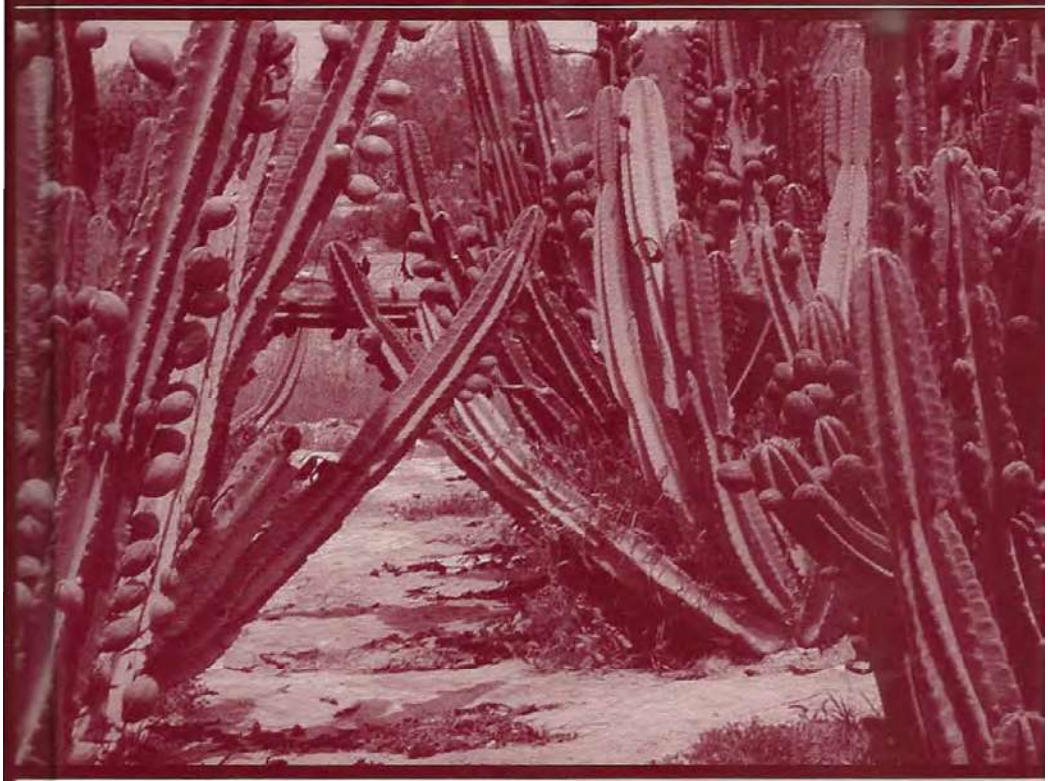
COMBATING DESERTIFICATION WITH PLANTS



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PASSIVE TRANSFER

The Eden Experience in Niger

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1. INTRODUCTION

Aid is like business; the only difference is that the customer doesn't need to be satisfied. Projects are often designed in order to obtain donor money without regards to what the recipient really needs. Reports are written after a project period of a couple of years, and if everything looks good until then, the project is ok even if everything collapses just after it has pulled out.

Sustainability is found in the hearts of the local population, their motivation being our biggest asset. We need to tap into their motivation, offer a product that meets their need, and have mechanisms like with a customer. He must show initiative, be free to choose and be satisfied with the product. Goals of a donor need to be in harmony with goals of a project that in tum needs to be in harmony with goals of a recipient. In order for this to work one has to start with the goals of the recipient.

2. EDEN PROJECT

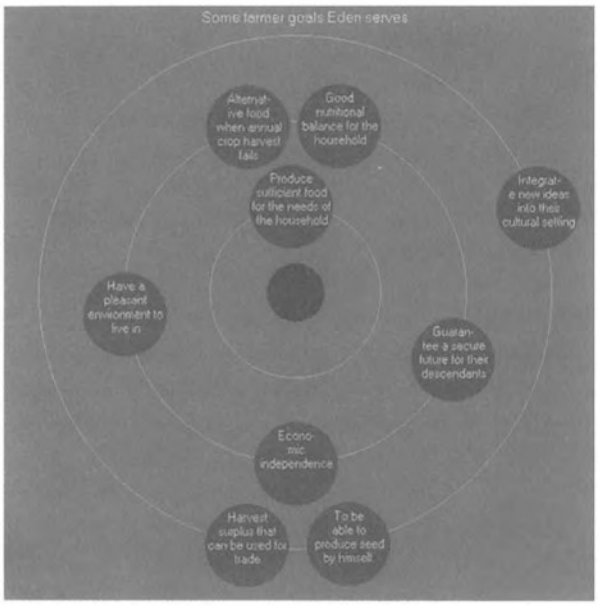
2.1 Background

Eden Foundation was founded in 1985 on the basis of the belief that there were effective means available for fulfilling the goals of the people living in the arid areas of North West Africa. The means were drought tolerant edible

Combating Desertification with Plants, edited by Dov Pasternak and Arnold Schlissel. Kluwer Academic/Plenum Publishers, New York, 2001.

perennial plants that could potentially grow in such a harsh environment without artificial support.

A project was designed based on farmers' goals with plants being the effective means for fulfilling these goals. Eden's purpose was to support the farmers in fulfilling their goals.



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It was decided to set up a project in Niger, which Eden considered the most needy country in the target area. It was seen as important to work for farmers' food self-sufficiency, to allow them to live within their means without dependency on cash input or Joans, and to use resources which could thrive without 'crutches'.

2.2 The plants

Drought tolerant edible perennial plants were chosen, as they would fulfil several goals these farmers have. There were reports saying that a lot of useful drought tolerant species existed, and that many of them were little researched and underexploited. The species should be natural, not hybrids nor superspecies, but with great genetic variety for their resistance and the farmers should be able to reproduce them from seeds themselves.

A database was set up to register information about any promising drought tolerant species from around the globe. From this information it was decided which species could be established in such an arid area. By 1991 data on 282 species considered to be sufficiently drought tolerant was compiled.

2.3 Direct seeding

The technique chosen for the establishment of the plants was direct seeding which was seen as the natural choice for such a dry environment. It meant that the farmers could direct seed them at the exact location where they wanted them, and was based on the assumption that they would not be watered.

2.4 The field station

In 1988, a 20 hectare field station, almost totally denuded of vegetation was set up in a 200 mm rainfall area, 13 km south of Tanout, Niger, in order to conduct direct seeding experiments, and hopefully arouse the interest of surrounding farmers if successful.

The field station in 1987

The area was chosen to resemble the difficult conditions for the farmers, and had formerly been used as a millet field. A fence was completed around

the field station in 1989. 341 direct seeding experiments were carried out on 34 species from 1988 - 1990, with 360 seeds for each experiment. The main variables were non-toxic seed treatments and sowing depths. Neither irrigation nor fertilisers were applied. A completely randomised design was used. Seeds of the most promising species were available for distribution, at no cost, to interested farmers.

2.5 The seeds

Most of the seeds were collected by Eden, but some local and exotic species were purchased. Genetic variation was sought when collecting seeds so collection was made from several mother trees in different areas. Seeds where given lot numbers, so the origin could be traced. Deseeding techniques were developed for each species. Seeds vulnerable to insect attacks were treated with non-toxic Neem oil. They were stored in room temperature to simulate the storage capacity of a farmer, and lab germination tests were carried out to check their viability.

3. DIRECT SEEDING METHOD

A method for direct seeding for the farmers was developed. Seed envelopes with advice as symbols (icons) were produced as most of the farmers were illiterate. Seed quantities in each envelope were calculated so that one plant would reach maturity from each envelope. The tools that would be recommended for use were tools the farmers already had.

3.1 Extension method

From the very beginning of the project the intention was not to approach the farmers, but have them contact Eden because of their own curiosity and initiative. Eden would let the farmers observe the field station, which acted as the shop window to the farmers.

It was estimated that it might take up to l0 years for the first farmer to approach the project. If they did not, then the project would be considered a failure and be closed down. It was not envisaged to contact the farmers to convince them. They would have to see for themselves that the approach might be appropriate for them, and implant it in their culture. The approach should be contagious in that once adopted other farmers would do likewise. The farmers were to direct seed on their own farms, so that someone would be responsible for the plants.

Eden would never approach a village without first being invited by a farmer. The first farmer in a new village who had either seen the field station or the direct seeded plants of another farmer would be told after he had contacted Eden that he could ask others in his village if they were interested in direct seeding. When a farmer placed his order for seeds he would be free to order any species, but then Eden would explain what was available. The reason for this was to register what species the farmers really preferred irrespective of what the project offered. Farmers who had adopted direct seeding would be paid an annual visit as long as they wanted to continue, where their results would be monitored and new seed orders taken.

No expatriates would be involved with the farmers in extension work. Local extension workers were chosen on the criteria that they would respect the farmers in a manner that they saw themselves as serving the farmer. They were talented, but not highly educated and were trained by the project. They would often travel by local transport or foot when visiting farmers so as not to distance themselves from the farmers too much. Eden's logo was used extensively for 'brand' recognition on the field station sign, project cars, extension workers' shirts and seed envelopes. The farmers would be trained by an extension worker in direct seeding, but they themselves would choose the locations and sowing patterns (i.e. intercropped, forming hedges, etc.) in their own fields.

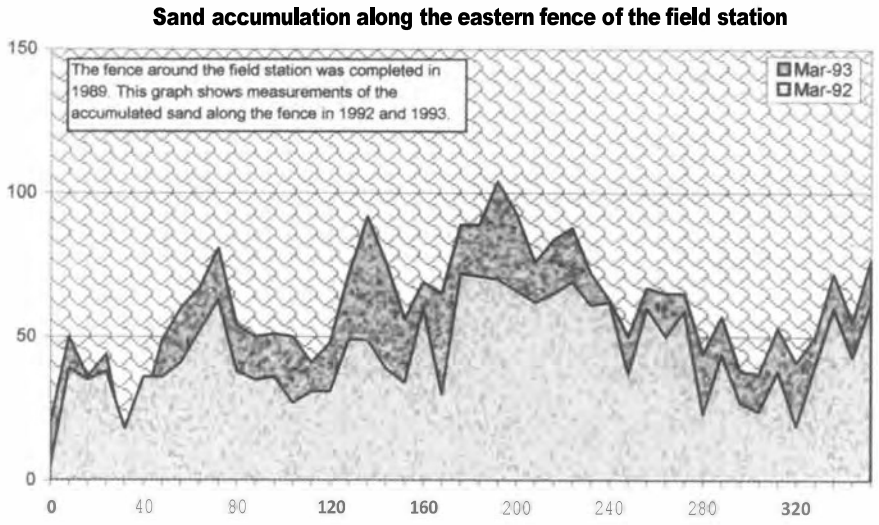
4. REGISTRATION OF RESULTS

On-farm research was done by monitoring all the farmers' results yearly, as well as other pertinent information. The farm was seen as the outer field station and the farmers as receiving free seeds as a compensation for participating in this research. In this way survivability under actual circumstances could be calculated. Their results were interrelated with the results from the field station and adjustments based on this information were made for the next season.

4.1 The farmers

Before Eden arrived the farmers in the area did not know how to direct seed. Their staple crop was millet. Their area was lacking vegetation, but they did not know of an effective way to establish new perennials. Erosion was a great problem, but many welcomed it as a way to get soft sand on top of areas of harder red soil so their millet would grow better. Many were hostile to trees as birds that ate their crops nested in them. Some did not like bushes, as the snakes would hide there. Neither did they know which species

would be best to establish. Most of them would slash and bum their fields yearly, leaving virtually no vegetative cover for long periods during the dry season, when strong winds eroded their fields.



4.2 Results

The farmers did not understand at all what the project was about in the beginning. Their comments were that this was not a real project as there were no lorries and equipment. Rumours started to spread, but already in 199 I the first farmer asked for seeds. He saw an exotic p l a t growing at the field station, and got it confirmed that we didn't water it and that it produced something edible. A total of 9 farmers from the 2 neighbouring villages ordered seeds that year.

One thing that made direct seeding catch on was that in 1992, Moussa, the farmer to the east of the field station, got the biggest harvest in a 20 km radius. The field station had by that time already quite a lot of revegetation from natural revegetation that had occurred from rootstocks that had formerly been cut down yearly and annuals that were not burned down in winter anymore. Moussa's field was therefore protected from the worst winds by the field station, but the farmer on the opposite unprotected side did not get a good harvest. He had to resow his millet plants several times because of the strong winds, while Moussa only had to resow those millet plants further away from the field station.

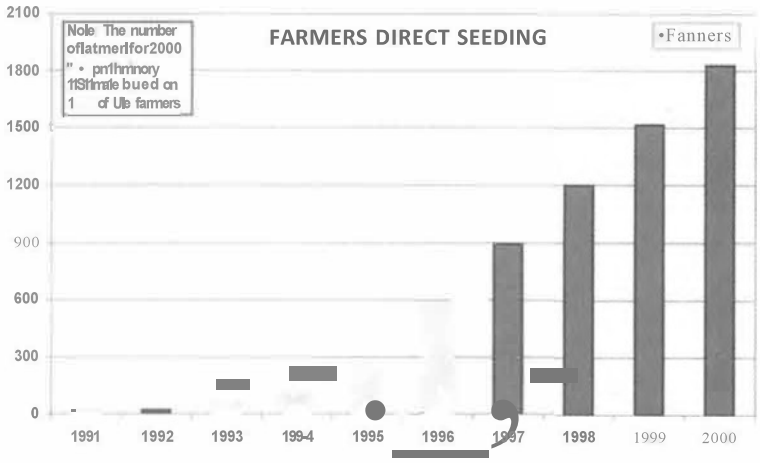
Farmers who heard about this were convinced that Moussa got his bumper crop because the vegetation of the field station protected his field.

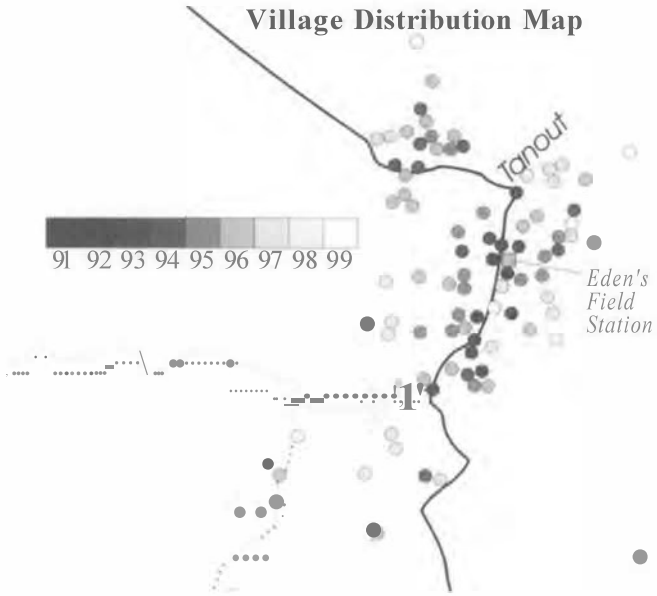
From then on many fanners became friends of trees instead of enemies, as one fanner put it.

Moussa's field that was protected by the field station

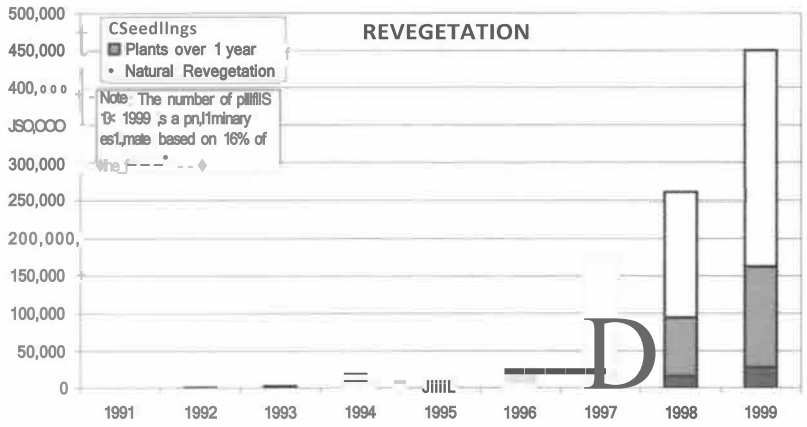
Further away, that was not protected from the wind

The first fanners had viewed the plants as something exotic and had sowed them in their gardens, but now they began to see the plants as beneficial for reducing the strong winds in the fields that adversely affected the millet plants. It became clear to them that the benefits of the perennials (Le.windbreaks) outweighed the disadvantages (Le.nesting place) and many started to direct seed and in tum convinced others, who then contacted the project. Since then the number of farmers and villages increased yearly, reaching 1,514 farmers from 96 villages in 1999.





The results from their direct seeding has also increased yearly to a total of 244,621 plants in 1998 (this figure r e ffs to seedlings and young plants, not mature perennials). They also had 10,810 perennials from 32 species growing from natural revegetation. This proved to be a 'side effect' of direct seeding as participating farmers stopped slashing and burning perennials in their fields. The natural revegetation came mostly from old rootstocks that previously had been cut down annually, and many of these became large in a short time, as they already had a developed root system.



Some of these plants have started to give food and in 1998 the farmers harvested 8,680 litres of food and sold plant produce for 235 FFR. The women and the children are the main beneficiaries of this as the men often leave the villages in the dry season to go off for temporary work somewhere else. Another expression of attitude change towards trees that has been noted is that some villages have introduced tree laws. After starting with direct seeding they have taken the initiative to ban the cutting down of trees, allowing themselves only to take branches without destroying the trees.

The farmers who are dissatisfied with direct seeding are registered yearly, and only 0.3% of those that have participated in the project have expressed that they did not want to continue.

5. DISCUSSION

In business, the customer and the one who pays for the product are usually the same. This is not the case with aid where the donors are actually sponsoring the 'products' that a project delivers to the recipients. The project is 'selling' its solution to the recipients, but the project receives its money from the recipients' sponsor- the donor. The project's loyalty is often where the money comes from and it tends to be more concerned with getting 'paid' for the products it delivers, than the real needs of the recipients. Therefore a project often uses incentives in order to get the recipients to accept the product, even though the recipient often does not really want it. Many products are fashionable ideas imported from the developed world that are not really appropriate to the recipients. In the worst cases the product is even forced upon them. This is why so many use an active transfer of their "solution" to the recipient. However, people have always tended to adopt

new practises in their culture if they have wanted it, like with television. It is important to let people choose what they want, and not force things on them in a neo-colonial manner.

Passive transfer is a mechanism for registering customers' interest, where such a mechanism does not exist. They need to see what you have to offer and then choose what they want. Like with a paying customer there must be a cost, even when they are receiving the aid for free in order to confirm that they really want it. With Eden they show what they want by having to contact the project themselves on their own initiative. They pay a cost by investing time and room in their fields by direct seeding even if they are receiving the seeds for free. If they are dissatisfied with the product they are free to stop, and their reason for that is registered. For passive transfer to work you must have a solution the customer can see and a way for him to contact you when he has decided it is something he really wants. Otherwise you can close for lack of customers, so it becomes the recipient that evaluates you. The donor and the project should evaluate how satisfied the recipient is with the product, instead of following a plan to the letter. The project should serve the recipient, not the donor. It should be the link between donor and recipient. The donor and project should serve the fulfilment of the recipient's goals with effective means.

The constraints are that the donors often have their own agenda and try to transform the projects into their puppets, making it difficult for the projects to serve the recipients even if they really want to. Passive transfer is often a long-term process, while the donors often think in short term projects. A long-term project can find itself without donors as donor fashions change, and it can then become a temptation to change with fashion instead of continuing to serve the recipients' goals. It is difficult to present a plan in facts and numbers, as it is a process outside of the project's control, and something donors are not used to. If and when donor money is secured, the project still has to develop a product that the recipients would want themselves, and it must be presented in a way so that the recipients can adapt it into their culture.

6. CONCLUSION

Farmers are not stupid or ignorant and should not be treated as children who do not know what is best for them. They know what they want once they see it, and they will adopt it and integrate it into their culture if it is affordable and appropriate. We need to treat them with respect and serve the fulfilment of their goals, and they need to be free to choose which approaches to adopt.

The Eden experience has shown a way to spread a solution without infringing on the farmers' dignity and right to decide for themselves, namely passive transfer. The results have so far been satisfactory, and many farmers have adopted the solution. However, it is difficult to control the spread, penetration and time frame. Whether such control really ought to be exerted would be the subject of another discussion.

Cover photo by Professor Yosef Mizrahi

KLUWER ACADEMIC / PLENUM PUBLISHERS
233 Spring Street, New York, New York 10013-1578

PRINTED IN U.S.A.

ISBN 0-3Db-4bb32-5
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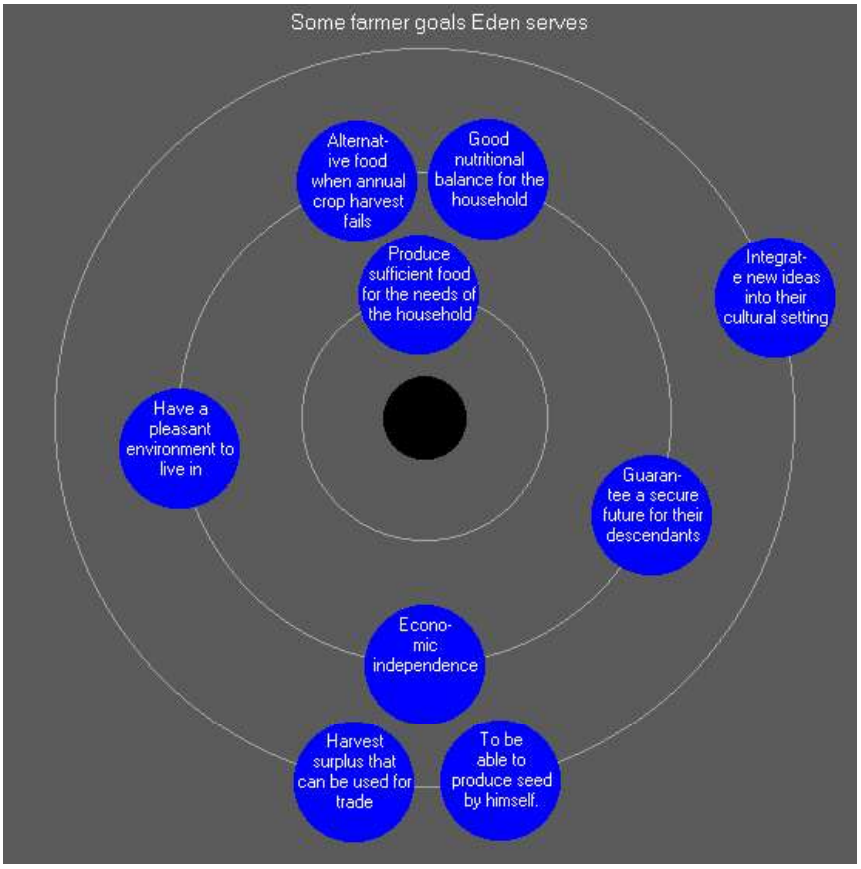
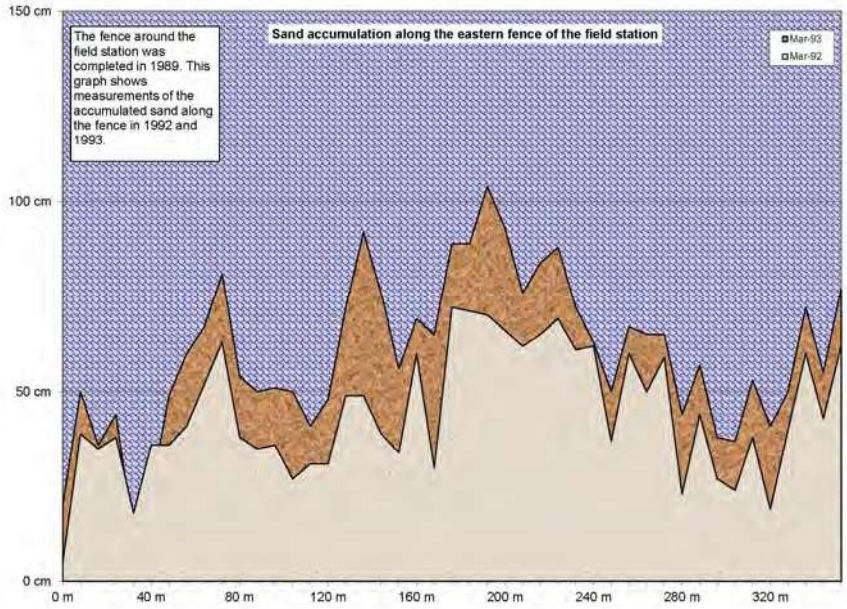
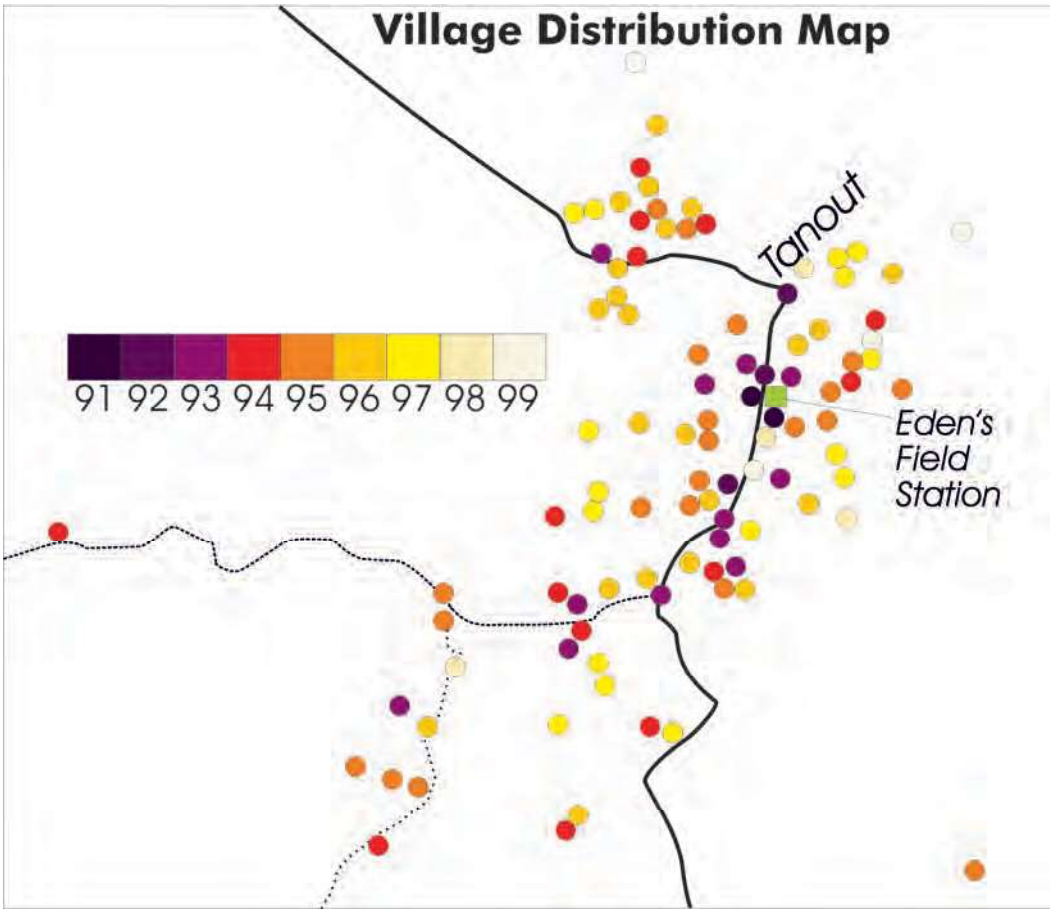
Colour illustrations and photos




Sand accumulation along the eastern fence of the field station
The fence around the field station was completed in 1989. This graph shows measurements of the accumulated sand along the fence in 1992 and 1993.
Mar-93
Mar-92
150 cm
100 cm
50 cm
0 cm
0 m
40 m
80 m
120 m
160 m
200 m
240 m
280 m
320 m


Village Distribution Map
91 92 93 94 95 96 97 98 99
Tanout
Eden's
Field
Station