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BOIS DE VILLAGES (NIGER)

Centre File 3-P-72-0093

Report of an Investigation Concerning  
Socio-Cultural and Political-Economic  
Aspects of the First Phase of the Project

and

Design Recommendations  
for a Possible Second Phase

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## S U M M A R Y

Two weeks' field investigation of IDRC village woodlots in the "3M" Arrondissements of Zinder Department supports three conclusions.

First, villagers express substantial and sharpening interest in reforestation. But thus far, IDRC project 3-P-72-0093 has barely tapped it.

Second, this failure flows partially from poor performance in the project's research component. Technically feasible reforestation packages - species and planting techniques adapted to facilitate rapid wood production in the local sahelien environment - were to have been developed. To date they have not been. Selective protection of natural regeneration remains probably the most productive reforestation strategy. Peasants have known about this for years; many would like new information.

Third, effective local participation in reforestation has been throttled by exclusive reliance in the IDRC project on a community woodlot system, ill-suited in the local socio-political context to serve as a vehicle for reforestation efforts powered and sustained by local people. Family woodlots offer more tangible incentives for participation and should be vigorously advocated.

Nigerien Forest Service personnel at the arrondissement, departmental and national levels agree with the first two conclusions, which are based on comments of area villagers. The third conclusion appears somewhat more controversial, but Nigerien foresters

recognize difficulties plaguing community action as a means to reforestation. At the national level, willingness to reorient the program during a second phase to a family-based operation emphasizing research gains appears firm.

Almost to a man rural residents interviewed want to move towards family-based forestry because they see privatization of the Woodstock as the condition necessary to justify their investment of time, energy and funds in sustained yield management. While they express a less succinct view of desirability of research, technical feasibility is a hot issue. IDRC woodlot performance generally suffers in critical comparison with villagers' success in managing natural regeneration and raising trees in their own compounds. Stunted neems in failed woodlots don't interest peasants. Many, however, would eagerly adopt cheap, effective, productive reforestation strategies if they stood to benefit by them.

Three conditions will govern second-phase success:

- (a) The project's geographical domain must be pared down from a three-arrondissement operation to one concentrating on a small number of villages grouped in a restricted area of a single arrondissement (probably Matameye).
- (b) A Nigerien forester having both field experience and research training must be assigned as full-time resident project director.
- (c) Local relaxation of the national forestry code currently in force must be authorized to permit establishment of

firm individual (family) property rights in all trees  
- planted seedlings and protected natural regeneration -  
on family lands, at least within the project area.

Assuming these conditions can be met a second phase appears highly desirable. It might well lead to productive advances, both in technical sahelien forestry matters and in defining terms of political and legal feasibility for self-help) reforestation strategies potentially replicable in similar sahelien environments.

This assessment of the IDRC village woodlot project (Hois de Villages /Niger\_/ Centre File 3-P-72-0093) in the Mirriah, Magaria, Matameye - "3M" - Arrondissements of Zinder Department includes five parts: (1) introduction, (2) background issues, (3) a series of questions and responses concerning various social, economic, environmental and political aspects of the project as they bear on its success, (4) conclusions and (5) a series of recommendations about design elements to be included in a possible second phase of the project.

### Introduction

Terms of reference guiding the investigation stipulate four goals:

- (1) identify main factors influencing project results;
- (2) describe specific obstacles to be overcome and action required to obtain better results in similar projects;
- (3) describe possible alternative wood production systems (emphasizing poles and fuelwood) feasible within the context of local farming systems; and
- (4) describe land tenure systems and land use pattern? in relation to community forestry activities with special reference to determining how much land village communities and individuals are prepared to devote to tree planting in relation to increasing need for food production.

Technical aspects of the project were investigated and are being assessed in a separate report to be submitted by Mr. Abul Gasim Self el Din of the IDRC forestry division/Nairobi.

## Field Investigation

Field investigations were conducted in Niger from November 16 through December 4. Most of this nineteen-day period was spent interviewing project area foresters and villagers. Discussions in Niamey before and after field work with M. Alio HAMIDIL, then Acting Director of the Forest Service, took two days, as did the Niamey-Zinder round-trip by car. Mr. Seif el Din joined the writer in Zinder on November 26 and returned with him to Niamey on December 2.

The author of this report has spent a total of four years in the "3M" area, first as a volunteer in the national adult literacy program and then as a field researcher investigating various aspects of rural development. He speaks fluent Hausa and has conducted all field investigations since 1971 in that language.

For this consultancy the author visited twelve of the 59 woodlot villages, four alone, seven accompanied by Forest Service chauffeurs (three of those together with Mr. Seif el Din) and one accompanied by the Magaria Arrondissement forester. In each village public interviews were conducted with villagers. Whenever possible, the headman was included in these discussions.

The author also employed one of his research assistants, a Hausa native of Mirriah Arrondissement, to conduct investigation in some twenty other villages. In each village the assistant discussed the woodlot operation with local notables, usually the village headman, often a relative; they had typically participated

in creating the woodlots. While his investigations were less public, complete and searching than the author's, his conclusions on a number of issues closely parallel those" reached by the writer and so tend to confirm their accuracy.

### Background Issues

#### Population Pressure and Soil Fertility

Population pressure is high and growing. The fragile local sahelien environment can no longer adequately support human and animal populations trying to exist there. Out-migration has become relatively standard strategy, especially among those younger people who can no longer find places on family homesteads. Most of these migrants go south to the cities of Nigeria, or to rural areas to work as hired farm labor. Reserves of arable bush land east of Zinder have steadily shrunk. Few peasants now consider colonization on the eastern marches feasible.

Despite out-migration (or perhaps because opportunities for same are also shrinking) , enough people remain behind to overwork and destroy the land. In the canton best known to the writer - site of two Mirriah Arrondissement IDRC woodlot projects, both miserable failures - bush land has now been almost totally exhausted. Some farmers still hold enough land to effectively reconstitute soil fertility by periodic fallowing, but they are rare. Most "3M" peasants feel the pinch of shrinking soil fertility more each year. Everyone recognizes fallowing is failing. Richer farmers are going to chemical fertilizers.

a strategy generally agreed to be high gain but risky: when rainfall is inadequate to disperse the chemicals, crop roots burn, reducing harvests and leaving the peasant to pay both his fertilizer and his family food bills.

#### Land Tenure

Local land tenure law conforms generally to rules of the Islamic Maliki school. In the simplest situations these prescribe sex-based division of land at the owner's death. Surviving sons inherit a full share, daughters a half share. Women's shares are often farmed by close male relatives since marriage is patrilocal and women frequently live their productive years away from their natal communities. As population grows, this particular set of land tenure rules tends to micronize holdings. If family lands become too small trees become dispensable in a short-term battle to wrest enough food from the land this year. Prospects for reforestation are impaired.

Increasingly young men request and receive land inheritance before their fathers die; They set up their own households and farm separately, making all decisions concerning production activities within the unit.

Average family size has shrunk noticeably over the past forty to fifty years in the project area. Several factors contribute to this development. Most important was the period of relative prosperity from 1951-68. Peanut cash-cropping boomed during these years, and many young men struck out on their own as independent entrepreneurs. During the drought of the early

and middle seventies, many of these smaller households suffered considerable hardship. Today they continue to lead a risky existence. If any of the adults (husband and one to a normal absolute maximum of three wives) fall sick during a critical production period in the growing season (June-September); crops suffer initially and the family later. Security once offered by the old extended family system often no longer exists as a "natural" element of kinship in these cases, although the indisposed often do make it with a little help from their friends.

Many household units may be labor short during peak production periods and unable to devote much effort to wood growing. Therefore any technical advances or common sense tricks which shift the burden of wood production to other seasons offer clear advantages in reducing the opportunity cost of reforestation. In this context note that many local adults, particularly men, leave villages where they farm during the summer rains for extended periods during the intervening dry seasons. Whether collective or family-based, wood production schemes requiring year-round residence will therefore strike many people as unattractive. Collective action units could overcome this difficulty by assessing absentees the monetary equivalent of their labor input but, as will now be suggested, such units do not flourish in the area.

#### Political Relationships

Since the founding of a Muslim kingdom in the "3M" area about 1800, villages there have been ruled by a succession of

formally centralized governments. From the pre-colonial Damagaram state through French colonial military and civilian governments to the independent civilian regime, these overriding political units have been increasingly hostile to local autonomy and initiative. Village collective action capability is meager. Despite some relevant differences between the larger cantons of Magaria and Matameye Arrondissements (the latter coterminous with the boundaries of a single canton, ruled by a still powerful canton chief, ex-minister of the civilian government) and the much smaller and more numerous cantonal units of Mirriah Arrondissement, "self-help" projects happen in the "3M" area as a rule because they are imposed by government officials. Villagers rarely come together spontaneously to engage in collective action.

Difficulties experienced by the UNCC quasi-cooperative movement, government-inspired, since its local inception in 1962, and by the cooperative assembly system which has since been piggy-backed on the original structure, strongly suggest those who rely on autonomous collective action as a mechanism for development projects, including resource management projects, build on risky footing. Nonetheless, there may be good reasons for doing so. The military regime's current proposals for a new era of village autonomy in the context of a projected "Société de Développement" reflect concern to decentralize power. For the policy to succeed, institutions capable of using power must exist locally. At the moment they do not. If they did, a

number of problems now hampering local renewable resource management efforts might be more easily overcome.

#### Collective Organization Problems

In a community woodlot scheme, Mi's failure, for whatever reason, to participate when he should threatens continuation of the project unless other participants have a way of sanctioning his failure to appear (reducing his eventual share, or forcing him to pay his part of production costs in some way). Unless this is possible, others involved in the project are soon led to withdraw their own efforts - to avoid being suckered by the "freeriders" - and the project fails for lack of effective participation. In the "3M" area effective local control mechanisms cannot be assumed to exist a priori. The presumption must rather be that they do not exist. The burden of proof lies on those who wish to use them to demonstrate the contrary in any particular community.

The advantage of family- or individual-based reforestation efforts is simply that they avoid these difficulties of interdependence. Encouraging individual households to engage in tree production when and where they will reduces costs of interdependence. If Ali falls sick he may simply not plant; but his failure does not impinge in any obvious way on Abdu's wood production efforts. The latter's returns to investment will be little affected by Ali's failure to reforest-his own land. In light of the unpredictable ways in which rainfall patterns, kinship obligations and professional activities affect

the lives (and production schedules) of residents of the same community, this sort of independence seems highly desirable in a wood production scheme.

Other comments seem pertinent here. So long as total demand for seedlings remains roughly predictable, even though it emanate from the uncoordinated reforestation efforts of individual family units rather than from the planned development of a new increment of community woodlot, mini-nurseries are viable operations. It makes no difference in the end if Ali or Abdu buys the stock so long as the nurseryman can apportion seedling production to effective demand. Existence of private nurseries in several villages not even associated with the TDKC project suggests seedling production is feasible locally. The new Forest Service mini-nursery program may help spread nursery skills more widely.

Risks involved in opting for an individually- or family-based wood production scheme exist but seem on balance less than those currently burdening communal woodlot operations. Families who are poor, or wood-poor when the project begins may find themselves unable to keep up or catch up. They may be unable to supply their own wood needs from family property. Those who are more secure and better able to devote additional effort to wood production may eventually be in position to exploit poorer neighbors' vulnerability. Weighed against this must be gains from greater flexibility and independent individual efforts at reforestation/wood production in a context of weak local

government structures and uncertain personal schedules. These frequently combine to undermine collective woodlot attempts. Overall efficacy of reforestation actions will be predictably much higher in this context when based on individual or family units rather than on collective units. Greater wood production means potentially greater supply and potentially more suppliers, which in the end should combine to drive down the price of wood to those who need it.

### Questions and Answers

#### Land Tenure and Tree Tenure

Two forms of land tenure occur in the "3M" area.

Hausa land tenure. Farmers live in a central village community. Original settlers tend to occupy the best fields, located closest to the residential center. These fields are heavily fertilized by night soil and by stock droppings deposited as village animals move to and from grazing areas during the dry season. Close-in fields can also be most easily fertilised with compound sweepings and droppings from animals tethered in or just outside compounds.

A second ring of fields, in the past farmed less frequently and fallowed more often, lies further out from the town center. Original settlers usually have some lands here. Villagers who joined the community at a later date usually do as well.

A third and final ring of fields, previously opened occasionally in the area of bush separating each village from neighboring communities and fallowed during long intervening

periods, are now usually owned by late comers to the community. These fields typically receive the least fertilizer and are hardest to regenerate once fallowing ceases. Most villagers interviewed indicated free bush was gone for good. Many villages in all three arrondissements apparently do not even have much fallow land anymore. Those which do are operating on an extremely short - three-to-five year - fallowing cycle.

The typical pattern of "Hausa" land tenure (which may be adopted by Hausa, Bugaaje ex-serfs of the Tuareg nomads, and partially or totally sedentarized /"House"/ Fulani, as well as by Barebari in the Zinder area) reflects a strategy of risk-spreading. It also embodies an attempt to include in family lands the variety of different soil conditions best suited to the particular range of crops produced in the area. A householder wants bottomland for gardening and a variety of upland dune soils for *peanuts*, millet and sorghum. Usually the upland fields will be spread out in several directions from the village, rather than grouped in a single block. This placement of fields somewhat reduces risk of crop failure by parrying very irregular and unpredictable rainfall patterns. A farmer may see his crops fail in fields on one side of his village while on the other, plants do well. Late-comers to the community often cannot adopt this strategy because sufficient land is no longer available when they take up residence. Nonetheless it remains an ideal.

Buyaje land tenure. Each family lives on its own field in easily moveable huts. Fields are arranged in long parallel

strips. Five, ten, twenty, sometimes fifty or more families align their compounds in a row perpendicular to the long sides of their rectangular fields. The line of compounds divides all the fields in the same unit, or village quarter, into a cultivated section in front of the compounds and a fallowed area behind them. Family livestock pasture in the latter during the summer growing season. Just before each rainy season houses are moved fifty to one hundred yards further into the fallow. A new area of field, heavily fertilized by droppings of family livestock, tethered nightly next to the compound, is put under cultivation. An equivalent area is fallowed at the other end of the cultivated section. This oscillation - a full rotation may take as much as fifty years to complete - is extremely useful from a reforestation perspective for two reasons.

- (1) It permits the Bugaaaje to more easily patrol their fields. In those villages where a common law of wood ownership has arisen, unauthorized cutting or collecting of wood (or crop residues, or manure, as the case and the law may be) can be more easily controlled and prohibited.
- (2) Since compounds are moved annually, a farmer interested in reforesting his field can start at least one or two seedlings at home each year. Planting in the family wash area assures waste water irrigation through the first dry season. Such trees, planted in the heavily fertilized compound areas, can be expected to do well.

Once large enough to escape livestock pressure, they should mature on their own.

Variations of Bugaaje land tenure are practiced by some Fulani and some Hausa. Annual or bi-annual moves occur within boundaries of a circular (rather than extremely elongated) field. Field owners practice the same sort of fertilization technique, in conjunction with annual moves. Thus the same easy irrigation of seedlings is possible. Surveillance of the field is, if anything, even easier than among the Bugaaje.

On-field residence (Bugaaje types of land tenure) coupled with annual moves makes both surveillance of trees and irrigation of first-year seedlings practically effortless. By contrast, residence located at the center of concentric rings of village fields (Hausa types of land tenure), many of which are far removed from the village, makes both irrigation and surveillance difficult. Informal policing is even more unlikely since villagers have no reason to visit fields from harvest end to the time fields are prepared again for planting. However, trees planted in central village compounds do quite well: constant access to adequate fertilizer and waste water from household uses assures rapid growth. /Go to p. 15bis./

#### Project Presentation at the Village Level

It proved difficult to establish the tenor and tone of project presentation in woodlot villages. Current understandings of project goals in almost all communities suggest preparation

Tree tenure

National forestry code. The code embodies formal forestry regulations in Niger. It conforms to the colonial French model. It recognizes "traditional use rights" but subordinates them to national forestry policy concerns. Fifteen protected species, classified during the colonial era, are off limits if live to peasants seeking wood. In theory, if no other species are locally available they are automatically authorized to trim necessary wood or even fell standing live timber. In practice they are frequently sanctioned by forestry agents for "violating the code" when they take such action.

A consequence of the code is that it leaves trees without effective ownership, and therefore without effective protection. The Forest Service is understaffed; agents cannot effectively patrol all the territory they have the responsibility of policing. Most trees, most of the time are simply part of an unregulated common property woodstock. Since anybody can cut where he wishes, at least in the worst of situations which exist in the "3M" area, nobody has an incentive to produce.

Common law of tree tenure. As the woodstock shrinks and wood takes on value a vague form of property right in trees has emerged in many communities. This parallels developments concerning crop residues and manure. Ten years ago in most "3M" area communities crop residues and manure, though to a

lesser extent, were free goods. They could be claimed by anyone willing to bend over and gather them. Even then women collected millet stalks at harvest time to fuel their fires. Those who wanted to stock peanut and cowpea vines - a rare few - were at liberty to do so. Presently, both manure and crop residues are widely recognized as private goods, in the case of crop residues at least until well after the harvest is over, and manure perpetually. Reduction of pasturage has forced livestock owners to provide for their animals by stockpiling fodder; the latter has become a scarce commodity. Since it is valuable, it has become privatized.

In many villages, people report women collect fuelwood where they can. In others, however, people are beginning to defend their trees, particularly dead trees which represent substantial supplies of wood in an area where shortages are more and more a daily reality. As noted, below, pp. 27-29, some villagers have begun to resist professional wood cutters unless they receive a share of the felled wood. In the past, others tried to protect trees from outside cutters by Quranic oaths. Both of these practices reflect a significant and intense desire to protect trees in the field.

In some communities the writer was told any tree allowed to grow in a field and somehow marked (fenced, trimmed, etc.) would now normally be treated as protected private property. Other villages have apparently not yet arrived at this point of informal privatization, and people still cut wood where they will. The only deterrent here is the risk that cutting will be detected and sanctioned by forestry guards as a violation of the national

code.

In light of the above it appears fair to conclude that, were the national forestry code changed to make field owners proprietors of trees growing on their lands, whether planted or natural regeneration, most villages would either develop or reinforce the kind of (very) informal policing which now exists in some localities. At that point, investment in wood production would become a much more reasonable operation than it now is. /return to p. 15, "Project Presentation at the Village Level./

was inadequate in the sense that villagers do not clearly believe they own the wood. The three Arrondissement foresters involved in project implementation say they told villagers trees would belong to them. In Matameye some community visits initially involved participation by Animation agents, who are responsible for generalized extension and mobilization work.

In a majority of locales visited by both the author and his research assistant, villagers understood woodlots were being planted because wood was becoming critically short in supply. Many interviewed admitted they had been told the trees would be theirs. Few - residents of one or two villages at most, one of which had a long history of involvement with Animation efforts and had hosted a series of outside agents since the mid-1960's - seem convinced wood will be distributed free to them when it is ready for harvesting. Most think the wood belongs to the forester, who controls the woodlot, and believe they have no say over distribution. They hope (a) they will get it free and failing that, (b) that they will be given first option to buy. Many professed resignation when confronted by the author with the hypothetical suggestion that the wood might be harvested and sold in nearby regional centers.

This set of beliefs : concerning ownership and control are subject to revision in the event that trees are harvested and distributed according to original promises. They may well be, but thus far no lots have matured to the point where distribution formulae might be discussed and put to the test. Monsieur OUATTARA Yahia, before his recent retirement as Zinder Departmental Forester,

arranged with the Matameye Subprefect that Animation agents, not Forest Service personnel, would handle distribution. This seems an entirely appropriate procedure. If it is adfyere\$ to, peasants' conception of who owns what in the woodlots might begin to change.

#### Site Selection

Site selection is a delicate issue. It invokes cession by a single individual or a few persons of land they are Ipathe to let go. The community benefits; the donors resign themselves to the loss. Villagers typically reported they were asked whether they wanted a village woodlot (termed "government: woodlot" in Hausa, and so called by most villagers), Most replied affirmatively. It is difficult to determine whether they felt compelled to do so or were really interested in having wood. But since such projects usually occur at government initiative (cf. supra, p. 9) it is probable that the villager in Angoal Talba, MIR, spoke for many in the project when he said:

Since the Government says so, we want it.  
Whatever the modern thing is, we have to  
follow it.

Others were clearly more enthusiastic, but they appeared to represent a minority opinion. Note here that the foresters found themselves in a bind as well as the villagers: once the latter expressed willingness to have a communal woodlot, land had to be found somewhere. Since they had village and hectare quotas to

fulfill on an annual basis, foresters were unlikely to release villagers from a statement of acceptance once they had obtained it.

In most cases after consultation with the foresters the village chief or close relative(s) surrendered land to be used in the project. There was clearly no explicit written agreement covering the transaction. Most donors felt they had given the land. Several hoped they would be allowed to reclaim it once trees had been harvested. In a few cases, particularly in Mirriah Arrondissement, woodlots were sited in village commons. Terribly degraded plant cover reflects the poor condition of these sites. The obvious advantage of such a selection from all viewpoints is that nobody directly loses very much.

#### Work Force Mobilization

Once the decision to establish the woodlot had been taken, foresters typically set a date for site surveying. In most communities a combination of older men and youth then turned out over a series of workdays. These typically ran from May through the end of the first growing season. They included separate days for plot surveying and hole siting, excavation, fence construction, planting, replanting and one or two days of cultivation during the first year. In the second and sometimes in the third year plot cultivation and replanting again occurred on a communal basis.

Most villages reported they had been given small amounts of pocket money - what Hausa refer to as "kola nut money".

Most took it as a gesture of thanks on the foresters' part, for having participated in work the foresters wanted done. A few carping complaints were voiced about the small amount of the "wages" - at best about half the going rate for field labor at the time plantations were established. Frequently it was noted that foresters had kept meticulous records of who participated and how much. Rewards were distributed in line with participants' efforts, according to most villagers:

Foresters disagree about the advisability of paying villagers for participation. At the time the project was launched, according to Monsieur OUATTARA, then Zinder Department Forester, the point was debated. No consensus was reached; in the end they split the difference between no wages and regular rates and paid half the going rate.

In one case peasants tried, during this period of close association with the foresters (who are normally viewed with wary reticence by locals) to bribe them for permission to trim *Acacia albida* branches. They wished to use the latter in fencing their own gardens. A total of 5,000 FCFA was collected and given to the foresters. They accepted the money but refused to grant permission.

It would be fair to say that, while work parties were organized\* by village headmen or their deputies, peasants clearly considered foresters as project overseers. They participated because it was clear foresters desired them to do so, not because village headmen asked for their participation autonomously.

### Woodlot Materials

Almost without exception the Forest Service supplied all materials used in the project. In all villages the author visited, barbed wire, chicken wire, fence posts and attaching wire had been delivered by foresters in Service vehicles. Monsieur OUATTARA Yahia observed that an attempt had been made early on in MATAMEYE Arrondissement to enclose a plot using indigenous materials. The effort failed when villagers were unable to find adequate thorn supplies, he said. Furthermore, he asserted, goats will devour thorns once they dry out.

So long as the existing forestry code is enforced in its current form, local materials probably will not suffice: Acacia thorn species are reasonably plentiful in the region and could be trimmed (indeed, are) for fencing. But many of the Acacias are protected. Peasants are understandably reluctant to use them when the evidence of illegal cutting must be left in so conspicuous a place as a garden enclosure.

That villagers contributed virtually nothing by way of materials confirmed their belief that the "Government woodlots" indeed belonged to the Government/Forest Service. Since all seedlings planted also came from Forest Service nurseries, and were planted under foresters' supervision, villagers could make no claim to owning woodlot trees on grounds they had originally established ownership by purchasing them from the Forest Service.

## Seedling Delivery Schedules and Planting Supervision

Most villages reported preparation of woodlot sites took place in the last four to six weeks before the rains. Planting occurred once the rainy season was well established. Potted seedlings were uniformly provided by the Forest Service. According to villagers, most seedlings planted were neem, but varying amounts of *Adansonia digitata*, *Acacia scorpioides* and *Acacia senegal* were also used, as was *Eucalyptus*. In all cases, foresters supervised planting. They indicated spacing, hole depth, etc., as well as directing site measurement. Most villagers interviewed by the research assistant said they fully understood how to plant the seedlings.

In many cases villagers also reported they had been told to cultivate cowpeas or peanuts (but not millet or sorghum) in the plots during the first several years. Replanting during the first and subsequent years occurred only under the direction of forestry agents.

In a number of cases land allocated to wood production was cultivated during the first year or two by the previous owners. In accord with foresters' instructions, only peanuts and cowpeas were planted.

If the woodlot land belonged to a single owner he often farmed only part of it, and ignored foresters' instructions to enlist other villagers as co-cultivators. Having already suffered a land loss to the project for the public good, most owners showed no interest in conferring upon other villagers

the special benefit of cultivating rights in woodlot land they could not themselves plant. Such behavior reflects accurately the degree of individualism currently prevalent in Hausa villages of this area.

Several Matamaye communities reported to the research assistant that the village youth association - the Samariya - had undertaken to hoe the woodlot during the second year, presumably at the behest of the village headman.

#### Enclosure Maintenance and Woodlot Protection

In a number of communities visited by the research assistant village headmen admitted they had been given responsibility by the forester for fence maintenance. In his own interviews the writer encountered a few headmen who admitted this responsibility. Most argued however that nobody had been appointed and felt it was a Forest Service responsibility. If convoked to repair the fence they indicated they would. One man, who had given a good deal of his field close to the village for woodlot purposes, said he would have guarded the plot since it was so close, but he hadn't been asked. Nobody reported appointing a guard. In one or two cases villagers had undertaken repairs apparently on their own initiative. This was a rare event, however. In many more cases, when -but only when - the forester ordered and supervised repairs they were accomplished.

Regarding maintenance people repeatedly argued that the forester controlled the woodlot. They vigorously defended their

own lack of initiative in caring for the woodlot (fence maintenance, cultivation, tree trimming and thinning):

Suppose we were to go in there and do something without being told. Then the forester comes along, sees the work hasn't been done properly, and asks who told us to do it. We'd be embarrassed, wouldn't we? (The word kumya, Hausa for "embarrassment", connotes violation of a culturally-imposed norm of deference to one's superiors in many cases. This is the sense of embarrassment as used here.)

This reasoning may represent a culturally acceptable way of excusing unwillingness to sacrifice for the common good. But it may express a real concern about antagonizing foresters. The latter appears the more probable explanation: foresters after all have ways of making life very miserable for peasants. If peasants demonstrate strict deference to officials' authority by erring on the side of inertia, the latter at least cannot fault them for getting out of line.

Several community spokesmen asserted they could run woodlots if authorized to. In some villages, selected natural regeneration on fields is clearly promoted (Dala Koleram, MIR; Yardawa, MAG; etc.). Since they are all practicing farmers there seems no reason to doubt peasants' competence to successfully handle the regular chores of woodlot maintenance, if they are actually interested in doing so. Motivation is however another issue entirely.

#### Distribution of Wood

Assuming wood actually reaches harvestable size in the

woodlots (Mr. Seif el Din has expressed serious doubt about this assumption in a number of instances where woodlot trees seemed seriously stunted) the consensus everywhere is that the forester will distribute it. At the very least he will be the one, villagers think, to say when it should be harvested and distributed. If he wanted to, as far as villagers are concerned he could unilaterally decide how it should be distributed. It is safe to say villagers would not risk challenging him.

In several communities, asked whether villagers if authorized could divide the wood among themselves people present agreed they could (Dadin Kowa, MAT; Angoal Gamji, MAG). The operative rule would clearly be an attempt to apportion proceeds to effort, at least if distribution were handled publicly. When asked if everybody would be given some, one village headman asked rhetorically:

When you've given a gayya (collective cultivation party on your own land) and it's time to feed the workers, do you invite those who didn't show to share in the porridge?

From the accompanying laughter it was obvious his remark made perfect sense to fellow villagers.

Several communities spontaneously volunteered in this context that they would not sell woodlot trees. They asserted wood would be distributed in kind to those entitled to a share. They needed the wood, they said. If woodlot production were sold and proceeds distributed among villagers, they would undoubtedly lose money on the deal because they would simply have to go back to market to buy wood!

Local Interest in  
Project Replication

Prospects for replication seem generally dim. In a number of Matameye Arrondissement villages, headmen and others interviewed by the research assistant asserted they would be interested in having another woodlot if it were to be made available on the same terms (outside financing, local work force, small amounts of money provided in exchange for labor). The incentive is obviously the probability of increasing the village's wood supply. However, these same men indicated nobody in the community - themselves very occasionally excepted - would be willing to provide land for another round of tree planting.

In villages the writer inspected the consensus concerning replication was: desirable but improbable because of land shortage. One village chief who had volunteered his land for the original woodlot indicated he would only give more if forced to. Village chiefs are typically expected to bear the brunt of unwelcome outside initiatives, but everyone admits there is a limit to how much they should be expected to suffer in the community's name.

Specific inquiries by both the writer and his assistant about the possibility of villagers clubbing together on their own to carry forward the process of reforestation/wood production through village woodlots, brought answers uniformly negative. The explanations again focused on land shortage. Occasionally lack of seedlings figured as a subsidiary problem.

Interest in individuals planting on their own fields varied with availability of other wood sources in the local area and perceived difficulty of reforestation on village lands. In a single case, recorded by the research assistant, a village chief indicated the system of village woodlots was preferable to in-field reforestation. His reason: fencing materials were available for the woodlot, but not for in-field plantings.

In a large number of villages the consensus was that some people at least would be prepared to buy seedlings, were they available, and plant them on their own land or in their compounds. In many villages there is already a history of such activity. Many villagers have bought neem trees or baobab trees to plant at home. In a number of localities people indicated interest in planting *Acacia albida*, *Parkia biglobosa* and *Adansonia reticulata* on their fields. Occasionally people said they would also plant neem in their fields, possibly as windbreaks. It appeared this idea had not been given much thought however.

A great many villagers say they now take care of trees which sprout naturally on their fields. Scrub varieties are systematically rooted out, but *Acacia albida* is usually spared and often trimmed - partially, no doubt, as a result of the forestry code provisions and Forest Service emphasis on preserving it, but also because most farmers in the "3M" area firmly desire this species on their fields. Others indicated they allowed other species to regenerate if they noticed there were few or no trees on their fields.

Villagers by and large express little interest in further woodlots if it means somebody is going to have to give up a block of land even though they are very interested in having more wood available on a sustained yield basis. Peasants seem generally interested in reforestation on their own fields, and would be more enthusiastic if assured trees belonged to them.

It should be reiterated here that villagers almost without exception desire change in the forestry code to vest ownership of trees in owners of the fields where they grow. Both the writer and his assistant systematically raised such a change as a hypothetical situation wherever they interviewed. Consensus favoring privatization of the woodstock was overwhelming.

However, villagers never volunteered to lobby for such a change. When specifically asked whether they thought they could ask the forester to work for privatization the consensus was just as overwhelming that they lacked the power - standing? - to do so. For villagers, forestry legislation is a state matter. Peasants live with the set of rules imposed. They will violate those rules with equanimity to get by, but will not openly challenge them. They are even reluctant to do so in the mild form of suggesting what appear to them to be appropriate changes.

The following illustrates the extent to which forestry legislation is an unquestioned state (Forest Service) prerogative. In a number of villages - Godo Haoussa, MAT; Angoal Gamji, MAG; Angoal Kaya, MIR (non-IDRC woodlot village) - people rather timidly inquired whether professional woodcutters who circulate

authorized to cut  
 felling dead trees for later sale are really authorized to cut  
 without permission on their fields. All three arrondissement  
 foresters say they tell woodcutters when issuing permits to  
 cut in "bush" areas, but not on peoples' fields unless they  
 obtain owners' permission. Woodcutters know they exceed the  
 bounds of permit authority when they cut without asking. In  
 other "3M" area villages they typically offer field owners  
 half shares in felled trees as compensation for permission to  
 cut and sell the other half. But in localities where this is  
 not yet established practice, woodcutters try to protect their  
 illegal advantage by telling peasants Forest Service permits  
 give them carte blanche to cut where they will.

Peasants see their fields being stripped of dead timber.  
 The wood brought down, if not cut, would eventually fall and  
 become available for home use. But villagers almost never  
 approach foresters to ask for clarification of their rights.  
 It appears almost certain they don't because they fear such  
 questions will be interpreted as challenging foresters'  
 prerogatives. That is a risk they are for the most part unwilling  
 to take.

Exceptions though rare exist. In Godo Haoussa, MAT, the  
 morning of our visit the headman had chased a woodcutter from  
 his field but not before the latter threatened him with dire  
 consequences for "thwarting the will of the foresters" The  
 headman stood his ground...but he, by his position, has a bit  
 more ground to stand on than most peasants. He knows the Matameye  
 forester, has helped create a village woodlot in his community

on land he donated, etc. Thus he can expect some consideration, even if his legal position were unsound. Most others, less well connected, simply watch the wood disappear. In the recent past, occasionally peasants resorted to supernatural sanctions invoked through a Quranic oath to protect their trees from woodsmen. A new Government decree has made that practice illegal, however, so it no longer exists as an alternative recourse.

#### Home Compound Reforestation

While Hausa village residential centers do not occupy vast expanses of territory casual observation in the "3M" area reveals that they produce a great deal of wood. Villagers are now very much in the habit of planting trees in their own compounds. Several incentives encourage this. First, the householder's property right in the tree is normally clear. Trees can be easily grown at home: irrigation with waste water is feasible, seedlings can be easily protected from livestock, and the soil is heavily fertilized. As a result, compound neems grow much more rapidly and strongly than do seedlings in field plantations. At home they provide desirable shade and the family can exploit the tree as it wishes for storage space, firewood and construction materials. In any future project a much greater effort could be made to encourage home forestry. Possibilities of in-village reforestation are by no means exhausted, and are also very promising by comparison with village woodlot productivity rates.

Two kinds of livestock graze over fields where woodlot or scatter-site tree plantations might be undertaken: local animals and those belonging to transhumant Fulani (Fulbe) and Bugaaje herders. The transhumant herders posed a severe control problem in the "3M" area until approximately four years ago. At that time, say local people, Fulani moved out of the "3M" region to pastures in other parts and have simply not returned. Perhaps this is a permanent shift, forced by the sharp reduction of grazing areas in the three arrondissements consequent on constant expansion of cultivated areas.

If Fulani are gone for good, herder-farmer tensions are likely to be more manageable, especially since most remaining livestock owners are also agriculturalists.

Inquiries in villages indicate some communities still employ local herders to control local livestock, while others let most animals wander and fend for themselves after the harvest. Cattle are the major exception to this rule: too valuable to run the risk of theft involved in free foraging.

Most villages find livestock control a serious problem even during the growing season, when livestock owners are legally bound either to tether their animals or to herd them in special pasture areas. Violations of this rule are frequent, and sanctions usually weak. In addition, many villagers are "embarrassed" (kumya) to bring a fellow villager to court, even if only before the village headman. Of those willing to take that step, most seek only a public warning addressed to the offending party, and stop

short of insisting on the insignificant compensation to which they are legally entitled. Very few complainants ever escalate animal damage cases out of the village to the canton or arrondissement level: typically damages are insufficient to justify the aggravation and outlays of time, money and energy.

Since effective rules concerning livestock control during the growing season shade to the laissez-faire side of the spectrum, it appears to most villagers highly unlikely that they could successfully mount effective dry-season regulation of livestock movements short of actually employing herders. Fencing seems a more feasible option for protecting reforestation efforts in the short run. Patrolling plantations might offer an alternative in some villages.

### How Much Land for Reforestation?

Woodlot communities are generally unwilling to devote more land to additional communal woodlots. Communities with common lands may form an exception to this tendency, but such land often appears too degraded for effective woodlot use. A few Matameye villages which were scheduled to have woodlots and then lost them through budget problems at project end, evidently have requested the Forest Service to honor its commitments. But in those villages, no woodlot exists as yet.

In project villages, somebody or some few usually have to sacrifice a substantial portion of family land for woodlot locations. No mechanisms exist to compensate expropriated peasants. Thus one or a few must suffer if the town is to enjoy collective public goods associated with a community woodlot. Solutions to this problem could evidently be devised but so far have not been. Without them people hesitate to make some suffer for the good of all, particularly because it is unclear which people will suffer. The village headman is certainly a likely candidate but the site may not be limited to his land alone.

Residents of woodlot communities and of other villages as well seem interested in devoting more land on an individual basis to reforestation. But how much land they will put into trees is unclear, and for good reason. Trade-offs and complementarities of food versus wood production remain unclear to many. *Acacia albida* has a good reputation as a soil regenerator in most project localities. Other species are prized or despised

for other reasons. IDRC/Nigerien Forest Service research in a second phase might well reveal new effective and productive relationships between specific species and good harvests. Technical advances in planting or promotion of appropriate natural regeneration, including the capacity to site the latter trees where desired, would increase the attractiveness of want reforestation.

Within the limits of existing village technology, people now seem interested in family plantations. But they are unsure whether wood they might produce belongs to them. The incentive to invest at this point is weak. Moreover, that incentive is partially a function of wood shortages. Firewood and construction materials grow everywhere more scarce, but inter-village supply differences do exist. The pinch felt by villages close to Zinder, Magaria, Matameye and Mirriah may be less painful at the moment further from these population centers. Villages in more remote areas seem less concerned at this point about how tomorrow's meal will be cooked. Reforestation for them is now a less burning issue than elsewhere.

Peasants have yet to experiment with windbreaks and properly spaced on-field plantings. Positive results of such experiments would unquestionably convince many more people to go into wood. But in function of the above variables, willingness to do so now is inherently elastic. There is no "correct" answer to the question concerning how much land villagers as individuals are willing to devote to wood production.

## Conclusions

### Technical Matters

People in the project area are not amused by reforestation schemes involving lots of labor and little output. They want wood; in many cases, they want it badly. All foresee a coming resource crunch. However, as farmers they are extremely sensitive to what will and won't go as vegetation on their fields, given their restricted means. Whenever woodlots failed miserably, local people pointed to the difficulty of establishing seedlings, especially neems, the major species in all the woodlots visited. Many peasants are convinced neems are feasible as an open field plant (rather than as a village tree) only with irrigation.

This may well be accurate, at least in areas where the water lies deep and is difficult to tap.

In several of the communities visited, people suffer from inadequate water supplies during the dry season, and say they cannot afford additional water to irrigate trees. Their own wells, already very deep, tend to go dry by the end of March. From this point on until the beginning of the rains they import water by donkey from distant sources.

By contrast, most villagers seem very interested in maintaining stands of *Acacia albida* on their fields. Where current cover is inadequate, or soon will be as older trees die off, they are making efforts to protect natural regeneration. Many expressed interest in planting *A. albida* seedlings in fields which do not now contain mature trees. They also express a

desire to plant *A. seyel*, *A. scorpioides* and *Adansonia digitata*, either at home or on their fields. It is quite clear that if a second-phase IDRC project in the "3M" area can come up with reforestation packages which work in terms of high survival rates, low interference with food production or a demonstrable contribution to soil conservation, reasonable wood production and - if possible - marketable by-products, prospects for reforestation in the area are quite good.

#### The Ownership Problem

In addition to technical feasibility, reforestation must be feasible in the politico-economic sense. A clear positive relationship between effort and reward is a necessary condition for local participation in wood production.

Of the IDRC woodlots, villagers repeatedly commented that foresters "owned the wood" because they had provided all material inputs as well as some small amounts of money for those who participated at various stages of woodlot development. Many people interviewed suggested that if they purchased seedlings - something they expressed willingness to do, at prices ranging up to 100 FCFA/plant - they would have a much clearer claim to ownership, as well as a greater incentive to care for and protect plants.

The same might be said for provision of fencing materials and labor inputs. In a second phase, it seems unrealistic to purchase villagers' compliance with wages equivalent to half the going rate, as appears to have been the case in the first phase.

This merely establishes that villagers are hired labor, and therefore under the direction of those who hire them. Their sense of a claim to the proceeds of their efforts is seriously eroded by this procedure.

Fencing could be erected and maintained using local materials - *A. albida* or *A. scorpioides* thorns, for instance - if villagers could be authorized to trim more than the lowest branches of these species. This would require a variation in the national forestry code, but one which seems well justified if *Azadirachta indica* or other thornless species subject to browsing are to be planted in woodlot or field sites.

**Foresters' Duties:**  
Policing v. Extension

Foresters charged with administration of the project know their enforcement responsibilities under the national forestry code (fining those who illegally cut protected species, etc.) tremendously complicate their extension activities. They know peasants are afraid of them, and of subordinate forest guards. When foresters try to encourage local participation, they encounter a vast reservoir of suspicion, bad memories of past interaction, reticence about involvement with foresters, and plain inertia (a common peasant protective strategy). There is almost no feedback from peasants to foresters, since the former view commentary on policies as dangerously challenging behavior. Challenging behavior they want to avoid. Thus there is no basis for cooperative activity.

Project execution now occurs in a totally hierarchical framework. Foresters give orders. Peasants execute them - if they are interested - to the best of their ability. If they are not interested, they ignore or evade to the best of their ability. They never question orders, make suggestions to foresters about how orders, or programs, could be improved, or initiate programs or inquiries of their own.

Foresters, in consequence, rarely get positive reinforcement from their associations with peasants. They do not encounter any positive demand for extension services they can currently offer, or information they could learn to offer if they felt people wanted advice about improved species and better reforestation techniques. Repressive policing activities short-circuit the communications necessary to successful extension work.

#### Designing Collective Approaches to Woodlot Management

Local people unquestionably prefer individualistic to collective wood production. The former reduce possibilities that some will freeride at others' expense, i.e., get more than they deserve or something for nothing because they cannot be compelled to bear their fair share of the costs of communal actions. Collective wood production, unless carefully designed, invites free-riding, the nemesis of voluntary collective action. In the sort of enterprise under discussion, Hausa (and Bugaaje and other ethnic groups which populate the area) worry a good deal about this issue. Indeed, as a Hausa proverb has it:

Work for the community good is difficult:  
while some are farting (with the effort of  
the work) others get new clothes.

Collective enterprises which fail to counter this tendency to unjust distribution of rewards often collapse for lack of popular support.

None of this justifies concluding that collective solutions to public problems should be systematically excluded from project design in phase two. Many public problems can only be solved through collective action. The current Nigerian regime appears aware of this. It seems to be moving in the direction of greater local autonomy and greater capacity to engage in village-level collective action. If regime policies in this area are successfully implemented, a great many sorts of public goods now impossible to obtain at the local level might be made available by villagers themselves. Nevertheless, at the moment in most "3M" villages local governments are very weak institutions.

It thus behooves those who would approach reforestation through collective action to develop, within institutions themselves, incentives encouraging effective participation and reducing as far as practically possible opportunities for freeriding. Wherever feasible, communal woodlots should be subdivided internally into either family or small group plots. Responsibility for maintenance of each plot should be clearly established, particularly if a small group is to share the work. If a family or a well-organized group is responsible for each plot within the woodlot, then one can expect at least some effort

to avoid a poor showing in competition with other units.

If an enclosure is constructed, responsibility for maintenance must also be clearly assigned. Bugaaje (dispersed, on-field residences; see above, pp. 13-15) use a fencing system which makes each family responsible for a portion of the fencing, which encloses and subdivides fields within a single village quarter. Similar arrangements can theoretically be established in area villages for purposes of woodlot maintenance. Likewise, other maintenance activities which must be undertaken collectively should be discussed and assigned beforehand by villagers themselves. Where authority for different aspects of the work is clearly understood, freeriding is less likely and less tempting.

In designing such collective enterprises, a good deal of attention must be devoted to issues of enforcement. Is it possible to police the woodlot to prevent illegal cutting? Is it reasonable to expect, within the local village context, that such regulations can be upheld? If not, all the nice design elements in the world will probably not save the project from failure.

Responsibility for maintenance and policing - in a word, willingness and initiative in undertaking efforts necessary to make sure the lot does eventually produce useable forms and quantities of wood - probably depends upon participants' belief that they do indeed own and control the wood. Here, collective ownership can provide a major benefit: if the woodlot is effectively enclosed, or guarded by some sort of self-help or paid patrolling system, ownership is unlikely to be challenged.

Strength which goes with (organized) numbers should prevent exploitation of villagers' efforts by unscrupulous professional woodcutters, nomadic herders, forest guards or even local people. If someone is delegated authority to speak for the group of participants, then odds are greater that this responsibility will not be shirked and that defense of the woodlot will be on balance more effective.

Wherever a natural community exists, its strengths should be drawn upon to ensure effective maintenance and policing. Most Hausa and Bugaaje villages do not qualify for the term "natural community". They are typically composed of quarters. These may or may not have a sense of unity and a tradition of collective action; often they do not. Villages may also be mere atomized agglomerations of human beings or of small families. If these atomized units have no experience working together, a collective enterprise such as a village woodlot management association prefaced on the assumption that villagers can work together is likely to be at best a feeble operation. It will require inordinate amounts of government supervision to function, and even then will probably die at an early age.

In considering design of such units one must bear in mind that "3M" villages currently have no authority to raise local taxes. They are creatures of the overriding administration with little independent life of their own. Thus it may well be impossible to pay guards out of locally-provided funds. Certainly many people interviewed by the writer expressed doubt

about the feasibility of such approaches.

If some sort of policing system is to be undertaken, either in addition or as an alternative to enclosure, it must be handled on a self-help basis. In one village it was suggested that this might be possible. If so, it is likely to be much cheaper than imported barbed and chicken wire as a solution to the protection problem. However, the idea would have to be thrashed out and agreed to by villagers. A series of enforcement mechanisms would have to be developed to ensure effective patrolling. Whether this is feasible in any community depends upon existing local organization. Presently feasibility would be at best problematic in most "3M" area communities.

### Recommendations

#### Reduce Project Domain

Limited resources available to the Bois de Villages (Niger) project during the initial five year period were constantly overstrained by the attempt to employ them across three arrondissements. Vehicle, fuel and manpower shortages will continue to hamper project implementation in a possible second phase unless domain is restricted. If not, project personnel are unlikely to be able to devote the necessary attention to personal relationships with villagers which project goals demand. If research results are indeed an important component, then foresters must be able to work closely and fairly continuously with villagers as they

seek to develop locally practicable innovations in reforestation strategy.

"Practicable" is a key word here. Foresters will only involve villagers in the search for better methods if they take seriously peasants' observations and suggestions. If participation is a final goal of the project, then the conclusions research efforts generate must address the issues which peasants consider important, as well as those which concern foresters in a technical sense. The Forest Service personnel involved in any second phase must be willing and able to listen to peasants' assessments of different varieties and techniques. They must be flexible; if first stage results are any guide to future action, it is clear that neem trees in woodlots will not lead to much autonomous reforestation activity. Instead of relying on old solutions, foresters are going to have to search in an uninhibited way for new ones. It appears not unlikely to this writer that the greatest returns to effort invested in research are likely to be attained in the area of promoting and channelling natural regeneration. That is not an area Nigerien foresters have focused on heavily in past reforestation efforts. Success along those lines will require willingness to think in new terms, terms which emphasize villagers' convenience - reforestation as an additional activity which must be fitted with the least disruption possible into the pattern of local understandings and activities.

It would appear that any effective research will be designed,

as far as specific projects and hypotheses are concerned, by a forester capable of asking why villagers behave as they now do. He must try, as a first step to adequate design, to understand what trees peasants want, and why, where and how they want them. They may be able to provide some answers to those questions, but even if they cannot, it is of crucial importance that they be brought to understand their views are important. Success of the project depends perhaps more on the development of effective channels of peasant-forester feedback than it does on any other single element. Peasants must be brought to the point where they use their own intelligence and initiative in problem solving. It will be an uphill battle to establish this new sort of relationship, given the past history of forester-peasant interaction. Nonetheless, the task will become possible if the project domain is restricted.

#### Resident Forestry Researcher

It is imperative that the Forest Service appoint an individual with previous field experience and research training to reside in the project area and develop and implement the research component. Monsieur Alio HAMIDIL, Acting Director of the Forest Service during the period of field investigations, indicated several possible candidates are currently completing advanced forestry training in Niger and elsewhere. If one of those individuals can be secured for the post, prospects for a productive second phase will improve.

This individual must be given full-time responsibility for

project implementation. His primary responsibilities should be two: research and communication with villagers. The two are in fact inseparable given project goals, as has been suggested above. This means that the project director must be totally removed from the policing aspects of forestry work in Niger. Otherwise, he will probably never be able to establish the relationship of confidence with project domain villagers necessary to ensure success of the research component.

It is worth noting in this respect that the project director must be an individual willing to spend time in a small rural village as a development agent. He must be prepared to accept a certain modesty in his existence if he hopes to establish effective relationships with peasants. It should be impressed upon him that research results, not the men and materials under his command, are the means by which his performance will be judged. Any incentives which can be devised to emphasize this criterion of assessment to him on a daily basis will probably contribute disproportionately to the realization of overriding project goals. Financial rewards and promotions might be considered here.

#### Forestry Code Relaxation

Measures discussed above will contribute to effective project implementation. The writer strongly believes, however, that they are inadequate to ensure project success alone. Both interviews undertaken during this consultancy and prior research

on reforestation problems in the "3M" area convince him that the Nigerian forestry code as currently applied in the "3M" area must be relaxed. Given villagers' individualistic orientation and concern with ownership of trees as a reasonable guarantee that effort at reforestation will be appropriately rewarded, it seems utterly appropriate that, at least within a restricted project domain, regulations be relaxed. Ownership in trees must be vested in individuals who own the lands where they grow. This must be a long-term arrangement, so that villagers have some security of expectation that investments in reforestation are justified for them.

This relaxation will generate several results, once its implications are made clear to project area villagers. First, it will free them of "extraneous" legal factors influencing their judgement of what trees are appropriate. Second, it will liberate individual initiative in the area of reforestation, as just explained. Third, it will generate incentives for villagers to work with the project director in finding ways to better manage local woodstock resources, since villagers will directly benefit from gains.

#### Subsidiary Recommendations

Emphasis should be put on village/compound reforestation. This process is already advanced in many "3M" area towns. It should be expanded within the project area, and means to make it more attractive should be actively sought out.

If villagers express any interest in communal reforestation they should be encouraged to pursue them. It should be made clear from the beginning however that they are woodlot owners and solely responsible for all maintenance decisions and activities. The project director should provide all relevant information about woodlot operation, species trials if villagers are interested, etc. But he should play no role in supervising village projects. If that separation of duties can be achieved, such experiments might provide extremely useful information about what works in autonomous local woodlot operations and what doesn't. It should also provide interesting economic data on possible economies of scale which can be realized through joint woodlot efforts as opposed to individualistic efforts.

Participants in the project should be paid nothing for their project activities, excepting only project nursery personnel doing essential nursery work. Villagers interested enough in finding solutions to reforestation will work for nothing if they are guaranteed control of the fruits of their efforts. Solutions found will then be real solutions, rather than subsidized, unworkable ones.

Seedlings provided villagers should be sold to them for some nominal amount. This simple transaction will go far to resolve the ownership issue. According to some villagers, it would also provide additional incentive to care for the tree as it grows, as a simple matter of protecting one's investment.

If possible, the forestry code should be relaxed throughout the arrondissement in which any second phase project operations

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are located, rather than merely within the small number of participating villages. This would over time produce useful information on the extent to which villagers, even without the benefit of extension work, might engage in effective reforestation strategies. If it is clear that extension work is an integrally necessary part of any strategy promoting reforestation in the "3M" area, the Forest Service can take account of this in future training programs. If villagers in non-project areas prove able to manage their woodstock without outside controls and policing, again future training requirements will be clarified. Certainly the Forest Service would be relieved of a considerable burden of work if villagers can indeed protect and police wood on their land. If it appears that they are thereby also motivated to do more reforestation, a principle of crucial significance for preservation of the sahelien environment will have been demonstrated.

Of the three arrondissements included in the first phase of the project, Matameye seems the most likely area in which to site a restricted second phase project effort. Monsieur Issa KOKARI, Matameye Forester, was most sanguine in his estimate of peasants' interest and ability to manage their own trees without a great deal of interference. It is also true that the Bois de Villages project was initiated there, and a rather large number of villages now have at least woodlot experience with reforestation. According to Nigerien foresters, their appetite for more has thereby been whetted.

Angoal Gamji/3

If seedlings were provided, would buy them at 10 francs/ and some would plant them in their compounds (*maina.*, *kuka*) and in fields (*doreowa*) .

Have enough *gawuna*; wood lacks strength; will falldown during rainy season storms, destroy huts.

Sarkin Bula: wanted to know, if man planted *Parkia*, another came with a permit to cut, tried to cut it, whose treex would itbe? Said would plnat more if it were sure trees were theirs

Angoal Talba notes:

p. 5: if gawos were theirs, what more would they do to preserve them than they already are doing? Claim to be protecting, trimming new ones because old ones have all died.

(In this context, remember that in Dala Koleram, was good evidence to back Mani Wanzami's assertion that they were taking care of trees; and that, if the trees were theirs, they would plant gawuna in the fields which now lack them. Some fields had enough, he asserted, but others didn't have any at all, and certainly no mature trees so natural regeneration likely to be insufficient. Gawuna a source of bird damage apparently, particularly if not sufficiently trimmed. Need authorisation to climb up, trim higher... )

Angoal Talba: they approve of gawo, and would buy if available in pots...but don't plant trees here; if Govt doesn't force them to, probably won't. Want gawuna, however. Women are burning manure; some go to fields at night and steal it; bad news as far as local farmers are concerned.

Fulani come through; they bang on trees, Hausa pick up the remains for their own use.

They're short on wood; donkey load at Falki CPT costs now 600=650. Bugaje land tenure makes it easier to concern self with trees on fields.

Have never used quranic oath in Angoal T. to prevent cutting wood. If had permission - changed forestry code - they would work it out in terms of taking care of trees and indeed in terms of regulating exploitation by herders so that the trees don't suffer.

Angoal Talba con't.

See p. 1: the woodlot was more or less imposed by the foresters who asked whether we wanted to plant a government woodlot. We said "Since the Govt says so, we want it." "Whatever the modern thing is, we have to follow it."

Unclear about ownership: if ~~we~~ they grow for five years they're ours; but they're the governments, those trees. They didn't tell us how they would ~~be~~ be divided up; since they did tell us to farm inside the lots, we did...cowpeas and peanuts, but not sorghum or millet."

They tied up the barbed wire to the posts with small pieces of ~~wire~~ wire; seven strands, not enough to keep goats out...one in there when we went to see ~~a~~ lot.

Assert they repaired the fence last year, when forester's asst. came out with poles to replace the rotten ones.

Replanted twice, 1977, 1978.

Think trees didn't make it in grazing commons because water table really low.

Fencing: wire is the difficult thing; balsamifera (Kaguwa) isn't sufficient. They've been prevented from cutting magaria thorns this year; gawo thorns aren't sufficient

They have both a town herder and they fine amongst themselves for allowing animals to stray illegally

Assert the town is all one big family...appears to be the case.

Old man asserted that the trees wouldn't do well in the commons; they like the "stench of man" grow extremely well in the villages, a la Gorse...he pointed to several maina which were vigorous and strong...have both water and hwarin mutum.

Guetsi/MAG

Town has number of people invo-v-d in the COOP/CPT network through the FED projet. Ten people in town have the animal traction equipment package, and villagers assert they use it to plant with The Mai gari is the town activist...has been to the Satomawa CPT. Asserted wasn't "today" that heard about the woodlot project; when they indiqated they were going to come, he thought it would be best if they started with his land. It was given as loan; when the trees are finished, the land will revert to him.

#### OWNERSHIP

The community owns them. The forester caused the plantation to come into being. We, among ourselves, we say that the Chef (forester) is the one who controls the trees; we wouldn't cut without his authorization. If they weren't protected, we today, we'd go and protect them. When we haven't got wood, we'd go and trim them to meet our needs.

In this lot, they have chicken wire. That and poles were provided by E&F, as well as three strands of barbød wire. When the fence started to sag, the villagers went out and propped it up; afterwards it fell down to the point where it couldn't really be repaired, so we let it go, because the trees were then big enough to make it without the fence. Termites destroyed some of the poles; the fence and wire then fell down.

Mai gari farmed plot for four years; only this year didn't, when the shade from trees began to make it unprofitable.

Do animal damage cases; if can't resolve locally, take to bafaad-Turaki, who brings the case before Sarki Haru na Magaria.

Usually, the village notables plead with the damaged individual to drop the case; only assess damages xduring summer rainy season.

Guetsi/2

If maina planted in fields, would be eaten by livestock. Use magaria thorns - still allowed to - to fence; Acadia senegal (dakwara) and gawuna are forbidden. Those one only cuts with foresters' permission.

If the village chief were to have announced that anyone who puts an enclosure around a tree in his field would not want it cut, thinks that it would be left alone. But haven't done it so far.

Wood short; in Magaria, donkey load now going for 650 CFA. Haven't begun cutting in dawan gwamna.

Forester once brought maina trees, and people bought them for 10 CFA. Now have a lot in the village. They are using crop residues and wood, but not manure for fuel. Women, however, do pick up manure when its available. They do all the fuel collecting, husbands only do so when women are far gone pregnant, with exception of three mallamia in town, whose women are cloistered.

If people were permitted to cut wood anywhere, it would very shortly disappear; but with the forester as a defender, it doesn't. However, if everybody were told to look after his own, the wood wouldn't disappear.

Would like more maina trees to plant.

Were trees available, might plant along field borders as windbreaks.

Would like Parkia, more albida, Kuka, bagaruwa, dakwara.

Mai gari: to our way of thinking, if we were given trees, that would be merely a form of assistance. We'd have to irrigate them if were to survive; work would be more than the money we'd get.(?)

REPLICATION: if were to do another woodlot, the mai gari would only give land if forced to; had 30 people, are now all gone; has handed out the fields to others. Nobody else in town would be willing to provide land for woodlot.

Guetsi/3

Would be interested in planting local species, if could get them.  
IN PAST; cmdt. brought trees in, mangoes; some said, don't plant them because afterwards he'll claim that your bottom land is his. But if the trees are sold to you, then if you plant them, they're yours.

ON REPLICATION

"Would some people get together to do a (govt) woodlot? Only if they were forced to. The better alternative would be for everybody to plant in his own field and to take care of his own trees.

Never used quaric oath to protect the trees.

Fulani, on fields, have easeir time protecting trees than do Hausa in their villages.

If didn't announce that planted trees belonged to planter, it's possible that they would be stolen by fellow villagers (i.e., wood, when trees got bigger) .

Troubles keeping Hulani out of gardens; that's eased off a bit, but some of the other members of group remember 40 cows in a garden, chewing on mango trees.

Maigari thinks that they wouldn't steal from each other if trees were planted, but there's plenty of disagreement, though suppressed by elders.

Angoal Gamji/MAG

1976

Weren't told much about it; just that were to clear and plant th area, and that ~~xxxx~~ afterwards it would be for their benefit.

Land was provided by four men; one who gave most was son of chief. Was "expropriated, but only after discussion; they understood why was taken, and weren't put out. Hope that ~~xxx~~ when the work is finished, trees are gone, they'll get the land back. Hope ~~ix~~ it was a loan.

Got kudin gooro for planting; put in gawuna, bagaruwa, dakwara, and mainly maina. Planted twice thereafter in the woodlot; ~~txxx~~ <sup>hereafter</sup> have left it alone. Replanted the trees which died.

Drought killed most of the trees; they didn't irrigate...have trouble in the village getting water for themselves. Livestock killed some of the seedlings after the wire went down.

~~Nx~~ Herding livestock: mainly, if ~~xxf~~ are ~~x~~ local animals, get ~~ixx~~ loose, then take them back, warn to keep them tied. Get compensation sometiems, but many say it's kumya. Keep them tied! If doenn't agree with compensation offered, then they give him permission to follow thru to Marusa, mai kompani.

They plant maina in the village; pay for them, 10 francs/seedling, from gardenrs who produce them. Nobody has ever planted in the bush.

Would have enough wood in the village if it weren't for the MAG woodcutters; some have permits, others come at knight, steal wood.

P. 3: list of trees on vilage lands; kalgo and gawuna are most numerous.

Some people leave trees, others kill them when clearing fields.

Iko says to leave gawo, so do; others are all cleared. They prune gawuna without permission.

Angoal Gamji/2

"Dawan gwamna isn't ours, to our way of thinking; it belongs to the chiefs." (Sarkin Bula Abdu)

Mai Gari: " If we were given permission to divide up the wood /even tho there is none in this woodlot/ we wouldn't give any to those who have done no work. When you have a collective work party, and then afterwards provide a meal, do you call those who didn't turn out to come and eat?"

On the point of OWNERSHIP:

If were given the dawan gwamna, we would irrigate (later denies that would be able to do this...water shortage). We couldn't pay ~~tax~~ taxes locally, but would be able to ~~gax~~ guard the woodlot, the old men and youth who are here."

Maigari: No, the householder<sup>is</sup> the field owner, but the trees aren't his. JT: do you prevent people from cutting on your fields?

MG: "No: even if you do, if he's purchased a permit, he'll be back."

MG: "If you don't have authority over the trees, and you trim and ~~tax~~ take care of them,, and then somebody comes along and cuts them, you suffer a loss, you've no way to demand compensation."

MG: some people now, if they see they haven't any trees on their fields, will leave a ~~kax~~ kalgo when they're clearing so that it grows.

If the law ~~is~~ were to be changed so that the householder controlled his trees, he would ~~pre~~ prevent others from cutting them.

Here, ~~after~~ are now beginning to try to protect trees.

Using wood, crop residues, but no manure for fuel.

MG: trees will only grow with irrigation; they tried to plant trees along the new road, did put in quite a few, but none took: droughtkilled them.