

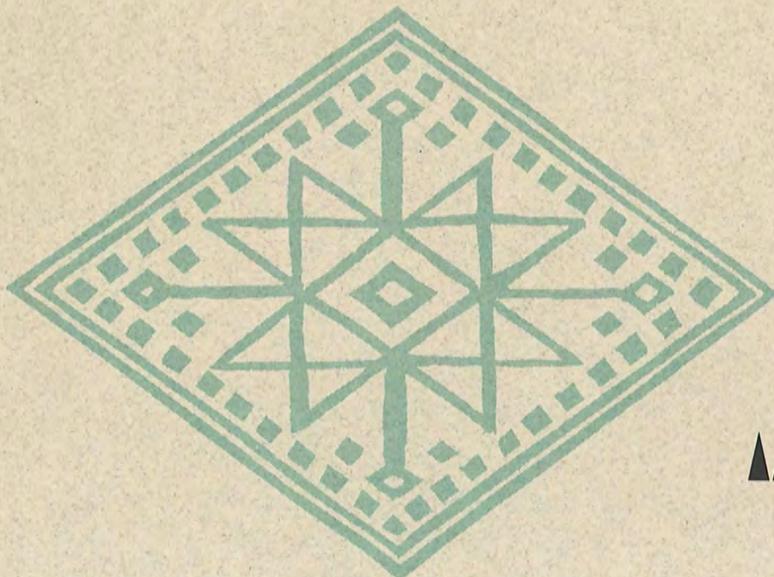


**HOW DOES YOUR GARDEN GROW:  
AN INQUIRY INTO NGO PROMOTION  
OF DRY SEASON AGRICULTURE  
IN NIGER**

by

Jonathan Otto

THE PVO/NGO INITIATIVES PROJECT  
**The Impact Reports**



DATEX<sub>INC</sub>



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## PREFACE

**The PVO/NGO Initiatives Project (PIP)** is a multi-year project funded by the Africa Bureau to promote collaboration and foster closer working relationships between USAID, PVOs, and NGOs. It has sought to do this, in over 20 sub-Saharan countries, by facilitating increased dialogue between them, acting as a catalyst in forming new partnerships, building the technical and institutional capacity of NGOs, and by developing comprehensive informational databases.

An integral part of PIP has been the development of research papers and case studies commissioned for seminars and workshops. All of these have been accomplished by African researchers and form the **research paper series**. Under PIP, two important **studies** were completed: the umbrella study which examines the design and implementation aspects of umbrella projects, and the registration study which examines the impact of the registration requirements on African NGOs. Finally, **the impact reports** look at the effect of selected project (PIP) and non-project activities on NGOs.

We are very pleased to have been able to publish these and to provide them to you. Please note that the views expressed herein and those of the author(s) and are not necessarily those of the Agency for International Development, nor of Datex, Inc.

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**DATEX Inc.**, an international management consulting firm, currently holds several long-term contracts with the Agency for International Development. These include **ENRIC** (Environment and Natural Resources Information Center), **PIP** (the PVO/NGO Initiatives Project), the gender specialist and social analysis portion of **DEFIL** (Development Strategies for Fragile Lands), and the financial and grants management portion of the **Democracy Enhancement Project** in Haiti. In addition, Datex also manages two worldwide IQCs: the **Food Aid Programming and Management IQC**, and the **Health Financing IQC**; a Mission-based IQC with USAID/Haiti; and has recently been selected for the **Monitoring and Evaluation of Policies, Programs, and Projects IQC** and (by the Department of State) for the **Refugee Programs IQC**. Datex has carried out numerous other short and long term assignments for USAID, the World Bank, and for the United Nations, throughout the developing world.

## **How Does Your Garden Grow: An Inquiry into NGO Promotion of Dry Season Agriculture in Niger**

### **Introduction**

This study is part of the A.I.D. Africa Bureau-funded PVO/NGO Initiatives Project (PIP) which is managed by Datex, Inc. PIP activities include coordinating the PVO Task Force, facilitating PVO/NGO/AID consultations, organizing seminars and workshops to improve PVO/NGO effectiveness, and conducting evaluations and studies such as this NGO impact study.<sup>1</sup>

Focus in this study is on US PVOs and Nigerien NGOs and their activities in support of gardening. In keeping with the major objectives of PIP concerning partnerships and institutional strengthening, this study emphasizes the kinds of relationships that PVOs and NGOs use in supporting gardening. The relationships explored include:

- PVO/NGO relationships with gardeners: what kinds of support are offered on what terms
- Interactions among PVO/NGOs: modes of collaboration and information exchange
- NGO/PVO cooperation with other development players, including local and regional government entities, and bilateral and multilateral donors' projects.

As a topic for an NGO impact study, gardening in Niger has several distinct advantages. It is physically discrete and easily distinguished from other kinds of activity. It is visible, unlike much NGO work such as training and institutional strengthening, and so it is more susceptible to observation. Perhaps most importantly, gardening is a core activity of many NGOs in Niger. It is at the intersection of their efforts in small scale enterprise, health and nutrition, food security, appropriate technology, natural resource management, and old fashioned community development. Supporting intensive dry season agriculture is a development intervention within the technical and financial resources of most NGOs, as recent history in Niger amply illustrates.

The study consisted mainly of two weeks of field research. Methodology included interviews in Niamey, review of project documents, and site visits across the country. At site visits in a dozen locations extensive discussions took place with NGO project personnel, well diggers, gardeners, and government officials, among others.

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<sup>1</sup> "PVO" refers to agencies registered as Private Voluntary Organizations with A.I.D. in Washington. "NGO" usually refers to non-governmental organizations headquartered in African, European or North American countries. PVOs are, in effect, a subset of NGOs. In this paper "PVO/NGO" is sometimes used to emphasize that both US PVOs and other NGOs are indicated.

Study sites are spread from the Torodi Arrondissement west of the River Niger to the far eastern areas of Goure. They are located in five of the seven departements: Tillibery, Dosso, Tahoua, Maradi, and Zinder. Unfortunately, political instability in the northern part of the country prevented visits to areas where gardening has been an essential element in oasis and resettlement activities.

The study is organized into three parts. Section one presents the political, environmental and organizational context of NGOs and gardening in Niger. This is followed by a series of mini case studies that look at key features of selected gardening support efforts. Section three offers an appraisal of NGOs' impact, the role of collaboration, observations on the future, and suggestions for improving interventions in this sector.

## **I. The Context**

### The Historical Situation

Wetter and drier periods have alternated throughout recorded Sahelian history, with thirty year droughts chronicled back to the fifteenth century. Severe drought conditions have occurred twice in recent years, from 1969-1974 and again in the early 1980s. Many other factors of policy, demography and economics have combined with subnormal rainfall to create an environmental crisis of enormous proportions across the southern borderlands of the Sahara. Niger, like its neighbors, can no longer count on rainfed agriculture to provide all of its food.

In terms of institutional resources, Niger is not rich either. Cooperatives under government control were imposed during the colonial era. Since independence government sponsored cooperatives have been virtually the only form of local economic organization sanctioned in rural areas. Over the last fifteen years the military government has attempted to create an integrated system for popular participation under a uniform framework for local organizations called the Societe de Developpement. This corporative structure and the controlling mentality of Nigerien government officials have rendered the Societe de Developpement marginally effective in rural zones. Its continued preeminence until very recently as the officially sponsored national development institution has also stifled the emergence of dynamic, autonomous rural organizations. In this political and social environment the absence of an national NGO movement is hardly surprising.

The first big wave of international PVO/NGOs arrived in Niger as relief agencies in the latter stages of the 1968-1974 drought. They were such a new phenomenon that when the first US PVOs applied to register they were placed under the tutelage of the Ministry of Defense, apparently because much of the national relief operation was carried out by military units. A second wave of external NGOs arrived with the severe drought years beginning in 1983. Many NGOs that came to do emergency relief work have established long term development programs. Their involvement in agriculture is a logical continuation of the concerns that brought them to Niger.

### Gardening and NGOs

The current massive expansion of gardening in Niger can be dated to the drought period of 1968-1974, when the country faced the prospect of survival in an era of continual grain deficits and undependable rainfall. Farmers in certain limited areas of Niger had long-standing experience with dry season agriculture, such as the peri-urban vegetable gardens of Niamey, onion growing near Galmi, and intensive farming in northern oases. However, irrigated agriculture as a widely practiced component of Nigerien farming systems was unknown across most of the country, even where seasonal surface water or readily available ground water offered opportunities.

When President Diiori Hamani in a 1972 radio broadcast exhorted Nigeriens to follow the example of the pilot school gardens project sponsored by Church World Service in Maradi, the vast majority of Nigeriens had neither eaten a carrot nor imagined raising crops by irrigation in the long dry season or "off" season. That connotation of the dry season as a contrary period for agriculture was later officially sanctioned when the national gardening campaign termed it the "culture de contre-saison".

Certain influences can be identified in the origins of popular gardening. Since before independence, migrant workers returning from coastal countries have introduced new agricultural ideas. Likewise, foreign missionaries growing vegetables for themselves have served to demonstrate gardening possibilities in scattered rural areas. In terms of US participation, several large groups of Peace Corps Volunteers in the late 1960s and early 1970s received training in gardening techniques, and attempted to introduce dry season gardening in their adopted communities.

Many of these experimenters lacked sufficient knowledge or resources and often failed for various reasons to convince others to follow them in their efforts. Still, they showed the way, at times presenting startling evidence of the potential. In less than two decades this potential is being realized. Necessity, born of the prolonged drought, coupled with continuing efforts of PVO/NGOs and others, has led to many thousands of new gardens in hundreds of communities.

### Current Institutional Situation

The recent, gradual opening up of the political structure in Niger after long years of tight control promises great change. Much, however, remains to be done. Proposed legislation to create a legal framework for NGOs has not been approved, and NGOs have yet to be granted status as development organizations. Legislative reform dealing with popular organizations is also unfinished. The political turmoil of current attempts at transition from centralized, authoritarian and militaristic government has produced a period of instability and inaction. Nonetheless, an observer with a twenty year perspective notes important trends.

Loosening of Niger government restrictions, plus the example of NGO movements in neighboring countries, has encouraged the emergence of national NGOs in the past five years. Since the first Nigerien NGO registered in 1987, a total of 27 have received official recognition. Many of these are fledgling organizations, with neither resources nor organizational structure adequate to implement development activities. A natural selection process will doom some that lack clear goals and leadership. Others will be unlucky in the fund raising game. A few, however, are up and running. Increased support by international NGOs and donors will undoubtedly strengthen the national NGO movement in coming years.

Reported changes in government policies and attitudes towards independent popular organizations has had a slow impact on actual practices in rural areas. Virtually no independent,

self-defined rural organizations exist in Niger, while neighboring Burkina Faso has over six thousand of them at last count. Cooperatives remain the only legally recognized economic organization in rural areas. Given the negative history of government control connected to these organizations, very few functioning, member-led cooperatives now exist.

Even if proposed liberalization is approved to allow for new forms of economic entities, wide spread development of self-defined forms of popular business and social organizations will follow only if concerted efforts are made to overcome the results of decades of repression and control. The institutional environment is bleak compared to other West Africa countries. As an economic activity, gardening remains organized by customary units of family, kinship and neighborhood, and has not benefitted from other organizational options for investment, labor, marketing and so forth.

In terms of the US PVOs, Niger has a small but dynamic PVO community. Most of the active PVOs have been in-country for some time, and have established sizeable multi-sector programs. More than half of the US PVOs in Niger have some connection to church bodies in the US. This often gives them a more diversified funding base and more program flexibility, but may restrict their size and scope of activity.

### Requirements for Gardening

Gardening in Niger requires several conditions and resources. Understanding these is essential to studying the forms of NGO intervention in this sector, and to assessing the factors that have made some more successful than others.

The first and most obvious requirement is land, specifically access to land suitable for gardening. As obvious as this statement is on the surface, such access is far from universally available, especially for women. Tenure issues often complicate access to land that has multiple uses. One example among many is competition around seasonal surface water resources that were customarily used by pastoralists, but are increasingly fenced off for gardens. Except for the smallest plots, reasonably level land is necessary for the kind of flood irrigation practices in Niger.

The second essential ingredient for gardening in Niger is water. This means water in quantities adequate for irrigation, and water that is readily attainable. As in the case of land, the requirement for water is not always adequately met in Niger, even where water is apparently plentiful. The effort and expense of lifting water and the availability of water during at least half the eight-month dry season are all potential limitations on gardening.

Fencing or protection from animals is a third prime requirement of gardening in Niger. Except in areas of long established gardening, customary practices of free ranging of domestic animals in the dry season put the onus on gardeners to protect their lush vegetation in a parched landscape. This requirement often has considerable environmental impact. Great quantities of

stems and branches from thorny trees and other perennial plants are cut for traditional fencing that is rebuilt each year. Commercial wire fencing is too expensive for most gardeners, while establishment of animal-proof live fencing takes years of careful attention.

Seeds and other propagation materials are key determinants of what can be grown and when. Once an open-pollinated variety is introduced, annuals present less of a problem than biennials or plants propagated primarily without seeds, such as the Irish potato. Seed purity, viability and other quality factors, as well as timely availability, greatly influence gardening results.

Equipment and other inputs for gardening, like watering cans, fertilizer and insecticides, are of variable importance. In some cases they are crucial, but their importance is often over-rated. Developing local versions or substitutes for imported items is a factor in sustainability.

Markets for surplus garden production is a final requirement for successful gardening. Even when home consumption is the major use of garden production, some portion of the production is usually sold. Sometimes the local market for a crop has to be developed. Often the market is seasonally flooded, especially for perishable produce, and retail prices may not cover transport to market much less growers' investments and labor. As for any other agricultural product, adequate markets at reasonable prices can motivate gardeners to great investment.

### NGOs and Gardening

NGOs' interventions in support of gardening have dealt with all the elements noted just above. This is especially true for water supply needs, where NGOs have developed, tested and disseminated new low cost technologies. Likewise, in developing experimental fencing and encouraging new crops, NGOs have played a research and development role.

In their support of gardening NGOs have frequently also encouraged, and sometimes imposed group organization in some form. Certain inputs are most logically shared in gardening, both because of the high level of investment and because they can serve a number of gardeners. Examples include a common well, water lift devices, primary irrigation channels, or exterior fencing around a number of individual gardens. For some NGOs, cooperatives or other village structures have served as the guarantor or administrator of loans, or the mechanism for encouraging more equitable sharing of subsidies for inputs.

Traditional institutions also interpose themselves. Gardening takes place within the confines of the 'terroirs villageoises' or village action space. Gardeners must fit into this still powerful pre-colonial land tenure regime. If the gardening group has the approval of the customary leadership of the community, it may have invaluable access to conflict resolution services or assured approval of land use.

In the cases studied the level of NGOs' organizational effort for gardening varied from almost non-existent, i.e., working with scattered individuals or paid laborers, to NGOs whose only intervention was in organization building. In some cases the organization for gardening is actually the whole community, perhaps with some newly formed committee or garden project leadership named within the customary leadership. In a few cases, gardeners develop non-traditional patterns of group cooperation, even without the legal right to do so.

Most US PVOs are directly involved in gardening and all seem to have some functional link to this activity. For some the link is indirect. For example, Church World Service (CWS) provides institutional support to a Nigerian NGO that digs garden wells, CARE works on watershed management on eroded hillsides above the dam that hold water for Galmi gardens, and the Cooperative League of the USA (CLUSA) has agents aiding cooperatives whose activities include gardening.

With this overview of the context in which NGOs have supported gardening, it is time to turn attention to some actual cases of what these interventions look like in the field.

## II. Mini Cases of NGO Gardening Assistance

For each of the gardening support projects studied, an attempt is made to look at the overall intervention including the type of support offered and the modalities of this assistance. Bearing in mind the central focus of this study is on relationships, each case will look at how NGOs worked with gardeners, with each other and with other development players.

### The Maradi School Garden Project (Church World Service)

Church World Service was one of the first foreign NGOs registered with the Niger government in the early 1970s as a drought relief agency. In 1971 CWS provided financial support to a pilot project in school gardens and experimental hand-augured tube wells. The wells technology actually had been developed ten years earlier by an American missionary, and essentially forgotten when he left Niger. The school gardens and tube wells project grew out of the work of a former Peace Corps Volunteer. Based at Lake Madarounfa south of Maradi, the project set up a small garden research and training center, and provided support to some 20 schools in the region. Schools received a well, fencing, seeds, training for teachers and periodic technical assistance with gardening problems. The project continued with Peace Corps Volunteers (PCVs) providing technical support until 1975. It was conducted in collaboration with the departmental office of the Primary Schools Inspector of the Ministry of National Education.

The project's organizing focus was the schools themselves, not community gardeners. The logic was that if students learned gardening skills, and if the school encouraged agricultural vocations, there would be a spread effect into the community. Parents provided labor for wells and fence construction. Institutionally, CWS's main partner in this project was the government itself, a common arrangement under the statist development policies of Niger. The Inspector's office provided legitimacy in the eyes of the central authority and the primary schools' headmasters. Had the project continued beyond its pilot phase, the government might have been encouraged to institutionalize it in terms of curriculum and teacher training. With the drought redirecting CWS's attention to emergency relief work, and with no long term strategy developed by either partner, this did not happen

Within each participating school a fund for a lunch program or "cantine scolaire" was started with proceeds from sales of garden produce. This fund helped augment school meals during the garden harvest period. In 1992 some of these pilot schools have on-going garden programs. At least two, i.e., Djirataoua and Gabi, generate funds from the sale of garden produce, manage savings accounts for schools' needs and have branched out into other economic activities. Not all schools were contacted for this study, but most reportedly do not have garden programs now.

Returning to the Madarounfa garden center twenty-one years after its establishment, the study found that the center itself has physically survived as the base for successive generations

of Peace Corps Volunteers and then personnel of the French NGO, l'Association française des volontaires du progres (AFVP). In the early 1980s, the resident AFVP volunteers at the former center turned their attention to apiculture, helping establish a honey marketing cooperative which is still functioning.

Reportedly all of the small bore wells furnished by the project are broken, usually because the bailer buckets or other objects fell to the bottom of the wells. The well at the garden center with an American windmill mounted on it functioned without major problems until last year when a pump extension rod disconnected. The Center is unoccupied for the time-being, but is maintained by nearby villagers in case of future need.

The Maradi School Garden Project enjoyed considerable short-term success in terms of launching school gardens and resurrecting the hand-augured small diameter wells technology. Apparently long term sustainability was not considered in the project phase out, as well boring ceased. No provisions were made for the either repair and maintenance of existing wells, or for continued support to the school gardens. Even though it showed great promise, the technology for manually bored wells was effectively lost in Niger for a second time, for over ten years, until it was re-invented by another US PVO.

#### Lutheran World Relief (LWR)

Among NGOs in Niger few if any have worked as hard for as long in gardening activities as LWR. In the past decade they have pioneered and popularized a number of well digging systems. One of these, an inexpensive cement ring systems known as the Puit Maraicher Betonne (PMB), the cement garden well, has been widely adapted by other organizations in Niger and in other countries. Estimates of PMB installations top 3000 in Niger alone, with more constructed every season. Along with its wells work, LWR also provides functional literacy and other training for cooperative organization and allied development activity.

About five years ago, an LWR wells engineer began experimenting with hand-augered or bored wells. Only dimly aware of previous experiences in Niger, he developed a set of tools by trial and error that essentially duplicate those CWS used in the early 1970s. Unlike CWS's project, however, the LWR program had the resources and the vision to take this system to a national level. The low cost and high discharge rates of the hand-augered wells has attracted the attention of many other NGOs and garden promoter organization. Currently about twenty teams originally trained by LWR are making wells for a dozen organizations, from the Canadian NGO ISAID in the Filingue area to the Projet de Tarka near Madaoua, to Project Danois south of Zinder. Like the PMB wells, this system is spreading to other countries as well though LWR's network.

The Projet de Tarka handsomely illustrates the potential for this technology and the results of inter-agency collaboration. Funded by the European Community, this project began several years ago with far more expensive technology than the tube wells. Located in an

extremely favorable environment for gardening and hand-augered wells, i.e., several thousand hectares of flat valley with excellent recharge of the shallow sandy aquifer from surrounding hills, the Tarka project has switched from expensive cement-lined wells to LWR's hand-augered ones. Installing up to four wells per day, two teams produced over 300 wells in recent months. Onion growing in this areas is so profitable that farmers can afford to purchase motor-pumps from Nigeria.

Without reservation, Projet de Tarka staff attribute their technical success to LWR. They point out that technical innovations like hand-augered wells are an essential contribution of NGOs, whose smaller size, flexible programs and grassroots orientation allows them to develop innovations that larger projects can then disseminate.

LWR has worked with dozens of NGOs, volunteer sending groups and other development agencies over the years. It has been generous in sharing its innovations and expertise. On the other hand, the multiplier effect of other agencies' gardening projects has produced LWR's greatest impact.

With gardeners LWR establishes a variety of relationships. At one site visited for this study LWR had contributed the cement and well diggers to complement local labor to dig a number of PMB wells in a river valley near the village nine years ago. Many people actively garden here, marketing produce locally and in nearby Nigeria. A Nigerian LWR agent, who was trained by CLUSA, lives here and advises the cooperatives in this town and several others along the valley. He is assisted by a Peace Corps Volunteer. Cooperative members have chipped in to start a cereal bank and LWR has agreed to purchase the first stock of millet if the coop builds the storehouse.

Ironically, LWR is closing down much of its experimental hand-augered wells program just as the team is working on solving the last remaining major technical problem, that of lifting sufficient quantities of water to make this system more economically viable. Another US PVO, Appropriate Technology International (ATI) has begun dissemination of a low-cost, high output treadle pump in other Sahelian countries. ATI hopes to marry this to the LWR hand-augered well, perhaps in Niger if funding is identified. So, although LWR is winding down its involvement, there is reason to hope that the hand-augered well technology will not be lost for a third time. Whether LWR's reduced wells program will suffice to bridge this gap in unclear at this time.

#### l'Association des Puisatiers de la Republique du Niger (APRN)

Given the great importance of water resources in Niger, it is not surprising that the first national NGO to be legally registered was a group of well diggers; nor is it surprising that their main target is water for gardening. The idea for an independent company to dig wells came initially from LWR, but the notion of using the legal form of an NGO was contributed by CWS.

Both these US PVOs encouraged experienced Nigerien well diggers to work out some independent organizational structure to carry on their trade apart from foreign NGOs.

The ground breaking work of creating the first national NGO was difficult on every level. Many months of paper work with reluctant government officials were followed by the reluctance of donors to support the untried formula of a non-governmental Nigerien agency. CWS continued its low key support. Then the Canadian NGO collective Solidarite-Canada-Sahel (SCS) became APRN's first financial partner, providing both institutional support and project funds.

APRN's mode of intervention varies. Typically in a new area they make contact with government officials and through them the leadership of the communities. With these leaders APRN's services are discussed and a contract negotiated. Increasingly, as APRN becomes established rural people are coming to them, often writing through the hierarchical "chef de canton" to request assistance.

The negotiated contributions of the gardeners are usually sand and gravel for cement, labor for digging, food and lodging for the mason, transport of materials from a central stocking point and a cash payment of about \$15 for each meter of PMB well dug. Total materials and management cost of the PMB wells for APRN is about \$150 per meter. APRN also uses a cheaper brick lined well, and in either case emphasizes training of local people to dig additional wells later. The molds for brick wells are left with the community and they have access in the future to the PMB molds as well. To date APRN has installed some 250 wells for gardening.

APRN is also attempting to help people deal with the problem of fencing. This is partly in order to decrease tensions between herders and gardeners. With manual equipment for fabricating woven wire fencing, APRN's workshop near Dosso produces low cost durable fencing. Some of it is sold, but some communities are given it for free if they plant hedges for live fencing that will eventually replace the wire fencing. The cost of this locally fabricated woven wire fencing is 50% less than imported fencing, and affords employment to local laborers.

### Africare

This US PVO is an exception to the usual pattern of US PVOs that arrived in Niger initially to do relief work. Africare was started in Niger, as a single small health project in the Diffa departement in the 1960's. Now, with programs in dozens of countries, Africare is one of the largest US PVOs in Africa.

Not far from its founding project, Africare now manages part of a natural resource management project funded by USAID in Goure. Although currently at a virtual standstill due to financial problems connected to the collapse of the BDRN bank, the project has accomplished quite a bit of infrastructure development in and around a series of oasis-like basins found

scattered across the sandy landscape of eastern Niger. These basins, called "cuvettes" or "bas-fonds", are remnants from a wetter period in Niger's history. They have been exploited for centuries for a natural soda product used to make soap. The product called natron is scraped from the surface of these seasonally flooded low points when surface water disappears in the dry season. Date palms and manioc are grown without irrigation in these cuvettes, but intensive gardening is new in this isolated area.

Africare has done two distinct kinds of infrastructure development: erosion control and wells for gardening. On the sandy hills and mobile dunes that are gradually overspreading these green depressions, wire fencing has been erected and hedges planted to slow the winds, hold the soil and allow natural vegetation to regenerate. At one site twenty hectares of dunes that were encroaching on a town and nearby bas-fond were fenced; then dry manure was spread along with grass seed, and hundreds of trees were planted.

The second type of infrastructure is cement lined garden wells along the outer edges of the bas-fonds, away from the natron-laden lowest spots. Around the perimeter most of the land is little used because the water table is deeper than near the low spots. Although dozens of these wells were installed in the past two years, relatively little gardening has actually resulted as yet from these wells, and many are still unused. Reasons vary among the different sites. Lack of gardening experience, lack of local markets, or the extra effort of drawing water from these somewhat deeper peripheral wells are factors. Also ownership of the wells may be unclear. In one village a Peace Corps Volunteer assigned to Africare has made an impressive start with some local gardeners. He is also experimenting with water lift systems and hand-augered wells in conjunction with LWR.

Africare's partner in this project is the Nigerien government. Except for Peace Corps, there are no other agencies formally affiliated directly with this program.

Africare, on an accelerated implementation schedule and subject to the vagaries of its funder, a bank failure and national politics, has concentrated on construction tasks at the expense of substantial community involvement. The well digging was done as rapidly as possible with both volunteer and paid labor. Workers on erosion control installations received food-for-work. It might be difficult to convince local citizens to continue on their own now that the project has only ideas and self-motivated and self-financed gardening opportunities to offer. As one American noted, this has been a technical success but not yet a development success.

### Innovations and Reseaux pour le Developpement (IRED)

It is Niger's good fortune that, when IRED decided to establish a field office for francophone countries, it named a Nigerien to head it. He set up the regional office in Niamey, giving Niger best access to its support services. Based in Switzerland, IRED is one of the leading international NGOs in the field of support to citizens' development organizations, especially in rural areas. They have held innumerable workshops and training sessions for

peasant groups and local NGOs around Africa and Asia, and have published the basic manuals in local institutional development.

Being a Nigerien, the IRED regional representative has been quite attentive to the developmental needs of emerging national NGOs. In addition to 'journées de réflexion' and other group events, IRED has advised many of the new Nigerian NGOs in their formation, registration and early growth pains. For instance, APRN has benefitted considerably from the technical and moral support provided by IRED staff.

As this study is focused on gardening, only brief mention of IRED's invaluable services can be justified. As more NGOs emerge to assist rural Nigeriens with gardening and many other activities, IRED's physical presence and assiduous assistance will be an important service to the whole NGO community.

### Winrock International

Winrock is a US-based research and implementation organization that has US PVO status. Although Winrock does not have its own gardening program in Niger, a Winrock expert in small scale irrigation has been working under the aegis of a USAID-funded project managed by Purdue University. Based out of the agricultural research center near Maradi, this Winrock expert has done considerable research on irrigation practices in Niger. He is about to publish a practical handbook on the subject, particularly describing the various choices the water lifting systems in various situations. This will be a useful contribution, as gardening projects are often undertaken by NGO personnel with little irrigation experience.

One of the Winrock researcher's observations after several years is that many times NGOs and PCVs encourage rural people to undertake gardening projects in situations where gardening is not likely to be viable. This is a question both of economics and technology. At a certain depth of aquifer, lifting the quantity of water that vegetables require on a daily basis in an arid sandy environment is unrewarding in Niger's economy. At twenty meters depth, economically viable water lifting systems for low cost gardening operations simply do not exist for Niger.

Winrock's researcher suggests a common sensical rule of thumb that NGOs should use to determine economic viability of gardening: calculate whether potential gardeners would earn a return on their labor and capital investment at least equal to the prevailing minimum wage expectations in their community. At less than that level, especially considering the risks of agriculture, most people would prefer to do manual labor. This formula assumes that such employment option is available.

Winrock's work does not call for direct involvement with communities. Nonetheless, their researcher has kept contact and exchanged ideas with a number of NGOs. He also has

assisted with Peace Corps training and is preparing the aforementioned manual for use by field practitioners.

During this study it was learned that an ambitious and potentially very useful Sahel regional project for support of small scale irrigation that Winrock had planned, had failed to attract major funding. It is hoped that some practical ways to maximize the distribution and use of data and analysis of the current research will be found.

### Peace Corps Volunteers

Peace Corps is not an NGO, in fact it is very definitely a US government agency. However, Peace Corps Volunteers working with PVOs and NGOs have played an important role in spreading gardening in Niger. Sometimes Peace Corps assigns volunteers to work in tandem with PVOs, as in the cases of CWS, LWR and Africare discussed above, even though the PCVs are almost always officially assigned to a government ministry. In such cases PCVs may function as extension agents or site foremen for the NGOs. This arrangement extends the NGOs' outreach and gives the volunteers a framework in which to work with the population.

Some times the collaboration between NGOs and PCVs is informal. For example, the LWR wells technician and his team have often helped volunteers arrange for garden wells. Winrock's assistance with PCV training was noted. Several volunteers received expert advice and encouragement from the staff of missionary groups that support agriculture such as the Christian Blind Mission. The volunteers' informal communications network moves ideas and innovations around the country, making them more readily available to NGOs and the communities they serve. Without a PCV in far eastern Goure, neither Africare nor the local population would be likely to experiment with hand-augered wells and with water lifting systems in cuvette gardening.

Another connection between Peace Corps and NGOs is the volunteers who go on to become NGO staff members. One example is the head of LWR's Africa desk in New York, who started as a volunteer in Niger and then worked on gardening for LWR here before moving up the ladder. The author of this study is another example of an exPCV from Niger who took his grassroots experience with him into a career with NGOs.

### Irrigated Wheat at Lake Madarounfa

If one were looking for a control group in the study of support to irrigated agriculture in Niger, the Madarounfa wheat growers would be prime candidates. From a few dozen small scale hand watered plots along a river bed near Lake Madarounfa that this researcher observed twenty years ago, the irrigated wheat fields have expanded to cover an estimated one hundred hectares. In addition to the main canal, forty secondary canals each water three to ten fields. Some fifty small motor pumps provide irrigation services on a rotating hire basis.

What makes this impressive development even more impressive is that there does not appear to have been any support by outside agencies. This subsidy-free, aid-free development was apparently spurred by the market force of a wheat mill across the border in Nigeria. With admirable candor, the Winrock irrigation researcher admitted not knowing of this huge development just twenty-five kilometers from his work center until very recently. It deserves careful study. If the wheat fields are as uncontaminated by outside organization and intervention as they appear, this would be a fertile opportunity to analyze the anatomy of an indigenous irrigation scheme.

### **III. Findings and Recommendations**

The data collected and analyzed in such a brief study as this one is necessarily anecdotal in character. No quantified assessment of gardening in Niger was identified by this study, and none that treat in detail the role of NGOs in this subsector. Several observations can be made, nonetheless.

Gardening, virtually unknown twenty years ago, now involves thousands of men, women and children in agriculture during a season when normally no crops are grown in most areas. It has improved the income and nutritional status of many, providing off-season rural employment and food security. Since dry season produce typically matures in the December to April period, it provides fresh vegetables long after rainfed produce has vanished from the markets.

In an agricultural system often considered to be tradition-bound and unreceptive to change, Nigerien farmers have significantly altered their farming systems. Even more dramatic in some ways is the adaption of intensive irrigated gardening by nomadic people who have customarily done little or no farming.

Gardening is no panacea for the environmental crisis of the Sahel, nor is it available to every region of Niger. It demands hard work on a unrelenting daily schedule of watering during a season customarily reserved for other tasks. In years of relatively good rainfed crop production, such as 1991, the number of gardens declines. Only in the most favored situations do people earn most of their living gardening. That said, gardening has become an integral part of overall survival strategies for uncounted Nigerien families.

#### NGOs' Impact on Gardening

What has been the contribution of NGOs to this quiet revolution? In many cases NGOs have been the leading force for the introduction of gardening. Since the early 1970s NGOs have continually experimented with technologies for gardening and have mounted gardening campaigns in areas that would otherwise never have had access to the investments and technical assistance to grow food in the dry season.

Anecdotal evidence of the impact of dry season agriculture abounds, like the hundreds of carrot sellers whose ambulatory marketing techniques mirror those of cola nut sellers. What agency, if any, helped launch the carrot growers' gardening efforts is impossible to trace. Even a few years after a successful project ends it is difficult to determine what agency participated. When asked, some gardeners recall the people who first introduced them to gardening and perhaps helped them with wells and equipment, but rarely is their institutional affiliation known.

What is more, the positive results of gardening support efforts are also not always a direct linear progression, as in most development work. More than one African has been heard

to say: we had a great school garden when I was a kid ... Whether that person ever gardens again, he or she knows it is there as an option for growing food in a hungry land. Years later, in retirement back in their own villages more than one former functionary has provided the impetus to start gardens and other productive projects.

Still, it is possible to point to some milestones. As water is usually the key constraint, wells provide one measure of gardening progress. NGOs are responsible for thousands of wells installed, 3000 PMB wells alone. Within a few years an even greater number of hand-augered ones are likely to be counted. The agencies that assisted local groups with literacy and leadership training have laid the groundwork for future economic activities as well.

### NGOs in Working Relationships

From the cases studied for this report, collaboration among PVO/NGOs is a striking success factor. APRN, Niger's first registered national NGO, would not exist except for the contributions of other NGOs, Canadian, American and European. In this case, as in most others, the assistance was not coordinated by any one contributing agency; rather, APRN's leader put it together from the existing possibilities.

In several variations, one can trace a cycle of collaborative or interactive development of new technologies in gardening. In generalized form, research and field trials lead to preliminary and then extensive dissemination, which identifies new issues or possibilities that, in turn, inform new priorities in research. Few agencies have the breadth of operations to complete the cycle alone. Even those that might not internally generate the perspective and objectivity provided by others. Winrock's findings on water needs and lifting devices is fed to NGOs and Peace Corps Volunteers to assist in project design and implementation, and these experiences point out areas for practical research.

Wells technology illustrates the cycle. Response to the need for inexpensive and long lasting garden wells produced the successful design and testing by LWR of the PMB wells. This led to massive dissemination efforts by other agencies, which helped demonstrate the great unmet need for an even less expensive alternative well construction method. This demand spurred the research and development of the tube well, also led by LWR. Several other agencies using the technology, notably Projet de Tarka, have made significant improvements on the LWR augering tools. This information must now get to other agencies also using the system. The advent and preliminary dissemination of this break through technology now propels the search for improved lifting systems, bringing new players such as ATI into the collaborative cycle. As in the case of APRN, not everybody knows who is or was involved, but together they form a serial chain of NGO-based collaboration with truly impressive results.

NGOs collaboration with gardeners has taken on many forms and so is hard to typify. One oft-cited success factor in rural development is borne out in the sites visited for this brief study, namely the importance of involving the would-be beneficiaries directly in project

activities. Africare now faces an uphill battle to reorient expectations of previously compensated project laborers toward self-motivated gardening efforts.

Perhaps the most critical observation of NGOs in terms of their relations with rural communities is that some do not use genuinely participatory approaches. Rushed by lack of time, ignorant of participatory methodologies, or overwhelmed by the difficulties of functioning in Niger's harsh environment, many seem to bypass this crucial step. This is especially necessary to reach outside the customary leadership. Simply working with the cheftancy and community notables of the typical patriarchal gerentocracy is an inadequate method for reaching marginalized classes or groups. Working with women, youth, displaced families, ethnic minorities requires time, patience and a commitment to developing self-reliant local organizations.

Niger's official control on institutional development, specifically the single option of state-controlled cooperatives, appears to have had a stifling effect on NGOs' creative approaches to helping build gardener service organizations. For example, unlike other countries of the Sahel, one does not hear about dynamic women's groups undertaking impressive economic activities in gardening or other productive endeavors. While NGOs have seemingly tried hard to make the cooperative structure work for gardeners, it had not produced more than occasional success stories. Hopefully, as legal options open for organizing rural people, NGOs will have the skills to help gardeners and other rural producers rethink their economic relationships.

### The Future of NGOs in Gardening

There seems little reason to doubt that NGOs will continue to support gardening in Niger. Many grain deficit areas, such eastern Zinder departement and the Diffa departement have significant under-exploited gardening potential.

Among the difficulties facing NGOs in gardening as in many other sectors of activity, is the limitations set by their donors. Of the few cases studied, at least two are seriously hampered from future progress in their activities because of funding problems. Increasing PVO/NGO dependence on bilateral donors means that PVO/NGOs are often little more than contractors to carry out projects designed by one donor agency or another. If they are not able to balance financial sources, PVO/NGOs find themselves and their programs captives of their funders.

New Nigerien NGOs pose a real challenge in the furtherance of gardening. On the one hand, they are needy and will require significant institutional assistance for some time to come. On the other hand, they represent a potential flowering of new opportunities for reaching rural people and even for expanding the pluralism in society as a whole. While ICED and SCS are actively aiding emerging NGOs, this researcher did not learn of any comprehensive partnership initiatives from the US PVO community. Given the key role that US PVOs have played in the

development of the NGO movements in other Sahelian countries, this appears to be an unanswered opportunity.

One of the most bedeviling questions for NGO support of gardening in Niger is when to quit: how to know when sustainability has been reached. Volumes have been written on this subject, but for this report sustainability might be considered on a simplified basis of three or four tiers. On the first tier is the direct sustainability of the gardens themselves, i.e., have people opted to continue this activity after NGO support ends. On this level it appears many NGO gardening activities have been successful indeed.

A somewhat more demanding definition of sustainable is whether local populations have been willing and/or able to expand these activities when additional investments are required on their part. Here the results are more mixed. For example, LWR and APRN have frequently given gardening communities a set of brick well molds, access to the PMB molds and on-the-job training to dig more garden wells. However, in many places this opportunity to supply water for new gardens was not used.

On an institutional level is the issue of whether NGOs have been able to inspire or empower national organizations to carry on their work. In the area of well digging the refusal of the government's well service, OFEDES, to consider alternatives to its own very expensive cement well system is a blockage that continues after more than two decades. Outside of government, APRN represents a bright spot in the PMB wells system. The expanding adoption of the tube well system augers well for that technology's continued development. For gardening in general, one can only imagine that newly emerging NGOs will respond to community demand for assistance in this subsector.

A final level of sustainability would be if gardening support activities were completely in the hands of the private sector, i.e., if well construction, fencing supplies and seeds were offered and distributed by market forces without subsidies. This seems a long way off in Niger for a host of reasons. For one thing the infrastructure costs of preparing a site for gardening and supplying irrigation water will only be rewarding on a strictly commercial basis in a few highly favored situations. An absolute application of these goals may never be possible in arid lands, as illustrated by developed capitalist countries' agricultural policies in Israel and the western US.

Another obstacle in Niger is the paucity of the entire private sector, including retailing of merchandise. Essential items, such as the plastic pipe for hand-augered wells, are not sold in Niger at prices that make the technology affordable, so they must be imported from Abidjan by the whole truckload. LWR has done this for everyone's benefit and some other agency must now pick up this responsibility. A private, for-profit well augering team, such as Projet Danois has set up near Zinder, could not function without an NGO or other non-commercial entity assuring pipe supply at reasonable prices. Early remedies for such private sector lacuna seem unlikely.

## Recommendations

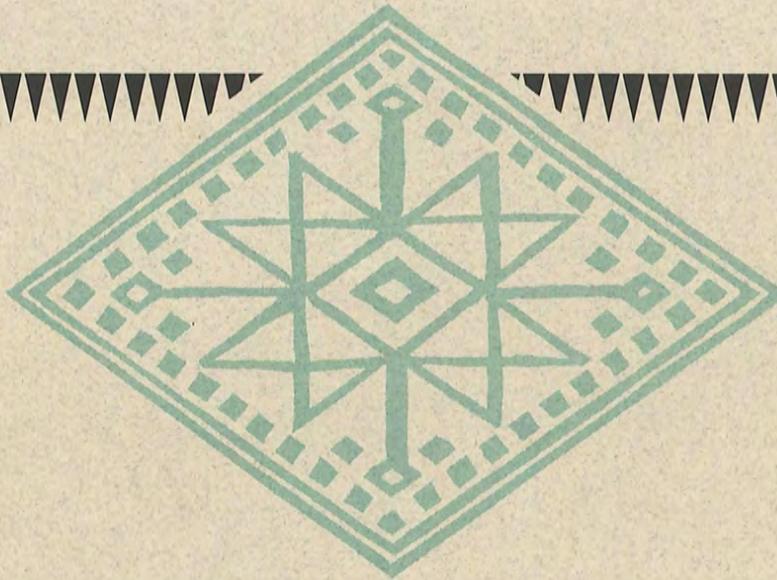
It is worth repeating the caveat that this study in its brevity is but a snapshot of selected pieces of long standing NGO support for gardening. These recommendations are offered as food for thought much more than specific steps to be followed.

1. The case of Madarounfa wheat growers working without external assistance merits thorough study by all who would understand and support irrigated agriculture. Land tenure, organization for communal tasks, sharing of pumps, integration into rainfed farming systems, and the economics of this experience all demand intensive scrutiny. Amid numerous large and small irrigation projects receiving outside support, Madarounfa is a veritable control group of self-organized, un-aided Nigeriens.
2. Continuity of technological development and dissemination of hand-augered well and appropriate water lifting systems is essential, given LWR's imminent reduction of activity in this area of gardening support. NGOs and donors alike have a stake in continuing the research and capitalizing on this promising low cost technology.
3. Market glut for garden produce during peak periods of production point to the need for experimentation and dissemination of season extending technologies, storage methods and food processing. Studying the methods of peri-urban gardeners who have greatly expanding the period of availability for local produce may uncover techniques that can be generalized.
4. Marketing research and development is an area of future activity. USAID plans to invest in agricultural marketing for onions and other major crops on a West Africa regional basis. NGOs have a lot to learn about the cross-border trade with Nigeria which is growing rapidly.
5. The environmental impact of gardening is an area for more concerted action. Where ever possible gardens should take on a more permanent character. Intensive development of live fencing could reduce the cutting of wood material for annual fence-building. Windbreaks and shade trees help create microclimates and reduce watering requirements. Combinations of gardening and tree nurseries might be promoted more.
6. Tenure for gardens, especially as they take on a more permanent character with trees and live fencing, deserves more attention. This under-studied issue is of particular concern for women with their customarily limited access to good land.
7. One seemingly neglected area of gardening support is seed sourcing and distribution. Many NGOs reportedly buy seeds from France or other temperate zone countries, despite the fact that more adapted seed sources exist. Areas with long gardening experience like Guidimuni could be sources of seeds for Niger. Distribution and timely availability of seeds seem to be continuing problems in gardening support than coordinated action could remedy.

8. With legislation still unfinished on freedom of association and economic organization, it is premature to make specific recommendations. NGOs would do well to investigate the range and use of organizational relationships that have evolved by NGOs and rural gardeners in other countries such as Senegal, in order to be prepared to assist Nigeriens to understand options for various "groupements d'interet economique" when the opportunity does finally come.

9. PVOs and NGOs in Niger seem isolated from the dynamic evolution of the NGO movement in other Sahelian countries. To cite one example, inter-agency PVO-NGO partnerships which are an integral part of PVO/NGO funding under the USAID umbrella project in Mali are rare in Niger. Niger's retardedness in adopting participatory methodologies, if this observation is accurate, is also in need of attention. The pioneering work in Senegal on adapting rapid rural appraisal approaches into the Methode Acceleree de Recherche Participative could well be transferred to NGOs in Niger. The concomitant improvement that one hopes exposure to this methodology would bring is a vastly increased focus by PVO/NGOs on marginalized people, starting with Nigerien women.

10. Donors as well as PVO/NGOs need to value local participation, institution building and women's equitable involvement as essential components in re-constructing a more free and pluralistic society at all levels. Beyond their traditional concerns for fiscal accountability and measurable outputs, donors should encourage their PVO/NGOs partners use methodologies that strengthen self-reliant institutions, and that they include women as full participants and beneficiaries.



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