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**FOOD SECURITY:
AGRICULTURE'S GLOBAL CHALLENGE**

by

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INTRODUCTION

Today, we have the paradoxical situation of almost a billion chronically hungry people in a world where food is plentiful (FAO, 1996; Bie, 1997; Conway, 1997; CAST, 1998), about 40.000 people die every day of hunger-related causes, 840 million people are chronically undernourished and 1,3 billion live in poverty. At the same time, average income per capita has tripled during the last 50 years, and we have 15% more food available pr capita today than what we had 20 years ago. Globally, the 20% of the world's people in the highest income countries account for 86% of the total private consumption expenditures - the poorest 20% account for 1,3% (UNDP, 1998). The World Food Summit of 1996 clearly stated that poverty, and not insufficient food production, is the main reason causing food insecurity. While it is true that, in the decades to come, global food production must nearly be doubled to be able to feed the projected 9,5 billion people in year 2050 at a satisfactory level; food security is much more than just a production problem and thus a challenge for much more than only the agricultural sector. The main purpose of this paper is to look at food security from an agricultural entry point, describing and discussing the current food security situation, assessing reasons for food insecurity, reviewing the possible impact of the World Food Summit of 1996, and making recommendations regarding future action in relation to political and institutional changes as well as changes in the *agricultural research for development* agenda.

To begin with, there exist several myths regarding food security, some of which is presented below in stark juxtaposition to illustrate the enormous range in perceptions of the problem as well as the possible solutions (re myths by Lappè & Collins, 1982/Lappè, Collins & Rosset, 1998; Pretty, 1997; UNDP, 1998).

There is simply not enough food to feed the world's population
Yes, there is sufficient food to feed everybody

There are too many people in the world
No, people are the solution, not the problem

The earth's carrying capacity is reached - the population increase in the South must be controlled
But the richest one fourth of the world's population consumes three fourths of the world's resources. A child born in the industrial world adds more to consumption and pollution over his or her lifetime than do 30-50 children born in developing countries.

We have to choose between environment and food;
Low input agriculture is always low output
No, evidence indicates that sustainable or regenerative agriculture can be highly productive.

The developing countries are not able to produce sufficient food to feed their population
But there is a huge untapped food production potential in developing countries.

More food must be produced in the North to improve the food security situation in the South
But production of food in the North does not solve the problem of lack of access to food in the South. Poor people are hungry because they lack purchasing power, not because food is not available on the world market.

Trade liberalisation will solve the problem of food insecurity

No, the market forces will not secure the right to food for poor people.

What do these simplified statements tell us which in reality includes so much anger, passion and involvement from NGOs and social movements. First, that there are different schools of thought based on different analyses of the causes of food insecurity and accordingly, prescribing different solutions and development paths towards reaching food security for all people at all time. Malthus iron law of 1798 predicted that food production is not going to keep up with population increase still has many supporters (Neo-Malthusians) such as Ehrlich (1968), *The Population Bomb*; The Club of Rome, *Limits to growth*; several publications by Worldwatch such as Brown & Kane (1994), *Full house*, Brown (1996), *Tough Choices - Facing the Challenge of Food Scarcity*. The Neo-Malthusians are also known as the *environmental pessimists* due to their focus on natural resource degradation. Their first priority regarding solving the hunger problem is population control in the South.

Other schools of thought are *the industrial world to the rescue school*, advocating increased production in the North, as well as external inputs and free trade; the *new modernists school* advocating a new green revolution based on increased use of fertiliser, pesticides and biotechnology; and the *sustainable intensification school* arguing that substantial growth is possible in currently unimproved or degraded areas while at the same time protecting or even regenerating natural resources (re McCalla, 1994; Pretty 1995 and 1997; Scherr, 1997). Apparently, there is a continuum from environmental pessimists via sustainable/regenerative agriculture to technology optimists (new modernists) and the industrial world to the rescue with a lot of overlap between the different schools of thought. The last section of this paper discusses the prospects for sustainable intensification through a new modernist approach (re the call for a second green revolution).

WORLD FOOD SUMMIT 1996

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active, healthy life (FAO: World Food Summit, November 13-17, 1996)

In November 1996, food security was put prominently, but briefly on the world's agenda. We might now ask: *and so what?* What has happened after the World Food Summit in 1996? Hungry people can neither eat sheets of paper nor good intentions and promises. What will it take to secure appropriate and effective action to provide food security for all? Will we have another World Food Summit 20-25 years or so ahead acknowledging that the objectives of the Rome Declaration were not met,

similar to the promises of the Food Summit of 1974? The World Food Summit in 1974, promised that all hunger would be eradicated within the next 10 years. Twenty-two years later at the World Food Summit in 1996, the heads of States and Governments were a bit more careful in their promises. The new agreed aim is to reduce the number of undernourished people from 800 mill in 1996 to 400 mill by the year 2015. Many people ask whether this is an ethically acceptable aim. Dr Fidel Castro Ruiz stressed the daily hunger tragedy and the lack of global responsibility in his speech at the World Food Summit:

Hunger is the inseparable companion of the poor, is the offspring of the unequal distribution of the wealth and the injustice of the world. 35.000 people, half of them children, are starving to death every day. If the world is rightly moved by accidents and natural or social catastrophes that bring death to hundreds or thousands of people, why is it not equally moved by that genocide which is taking place every day in front of our eyes.

The Rome Declaration on World Food Security clearly states that poverty is a major cause of food insecurity. Steady increases in world pr capita food production have not contributed significantly to a reduction in the number of malnourished people in the world. The concept of food security was introduced in the seventies to better illustrate that production increase alone is not a sufficient condition for reducing the number of malnourished people in the world. Poor and hungry people need to have stable access to the food being produced and the production must be based upon sustainable production systems (McCalla, 1994; IFPRI, 1995; FAO, 1996; and World Bank, 1997). Food security is a question of equity, distribution, power and politics as well as a question of food production.

The World Food Summit, in addition to the Rome Declaration including an action plan with seven commitments, also provided a great number of excellent, high quality technical background papers highlighting different aspects of agricultural production and food security. Global food supply and demand have been and still are the subject of countless sophisticated analyses that often fail to incorporate the human sufferings of those whose right to food is denied (CAST, 1998). The *right to food* was declared a *basic human right* in the UN declaration of 1948 stating that everyone has the right to a standard of living adequate for health and well-being of himself and of his family, including food, clothing, housing and medical care. *The right to food* was an important issue during the preparatory negotiations prior to the World Food Summit in 1996. At one point, this *right to food* was almost deleted. Many people felt that would have been a step in the wrong direction, weakening the UN declaration of 1948. *The right to food* remained, but the US introduced a reservation on that issue.

The views differ on what was really achieved by organising the World Food Summit of 1996 as well as regarding the content in the declaration and its seven commitments. Most people will agree that there was a very positive effect (awareness, knowledge, commitment) of putting hunger and malnutrition on the global agenda for a week or more. The process itself, all the preparations, the negotiations, the bringing together of officials and politicians representing different

countries, the NGO fora etc all contributed positively to the overall aim of a food secure world.

Regarding the conceptual content in the declaration and in the commitments, the WFS 1996 moved away from previous stress on population control and increased food production to emphasis on eradicating poverty and inequality (Conway, 1997). The main message was and still is that there is enough food for everybody in this world and that the productive capacities should be sufficient to feed mankind also in the future given that the necessary resources are provided for research and development in both high and low potential areas.

On the negative side, in relation to the whole issue of UN summits, it has been argued that summits are too costly and that too many are conducted too often to maintain momentum (re the number of summits during the last decade). Conceptually, it is argued that the World Food Summit documents lack the kind of analysis that might promote an understanding of why we have a global food system which continues to produce enough food every year to feed everyone on the planet nevertheless leaving 840 mill people without access to the food they need (McLaughlin, 1996). Accordingly, the documents lack commitment and the sense of willingness to implement changes which might impact on the North as well as on elites in the South (Development, 1996). This year's Nobel Prize candidate Amartya Sen (1996) in his comments to the World Food Summit, stressed that food security is not only a matter of food and agriculture, not only technical and resource related issues of food production, but an examination of broader economic factors bearing upon the entitlements of the poor. The seven commitments in the WFS action plan resemble a fantasy wish list without the power to initiate necessary changes (Lang, 1996). Another weakness is that food security is being discussed without addressing the consequences of GATT agreements on access, stability and availability of food (Development, 1996). Some people argue that the World Food Summit should have discussed and questioned the neo-liberal, export-oriented, market-driven, competitive model of development which might have brought the world to the situation described but not analysed in the WFS documents (McLaughlin, 1996)

What are the impacts of summits? The World Food Summit declaration signed by most of the countries in the world states that *we pledge our political will and our common and national commitment to achieving food security for all and to an ongoing effort to eradicate hunger in all countries with an immediate view of reducing the number of undernourished people to half their present level no later than 2015*. However, promises given in international settings appear to indicate what governments *think* should be done and not really what they are *willing* to do (Fowler 1997).

WHY ARE PEOPLE POOR AND HUNGRY?

Approximately 20% of the world's population live in poverty. In Sub-Saharan Africa close to half of the population falls below the poverty line (FAO, 1996; WB, 1997). Twenty-five years ago, about 900 million people were chronically undernourished, today we have about 840 million chronically undernourished. It is predicted that in the years to come, hunger will be

worst in Sub-Saharan Africa and parts of South Asia. In order to develop strategies and action plans to combat food insecurity, it is necessary to understand the underlying causes of the problem. If the aim is to eradicate hunger and malnutrition, we need to understand what are the causes of the present shameful situation of a world of 840 million hungry people in a world of plenty, to be in a position to develop appropriate strategies and mechanisms for effective action. If poverty is the main cause of food insecurity, we have to start by examining *Where are the poor people? Who are they? And not least Why are they poor and what does it really mean to be poor?* Poverty is indeed a multi-dimensional concept, with many different definitions including for example low endowment of human capital, inadequate physical assets, lack of opportunities e.g. employment opportunities, insufficient fulfilment of basic needs, absolute poverty, relative poverty, and combinations of absolute and relative poverty including e.g. national inequalities. One way of defining poverty is *the one dollar a day* equivalent, different nationally developed *poverty lines*, or by combining different economic and social indicators in national and local *poverty profiles* (WB, 1997).

Despite urbanisation, nearly three quarters of the poor will continue to live in rural areas well into the next century and the significant majority of the rural poor depend on agriculture for their livelihood (WB, 1997). Of nearly one billion poor identified in 58 poverty profiles completed by the World Bank, 72% live in rural areas. Access to basic human needs such as education, potable water, health care and sanitation are far less available in rural areas. The problems of malnutrition, low life expectancy, and high infant mortality are also more severe in rural areas (WB, 1997). There are no simple explanations of why people are chronically undernourished in a world of plenty. Food insecurity is found to be influenced by different factors at different levels, including global, regional, local, household, and individual levels.

GLOBAL, REGIONAL, NATIONAL, HOUSEHOLD AND INDIVIDUAL FACTORS AFFECTING FOOD SECURITY (Haug, 1997)

Global:

- Political structures, power relations, market mechanisms
- Macro politics/political economy and policies
- International trade; i.e. raw material prices, GATT/WTO, the structure of the international grain market
- The debt situation for countries in the South
- Food aid and agricultural assistance
- War and conflict situations

Regional/National:

- Political structures and power relations
- Agricultural policies (urban biases, commercial farm bias, lack of incentives for production by small farmers)
- Terms of trade for national export products relative to imported products.
- Environmental policies (emphasis on conservation rather than sustainable use)
- Inequities regarding property rights
- Population growth and population pressure
- Degradation of natural resources, droughts, floods and other types of natural calamities
- War, political, religious and /or ethnic conflicts
- Lack of local participation, low status of women in society

Local/Household/Individual:

- Lack of purchasing power, lack of access to income generating activities or employment opportunities
- Lack of access to productive resources such as land, water, pasture, forest, biodiversity (re importance of property rights)
- Lack of labour to perform agricultural activities
- Lack of inputs and lack of capital/credit to purchase inputs
- Lack of access to markets, lack of institutions for marketing and input distribution
- Degradation of natural resources, natural disasters (drought, flood)
- Low status of women in society as well as of minority groups (religious, ethnic)
- Inter-household relations
- Lack of opportunities for human resources development (education, extension and training)
- Health limitations (AIDS, malaria, parasites etc.)

Regarding poverty analysis, Amartya Sen's *entitlement approach* has indeed contributed to both increased understanding of the causes of poverty as well as provided an analytic framework of analysis. The entitlement approach was originally designed by Sen in the mid and late seventies stressing the importance of the incidence of poverty in explaining why certain people are undernourished and starving (Sijm, 1997). Sen showed that failures in food entitlements or lack of access is causing food insecurity, linking hunger with poverty and not necessarily with a decline in food supply.

Sen has been criticised for being too concerned about the demand side (access) on the expense of food supply. He has also been criticised for treating famine victims as passive asset-less persons not recognising that household members are active in pursuing different coping strategies as well as not recognising the importance of social disruptions, wars and violence in relation to hunger (de Waal, 1990). There is an apparent and close connection between conflict and underproduction (re e.g. Messer, Cohen & D'Costa, 1998), however, the extent of *silent hunger* not caused by any wars nor natural catastrophes is far greater than so-called shock-induced hunger (Speth, 1993). Von Braun (1993) is another important contributor to the understanding of hunger and poverty, assessing interactions between policy failure, population growth, resource poverty and disasters at four levels of analysis ranging from economic strategy and policy at the macro level to the bottom layer of actual income and consumption failure at the micro level (including the role of coping strategies). When recommending actions to reduce food insecurity it is important to use appropriate approaches and tools to undertake poverty analysis which the action should be based upon.

WHAT ACTION SHOULD BE TAKEN?

Theorists have failed to find a development strategy for social and economic planning which at the same time is a strategy also for poverty alleviation (Apthorpe, 1997)

During the last 25 years, African policy-makers have been bombarded with often conflicting advice on agricultural development strategy from an increasing array of international development agencies. (Delgado, 1997) has identified at least nine different dominant agricultural paradigms since the 1960s: commercialisation via cash-cropping, community development, basic human needs, national self-sufficiency in food, structural adjustment 1 (demand management), structural adjustment 2 (equity with growth), and sustainable development. Each paradigm has had an impact on the direction of agricultural development and contributed to an intellectual heritage. The World Bank's latest agricultural strategy: *Rural Development: From Vision to Action* (1997) very much confirms the World Food Summit action plan stating that ensuring adequate growth of the world's food supplies is not enough to achieve food security. *It matters where agricultural production takes place and who receives the associated income. Only if more rapid agricultural growth occurs in countries with impoverished rural population can rural farm and non-farm income rise sufficiently to enable the rural poor to afford more and better food. Agricultural growth stimulates economic growth in non-agricultural sectors, which results in increased employment and reduced*

poverty. Sustained non-agricultural growth particular in the poorest countries is not likely without first addressing agriculture (World Bank, 1997).

South Asia example: Indonesia (from being among the top ten of IMFs promising developing countries economies to become the worst case)

Over 200 million people live in Indonesia, almost half of them food insecure (Washington Post, 22.07.98). Indonesia has become the largest rice importer of the world. According to Bulog (Indonesia logistical bureau for staple food), rice imports will be between three and four million tons in 1997 and 1998. Five years ago, Indonesia did not import any rice at all. In 1996, 11% of the population in Indonesia was living below the poverty line, for 1998, the number of poor people is expected to increase to 47% (Central bureau of Statistics, 1998). There are very many explanations to why this sad development could happen, what caused the crisis in South-East Asia and why Indonesia is so heavily affected. One explanation is the kind of unhealthy economic growth that took place in Indonesia since the 1970s. In the resource conflict between mining, logging, plantations, industrial enterprises and urbanisation on the one hand and local people depending upon the natural resources for their livelihoods, the modernisation and economic growth line won out. In addition to a political and economic instability, liberalisation of finance, corruption, nepotism, currency speculation etc. played negative roles.

The Indonesia case described above illustrates how the food security situation in a country might completely change during a relatively short period of time due to mainly global economic forces and political instability. Several factors, forces, strategies and actions to improve the world's food security situation could and maybe should be mentioned in this paper, however, I will limit myself to focusing on two key factors impacting on food security to illustrate some of the challenges we are facing.

Globalisation of the economy and the power of the market

The free market fundamentalists are more dangerous to the global economy than all totalitarian regimes. (George Soros, Norwegian radio, 6.10.98)

The trade balance for food in developing countries is negative. They import more food than they export (FAO, 1996; Lang, 1996). Since 1970, the share of African and Latin-American world trade has decreased while the Asian share has increased. Only 0.4% of world exports originate in the 48 countries UN defines as Least Developed Countries (LDC). Imports of food in developing countries are increasing more rapidly than exports. For some countries this is a result of moving away from agricultural based export; for other countries the implication is less export earnings to accommodate necessary imports. According to FAO (1996), 47 countries rely heavily on export of agricultural products to secure export earnings and foreign exchange. The export might basically include a few cash crops such as coffee, cacao, sugar and cotton, and hence might easily be effected by price variations at the world

market and accordingly, contribute to serious economic deficits which again might contribute to increased food insecurity (Haug et al., 1996).

The WFS plan of action supports a fair and market-oriented world trade system conducive to fostering food security, namely GATT/WTO. The NGO fora challenged this view and stated that the market forces alone would never be able to secure food for those who needs it the most, underlining that the WTOs trade regime is not acceptable regarding the issue of food security. Many people support this view of food security being too important to leave to market forces alone. According to them, the results of the GATT-WTO negotiations might have a more significant impact on the global food insecurity situation than what the WFS of 1996 has had/will have. As of today GATT rules have abolished quantitative import controls, discouraged supply management and limited preference buying from local producers and made developing countries more vulnerable towards export dumping (Ritchie, 1996). In Kenya for example in 1992 and 1993, European Union (EU) wheat was sold 39-50% cheaper than the same wheat purchased by the EU from European farmers. This resulted in a complete break-down in wheat prices in Kenya in 1995 due to over-supply. Note that Kenya was self-sufficient in wheat in the 1980s (Ritchie, 1996). Governments need to be able to use quantitative import controls to protect themselves against subsidised export dumping. One possible development path might be a shift from cheap export-led food policies to more local production for local use policies (McLaughlin, 1996). Apparently, an unregulated free market economy dominated by banks and trans-national companies will not promote sustainable food security for those without the necessary purchasing power. Food is far too important to be left to the market forces alone. GATT/WTO and national policies must address the issue of how to facilitate food security down to the individual level, recognising that market liberalisation or, as George Soros puts it, *free market fundamentalism* will not provide the 1,3 billion poor people in the world with access to food.

IMPACT OF STRUCTURAL ADJUSTMENT AND INCREASED TRADE ON SMALL-SCALE FARMERS

Poor farmers in developing countries undergoing adjustment programmes had no cushion of social security. In region after region, governments have eliminated long-standing subsidies to agriculture and as a result small farmers have lost access to essential inputs and services - and many have suffered a steep fall in income or have had to leave farming all together. Farmers producing food for local markets have also been suddenly subjected to the cold wind of international competition - and many find it impossible to compete with technology advanced farmers in Europe and North America who can sell cheaply in part because they have benefited from massive subsidies. Expanding international markets may have created vast opportunities for some wealthier farmers but the impact on the livelihood of the rural poor in developing countries has been harsh (UNRISD, 1995: States of Disarray. The social effects of globalization. United Nations Research Institute for Social Development).

New green revolution?

Achieving food security today is not so much a matter of increasing total levels of production, but rather of ensuring that individuals secure entitlements to food. If distribution is the problem, then redistribution is the answer (Sen, 1996).

To what degree do we need a new green revolution to achieve food security for the poor? Is it possible to provide food security for all by providing better technologies? What is the relationship between increased production and improved food security? How can we make sure that a new green revolution will reach poor people in marginal lands? At present, there are convincing arguments that a new green revolution is needed, a green revolution which is fundamentally different than the one we experienced in the sixties and seventies. Conway (1997) argues for a doubly green revolution. UNDP (1998) as well asks for a second green revolution aimed at poor people in fragile ecological zones. Bie, (1997) stresses the need for an evergreen revolution where the technologies (e.g. varieties) are adapted to the environment and not the other way around (e.g. drought tolerance, tolerance towards acidity, ability to do well in low fertility soils etc). The supporters of *sustainable intensification* and the so-called *new modernists or technology optimists* might agree on several elements of a new green revolution. The so-called new, second, ever or doubly green revolution is supposed to correct all the shortcomings of the first green revolution regarding environmental concerns and impact on poor people. Whether it is possible still remains to be seen, however I feel that we have to try to do something with the unethical situation of hungry people in a world of plenty. According to CAST (1998), food security is about people, not about commodities. How can agricultural commodity researchers with food security as their aim orient their efforts toward food security as a people and not a commodity issue? This is not the responsibility of agricultural researchers alone, but of all actors in the agricultural technology development system as well?

The first green revolution contributed to more than doubling the average yield of rice, wheat and maize over the past 20 years. Unfortunately, this did not affect poor people in marginal lands (UNDP, 1998). In Africa the situation has been rather depressing illustrated by the decline in per capita food production for the last three decades. The challenge in Africa is both to increase food production and raise incomes in rural areas. Seventy percent of people in Sub-Saharan Africa live in rural areas. According to CAST (1998) agriculture accounts for 30% of gross domestic product (GDP), 40% of all exports and 70% of employment. In Africa, far more than in any other region a prosperous agriculture could be the engine for economic growth. However, it is expected that Africa will continue to be a net food importer long into the 21 century (CAST, 1998). The gap between production (supply) and people's needs (demand) is increasing (IFPRI, 1997). There are many reasons for this unfortunate situation within agriculture in Africa. The so-called anti-rural bias contributes to the present unfavourable conditions for agricultural in many African countries. For various reasons, it is not currently profitable for farmers to produce food or to adopt improved technology in many parts of Africa. At the time of the first green revolution, inputs were cheap and grain prices acceptable. The trends during

the last two decades have been increasing prices of inputs and decreasing prices of grains. Presently, distress sale is often the case. This was not a feature of the original green revolution. Today, organic farming is a way out of the debt trap. The price of inputs are too high compared with the price of agricultural produce implying that farmers might be worse off after having purchased inputs on credit and selling the crops. It is argued that sustainable intensification based on regenerative and low-input agriculture can be a highly productive solution to this problem (Pretty, 1997).

Several people question the call for a new green revolution and consider it to be an attempt of moving the attention away from the really important constraints which are preventing food security for all. It is of course difficult through agricultural research to solve problems that are not really related to agricultural technology. Germplasm enhancement or improved management methods are maybe not the best answers to the lack of access among rural people to production resources such as labour, land, water, pasture, forestry, seed, capital etc. However, we might expect that improved varieties of crops, important for poor people and adapted to local conditions non-hybrid varieties with high tolerance towards acid and low fertility soil as well as drought, might mean a difference for the majority of rural people in many developing countries. We might also expect that improved management approaches such as Integrated Pest Management (IPM) and Integrated Plant Nutrient Management (IPNM) appropriate for small farmers in the South will have an impact on improving the food security situation for poor people. However, a new green revolution will not be successful unless the necessary political and institutional changes take place. Important key words in this regard are redistribution, democratisation, decentralisation, local control, participation, equity (e.g. women's role and rights), empowerment, property rights, trade, access to markets, infrastructure, and education. Another element in the new green revolution is the application of biotechnology. This technology includes genetic engineering, which is rather controversial in many European countries because of the risk involved (e.g. regarding biosafety). Up to now, there is no evidence that genetic engineering will mean a great difference for poor and hungry people in the South. Most of the agricultural research involving biotechnology is oriented towards industrial agriculture in the North and involves intellectual property rights (such as patenting). At present, biotechnology gets more attention for the problems it might cause than for the problems it might solve.

A new green revolution should not, as did the first green revolution, regard technology as a neutral tool in a development process. A new green revolution needs to be based upon an analysis of identifying the poor, and why they are poor. The objectives of such an analysis should indicate what might be done through agricultural research to improve the situation for the poor and what political and institutional changes might be necessary to achieve positive impact. According to Sen (1996), it is possible to combat hunger from a technical, biological and economic point of view, but the political will is lacking.

Chivi food security project, Zimbabwe (Murwira et al., 1996).

This project emerged as a response to extension and research services in Zimbabwe being inappropriate, top-down in approach, technology message-oriented and not reaching the communal sector. The Intermediate Technology Development Group (ITDG) in close collaboration with Agritex and the Department of Research and Specialist Services, decided to look for alternative ways of working with smallholder farmers in Zimbabwe to enhance food security at household level. The main aim of the project is that of realising the potential of the community to identify and manage their own development. The project is characterised by a low input, participatory approach; building on local knowledge; community leadership; an absence of material support; an absence of free inputs. The project, in line with its objective, let the community identify its priority needs and develop appropriate solutions. ITDG acted as a facilitator. Water was one of the major priorities. Farmers selected representatives to learn about possible technology to resolve water shortage problems. Local research stations, training centres and individuals were visited and a whole range of technological solutions assessed: no-till tied ridges; sub-surface irrigation using home-made clay pipes; special mulching and half moon ridges; infiltration pits; rain water harvesting using reservoirs; guttering and rock catchment methods etc. At the end of these exposure visits, the representatives gave feedback on the techniques they had seen, and the community decided which techniques they wanted to test and who should be responsible for the testing. One study said of the project: *In many respects IT's food security project in Chivi is breaking new ground in participatory rural development. There can be few if any projects in the region which have so little to offer in material terms, yet so much to offer with respect to facilitating community development through tapping existing potentials. The signs are so far that the model shows considerable promise.* (Murwira et al., 1996).

CONCLUSION

The global food system is organised and operates in a way which tends to reward the rich and punish the poor (McLaughlin, 1996)

Food production per capita has increased more than population during the last four decades. In the same period the number of chronically undernourished people has remained more or less stable. Global food production over the coming decades is expected to be sufficient to cover the needs of those who have enough purchasing power. However, millions of poor people in the South will continue to have insufficient purchasing power and productive opportunities to cover their basic food requirements (CAST, 1998). How do we solve this problem? Until recently, the main focus has been on area-neutral global production increase and population decrease in the South. The main message of the World Food Summit of 1996 was that poverty is the most important cause of food insecurity. To follow-up on this message the focus

should be on poverty reduction and redistribution. Poor people need to get access to production resources and/or opportunities for income generation. Sen (1996) states that if distribution is the problem and not production then redistribution is the answer. This could be redistribution after or independent of production, or redistribution of opportunities to produce. What is needed is anger, passion and imagination, not only uninspiring technical discussions. What is needed is political will, not only the political will of states and governments, but also the political will that emanates from the public at large (Lang, 1996). Also required is investment in local human capital and the institutional capacity of agricultural research and policy groups so that they can become equal partners in formulating appropriate agricultural development strategies for their countries. Investment in a new type of people-oriented agricultural research is of crucial importance for securing access to food at local and individual levels in particular for the food deficit countries in the South.

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