Human Capital. Along with agricultural research and transportation infrastructure, priority attention should be focused on the appropriate types and levels of investments in human capital, principally education. African countries of all political leanings have invested heavily in the latter, although results, as measured by school attendance, suggest that further efforts should be made. The percentage of the appropriate age group enrolled in secondary schools in Senegal, Nigeria, Kenya, and Zambia ranged from 10 to 18 percent in 1979. Comparable figures for Malaysia, Korea, Argentina, and Chile at the end of the 1950s were 20 to 30 percent (World Bank 1983).

Furthermore, foreign assistance allocations have not been consistent with the principle that skilled decisionmakers are central to defining and implementing a tight set of priorities. Examination of World Bank Annual Reports, for example, shows that in the 1960s, 50 percent of World Bank lending to Africa went to transportation and 11 percent to education. The comparable figures in the 1980s are 15 percent to transportation and 4 percent to education. In the final analysis, there is some inconsistency in the willingness of major donors to maintain 80,000 expatriate advisers in Africa at US\$4 billion per annum, in the context of lack of willingness to make major investments in higher education (Lele 1987).

Promoting the Making of Choices

Perhaps the one commodity scarcer than a decision in many African governments is an informed decision. The political process will always influence choices and indeed should, since it is the same process that should serve to lend legitimacy to decisions made. It is therefore unrealistic to expect that policy decisions will be made in an economic vacuum, divorced from social and political considerations. Nevertheless, policymakers often have some—sometimes even considerable—room to maneuver within political constraints. However, the more important the policy change, the

greater the risk of unanticipated political costs. Policy research and analysis, based on solid data, substantially reduces the risk of the unknown.

It is also unrealistic to think that the usefulness of policy advice is independent from who gives it. It is even more unrealistic to think that policy reform is a one-shot deal. Rather, it is an exploratory process involving sequences of actions based upon the results of earlier interventions. Furthermore, the economic (and political) context of policy reform is constantly changing—with changes in world prices, trade flows, weather, and so forth.

Therefore, the greatest priority for national governments and foreign assistance agencies alike should be to strengthen the institutional capability of African nations to continuously generate and use knowledge for policy reform. This involves the creation and staffing of institutions that can constantly identify emerging policy issues, analyze options, and monitor the execution of decisions.

The first requirement for these functions is solid data, a good that must be continuously generated by government, guided by a sense of priorities as to what is to be collected. The second function is policy research, which frequently identifies policy issues before politicians and policymakers are fully aware of them as priority areas of concern. For this reason, policy research must occur outside the day-to-day exigencies of government bureaucracies, given their built-in emphasis on immediate, "useful" results. Finally, policy analysis takes the results of policy research that have become relevant and presents the consequences of different options to policymakers. For the same reasons that policy research should occur outside government, policy analysis units should be housed within it.

In sum, some priority areas for attention by policy researchers, analysts, and decisionmakers have been suggested. These involve a tough set of choices along regional, commodity, and functional lines and within each category. Until national structures have a capacity to deal with such issues, governments and foreign assistance agencies alike should devote priority attention to building such institutions, while dealing as best as they can with the policy issues themselves. The apparatus necessary to improve the intellectual quality of decision making is neither cheap nor easy to build rapidly. It involves substantial outlays of foreign exchange, at least until domestic universities can take up some of the burden. Yet, there is no alternative if the objective is to promote sovereign government in a mode likely to find viable prioritized solutions to the myriad problems posed.

Notes

1. This paper draws heavily on the concluding chapter of a forthcoming book edited by J.W. Mellor, myself, and Malcolm Blackie. The contribution of J.W. Mellor to these conclusions, and the need for a tight set of priorities in particular, is consistent with his first authorship of that chapter. Remaining deficiencies are mine alone.

2. The 1984 World Bank report entitled "Towards Sustained Development in Sub-Saharan Africa: A Joint Program of Actions" was a large step in this direction, relative to the Berg report in 1981, which had defined the terms of the debate (World Bank 1981, 1984).

3. A point made by Elliot Berg in an oral presentation to the House Subcommittee on African Affairs, 30 April 1986, more fully documented for one region at least by a new major study on cereals policy reform in the Sahel performed under his direction (Elliot Berg Associates 1986).

4. This willingness is sensed by many professionals who habitually visit African governments; it has most recently been expressed publically by the assembled heads of state attending the Special Session of the UN General Assembly on the Critical Economic Situation in Africa (27 May to 1 June 1986).

5. Witness the complacency that set in about agricultural matters in the Sahel in the late 1970s, as the memories of the great drought in the first half of the decade wore off. In my view, changes of attitudes on the part of decisionmakers were more a reflection of frustration with the lack of progress than anything else.

6. Even for those countries that report sorghum and millet separately, the split is often arbitrary since the crops are frequently intercropped.

7. Data not shown suggest that yield growth attributable to "millet/sorghum" in the table is primarily attributable to sorghum.

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