Réseau Guinéen sur la Traction Animale (RGTA): progress, constraints and new possibilities

A summary of discussions following an ACT support mission
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by

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Preface and acknowledgements

This report briefly summarises some of the discussions and conclusions of the advisory mission. It was not an evaluation mission, and most of the value came from 'brain-storming' and exchanging ideas. At the end of the mission, the conclusions were discussed by members of the RGTA advisory committee and ACT. For this reason (and the schedule of the author) a more detailed report was not required. The report is not intended to be critical, (except in the constructive sense) and no offence should be taken by the content of this report. The author was impressed by the RGTA/ACT work and offers his congratulations for their achievements. If further information or clarification of comments are required these can be supplied to RGTA/ACT as soon as practicable.

The author would like to thank all those persons who assisted the visit, in particular Almamy Sény SOUMAH (Président, RGTA), Filip DE ZUTTER (ACT Dabola), Fodé Fatou SYLLA (Chef Secteur Dabola) and Filip DECLERCQ (ACT, Brussels). The author was pleased to attend the RGTA advisory meeting and thanks the members for their hospitality and ideas exchanged. He also would like to thank the extensionists with whom he worked, the master farmers, the SOMATA staff and the other members of the ACT team for their information, help and hospitality.

Promotion of mechanisation and weeding technologies

(Contraintes liées à la méchanisation des exploitations / entretiens mécanique des cultures)

The extension work of RGTA/ACT in Guinea is generally going well and there is no need for the project to be disappointed if progress is not as rapid as envisaged. In Guinea Maritime, the project is attempting to introduce animal traction into areas where animal traction is a new concept. In Haute Guinea it is introducing weeding technology into areas where plowing was the only operation. Such agricultural innovations take time, and, from the African perspective, progress is quite acceptable.

The introduction of new technologies has three related aspects:

- introduction and acceptance of the idea and principle of the technology
- adoption of the practice (can initially be with demonstration equipment)
- continued sustainable use (equipment acquired/hired by farmers at sustainable prices).

From discussions with project personnel and farmers it is clear that much progress is being made on the first stage, and some progress on the second and third stages. It is important that the project stimulates several examples of step two, so that it can demonstrate (to farmers, other projects, government and donors) that the technologies being promoted are technically good and farmers like them.

While it would be excellent if farmers were to go straight to step three (serious investment in the technology), in some villages, farmers may need more time. In one village visited, only a few weeders were in use. Farmers were convinced that within 5-10 years most farmers would be weeding with animals, but rapid adoption would be constrained by the price of the equipment. In such circumstances, the project should not withdraw its few demonstration implements just because sales are slow. Rather it might try to lend a few more demonstration implements to key farmers. Once the weeders have been used effectively for several seasons, the technology will have been clearly proved. At this later stage, if there are still problems of affordability, possible solutions can be assessed (cheaper implements, credit system, multi-farm use, etc). However, for that particular village (and other similar ones) there is still need to have farmers use weeders effectively for several seasons, to demonstrate that farmers can obtain real benefits from the technology.

In the past, the project has thought that progress would be greatest if one or two farmers demonstrated the technology in many villages. However, if just one or two farmers start to use a technology, they may feel isolated in the village (as was reported) and/or unable to obtain local infrastructural support (eg, from blacksmiths or other artisans). At the same time the project resources are spread over many villages. The project should therefore consider the concept of 'critical mass'. Once 5-10 farmers (or so) start to use a technology, they have mutual support, and local artisans have a clear market to respond to. They will provide a village-wide demonstration and subsequent adoption should be quicker.

The project should therefore concentrate on achieving significant adoption in several villages. This may mean lending 5-10 weeders (rather than just one or two) in one village for a season or two.

At the same time the project should identify the preconditions that make the technology easy to adopt. For weeding, this will probably involve villages with significant row crops that can be sold easily (eg, villages growing cotton and groundnuts, with easy access to market). They should then concentrate on encouraging adoption in these villages. This should be easier than randomly chosen villages, since the project will have identified villages that have a strong technical need and economic potential. Once these villages have been seen to accept the technology, it will be easier to convince others (farmers, projects, government, donors) that the technology should be promoted in other villages.

In summary, the extension programme should continue its good work, but with more prioritisation of villages, more concentration of resources within villages, and with a willingness to make several demonstration implements available for 2-3 seasons if necessary to clearly demonstrate the value of the technology.

Transport

Animal-drawn transport is very under-developed in Guinea. The trend throughout sub-Saharan Africa is increasing use of animal power for rural transport. This is hardly seen in Guinea, although the transport

needs are clearly there. The project has been disappointed by the low-levels of cart adoption, and had virtually given up active promotion of carts. This seems premature, and the project should make a renewed effort to demonstrate the value of animal-drawn vehicles.

Animal-powered transport can be of particular social and economic benefit. Farmers with animal transport (carts or pack animals) have larger circles of contacts and trade. The resulting enhanced market access allows them to increase their production and also their profit. With animal transport, greater use is made of manure and crop residues, which also increases overall farm production. Animal-drawn carts can provide important local 'feeder' transport between farms and roads, to complement motorised road transport systems. The development of efficient animal-based transport is often constrained by limited supplies of carts and/or the capital or credit to purchase them. However, animal-based transport is usually very profitable. As long as there are sufficient numbers of carts in an area, local artisans ensure the technology is sustainable. In Guinea, as in most of Africa, women are the main transporters of goods in the rural areas. They carry domestic requirements (water and fire wood), food grains, farm produce, traded items and children. With animal transport, their burden can be eased and their time is saved for other activities with economic and/or social benefits. As women farmers and traders are freed from the limitations of head-loading, more is produced and traded, increasing profits and overall economic activity.

It is recommended that the project develops new initiatives to promote animal-drawn carts. As with weeding technology (discussed above), the project should aim for more prioritisation of villages and more concentration of resources. Villages should be selected with conditions likely to favour cart transport (flat areas, with existing tracks and with significant economic transport requirements - such as regular local market). In such identified villages, several (5-10) carts should be placed with trusted partners (entrepreneurial farmers and transporters). The carts may have to be demonstration models on loan, with options for subsequent hire-purchase. The aim will be to have a few villages where the cart technology can been proven to be technically appropriate for Guinea. Once a sustainable 'critical mass' of users has developed, the inherent profitability of transport should ensure continued expansion. In several neighbouring countries (Senegal, The Gambia, Guinea Bissau, Mali, Burkina Faso and Mauritania) there have been very rapid expansion of animal-drawn carts in the past 25 years. It is not therefore not unreasonable to suggest that within a generation, thousands of carts could be used in Guinea, assisting men and women and general economic development.

One problem mentioned by the farmers, was the belief that carts were 'heavier' on the animals than plows. This misunderstanding was very strong in one village visited. However, farmers appeared convinced this was not so following the showing of photos of successful cart use and discussions in which they had to choose between pulling a plow themselves or pulling a cart. Deep-seated prejudices cannot be removed by one conversation, but such discussions provide openings for specific follow-up activities (such as the loan of carts to interested farmers). The project should take all opportunities to promote discussion and demonstration of cart options in areas well-suited to such technology.

The cost of the SOMATA cart is high by international standards. The main cost is that of the imported axle and second-hand wheels and tyres. It is important that standard types of axles are used, so that the bearings are compatible with the numerous (over 500,000) carts used in Francophone West Africa. The price should come down with economies of scale, and tenders could be invited for the supply of a large stock (several hundred) of compatible axles, wheels and tyres. Quotations should be sought from Senegal, Zimbabwe and Europe. If possible, the sale price of the cart should be based on axles bought in bulk (ie, they should be priced on their 'normal' price, should they become popular). This would effectively be the case if the carts were subsidised by 50%, as is the case with certain equipment.

The project might consider the possibility of arranging income-earning schemes involving animal-drawn carts. One example would be labour-intensive road construction and repair. Other ideas for transport of goods and materials by carts might also be considered. The aim would be to assist in the initial adoption of carts: once there use was well-established, their profitability should be assured by a wide range of local transport opportunities.

The project might also consider the use of simple sledges, which are widely used in Eastern and Southern Africa. Sledges are less efficient than carts, and they can create water-ways that accelerate erosion. However they are very simple (a V-shaped log can be a sledge) and cheap. While carts can run away in hilly areas,

sledges are much more stable (high resistance, high friction). While carts are generally better for the owners, the animals and the environment, sledges might be considered as a cheaper alternative in certain areas.

Extension programme with master farmers

Vulgarisation par les maîtres-bouvier.

The use of master farmers for training is one of the best parts of the RGTA work. It should be continued and further developed, and the master farmers should be given strategic support, where appropriate. For example, the cost of a bicycle is equivalent to one month's salary of an extension worker, and the master farmers undoubtedly give more than that value in their time. In addition to their initial training, they have given follow-up advice, and this has necessitated them travelling to farmers' fields. They are also planning to extend their circle of involvement in future years. Therefore the issue of a bicycle, after their first successful training programme has been initiated, seems entirely reasonable. The indicated they would accept various conditions (maintenance by them, withdrawl of bicycle if they lost interest in the RGTA work).

As a further incentive, and as part of the RGTA extension programme, they could be given a cart on loan for their own farming and entrepreneurial activities. This would not only be an appreciation of their good work, but it would be a continuous demonstration of the value of carts. As stressed above, their is a need to have carts seen in regular use, so they become accepted as a normal part of rural life in Guinea.

The master farmers insisted that the success of their programme depended on the continued availability of project-supplied cords and rings. From an external point of view, this might not seem a vital point, but the master farmers felt this very strongly. The marginal cost of this is small, compared to the value of the programme, and so continued subsidy of these items seems appropriate for at least two more seasons. In the meantime, the project might try to identify cheaper sources of nose rings, for example from China.

Soil conservation with animal power: green manure

Conservation des sols en utilisant la traction animale: engrais verte

A trial has been started with a legume crop that could be incorporated into the soil to enhance fertility. A 'nice idea' in principle, which the project might use to claim it is helping to reverse any trends towards soil impoverishment and degradation. In practice there are numerous problems, that militate against success.

- The establishment involves plowing and weeding: the same effort required for a cash or food crop (eg, groundnuts).
- The present crop is too luxuriant and full of tendrils to plow in easily. Therefore it cannot be used as a green manure as intended.
- Even if the crop does improve fertility, it will not be until the following year, with the risk that even then the crop might fail due to rain problems or pests. Farmers are unlike to invest their time and effort this year, for what is at best an uncertain benefit for the following year.

Farmers will be more willing to invest in improving soil fertility if they can see some immediate benefits as well as potential longer-term value. Thus emphasis should be placed on a crop which provides some benefit in the same season. Groundnuts or cow-peas should provide a harvest for human consumption, high quality animal feed and some leguminous enhancement of the soil for the following season. Further work should be on such multi-purpose crops. However, RGTA/ACT does not have experience of forage trials (which are complicated if done correctly) and should not devote significant resources to this programme. It should certainly assist with technical advice on the animal traction side, and possibly use its contacts to find any examples of successful use of green manure in Africa (there has been some use of forage cow-peas in Mali, promoted as an animal feed).

It should be remembered that greater use of carts, can lead to greater crop-livestock integration. With carts, it is easier to stock fodder (maize stover, groundnut hay) and markets develop for animal feed (such as groundnut hay). It is also easier to return animal manure and compost to the fields. At present, most crop residues remain in the field and may be lost through oxidation and fire. Promotion of carts could increase the value of legume hay, encouraging greater cultivation of soil-enhancing legumes.

Equipment: heavy plow, harrow, plow for swamp rice

Machinisme: charrue lourde, la herse, charrue pour culture de riz en mangrove et bas-fonds.

Heavy mouldboard plow.

The project imported a heavy European type plow to assess its value. The was envisaged that this might be useful for turning heavy soils and incorporating vegetation, as was its role in Europe. However, given project experience, it was a strange idea, because the new reversible plow was very heavy, very expensive, complicated to adjust and required a very high power source (in Europe it was used in clay soils with strong animals). In Europe, the weight and stability of the plow was such that it could be pulled without a person steering it (when correctly adjusted), and was thus a labour-saving implement. However, in Guinea, farmers have been telling the project of the importance of light implements, that are simple, inexpensive and appropriate to the power of the local N'Dama animals.

To reduce weight, the project has removed one mouldboard (so it is no longer reversible). The fore-carriage (the two-wheel system of adjustment) was not copied correctly: the copy was heavy, crude and without function. The wheels were made the same size and height (it was designed to have wheels of different size and/or height, with one in the furrow and the other on unplowed land). Also the adjustment was incorrect (it was not possible for the plow to enter more than a few centimetres). Therefore, in order to test the plow, the fore-carriage was replaced by a normal plow wheel (not so stable, but much simpler, lighter and cheaper).

This change meant that the new plow was not dissimilar to a big version of the SOMATA plow. It had a large width and cut, requiring high power. A pair of N'Dama oxen could plow with it in light soils with a shallow cut - but this is not what it was designed for. For deep cut and heavy soils, it would require more power than available from two animals. A trial was initiated to see if four animals could be used. Farmers were shown photos and agreed to try. Within a few minutes, one person was plowing with four animals (un homme, deux attelages!), although further animal training and rein systems would be required, it was clear that the system could work. Naturally, two (or more) pairs of animals work best in large fields. The system is appropriate where there is need for high power, where animals are available and/or human labour scarce, and where fields are large.

Although it would be technically possible to use the large plow, there seems little technical or economic justification. The exercise has illustrated some dangers for the project. It was another 'nice idea' with insufficient thought of the technical and economic consequences and implications. It also showed the danger of trying to copy a system (the forecarriage) without real understanding of its function. The project would do well to learn from this experience, and be more rigorous in its planning and implementation of innovations.

Harrow and swamp plow

There was a demonstration of the 'Spanish' harrow. There seemed no technical problems. It appears a useful implement, but it will need further evaluation to study how it wears and whether it is economically justified. By turning over the harrow, one has a simple levelling device.

The prototype swamp plow did not work during the demonstration (other than as a bulldozer). There was no problem with the use of a wooden pole: the problem appeared to be the shape of the plow body and mouldboard, which did not allow scouring under the test conditions. The SOMATA plow was able to work, but the inversion was insufficient (the soil fell back to its original position). The farmer wanted the plow to create ridges. It was suggested that what was required was a morning of testing with some alternative shapes of mouldboard, to find one that inverted the soil and cast it high.

RGTA (and its partners) are hoping to develop an efficient rice cultivation for swamps (and/or mangroves). This is a clear case for a networking approach. Other West African countries are trying to do the same and Asian rice farmers have been working on similar problems for thousands of years. It is unrealistic to think that RGTA, with its limited resources, can design an effective new system for Guinea. Rather it should test well-proven systems. There should be little or no attention to well-meaning prototypes. Time and effort should only be given to well-proven implements and systems that are known to be technical and economically appropriate elsewhere.

It may be appropriate to import samples from (say) Indonesia (the island of Bali has cattle similar in size to the Ndama). However, this may have already been done in neighbouring countries (Senegal imported some

buffalo equipment a few years ago). There is therefore an urgent need to assess the situation in other West African countries. One way would be through hosting a workshop (to be discussed later). Study tours and correspondence may also be important.

Hire-purchase system for animals and equipment

Système location-vente pour animaux et machines.

The hire purchase system for equipment seems appropriate in circumstances where farmers lack cash and other credit is not available. Without schemes, the adoption rate may be slower. Farmers are aware that purchase on credit is significantly more expensive than cash purchase, and so only those who really need the credit will use such schemes. Hire purchase and credit schemes tend to be very labour-intensive to administer: they are also fraught with problem relating to failure to repay and/or embezzlement. RGTA should try to have as little to do with such schemes as possible, concentrating on what it is good at: farmer training and extension. However, it is recognised that some form of credit/hire purchase may be essential where new technologies are being introduced.

In most countries, credit for animals is much less secure than credit for equipment. The risks of animal loss are much greater (disease or theft). Also, the farmers and their families know that cattle can be quickly exchanged for cash, and so family emergencies may cause a farmer to sell an animal. That being said, it is often difficult to introduce animal traction in the absence of credit for animals. Some countries have introduced insurance schemes for animals (a compulsory additional charge to the credit). This solves some problems, but creates others.

The conclusion must be that RGTA continues its present programme, but with extreme caution. It should consider its involvement with credit as a last resort. RGTA should search for new ways to avoid becoming bogged down with the effort and inevitable pain of credit provision.

Institutionalisation of RGTA

Institutionalisation du RGTA: evaluation.

RGTA has come a long way in the past few years. It has achieved recognition and a degree of autonomy, although it is still financially dependant on ACT. RGTA would naturally like complete autonomy and financial independence, provided it could be assured of continued levels of donor support. Given the nature of Guinean society (where corruption is not uncommon), continued links with ACT seem very important in the short- to medium-term. As long as the two organisations have mutual trust and respect, the links will be mutually beneficial. RGTA will gain from the additional credibility and protection afforded by its association with ACT (officials know they cannot put pressure on the assets of RGTA while ACT is there). ACT can show it is empowering local organisations in a sustainable way, while being confident that donor funds are used wisely.

RGTA is still evolving. It needs to demonstrate that it has good systems in place for dealing with changes in personnel (at all levels). It is also important that future donors have confidence in its programme. It may be appropriate to include certain donor representative(s) as members of, or observers at, it advisory board.

Networking

The early success of RGTA/ACT had much to do with a willingness to learn of the experience of others in West Africa. This is still the case. RGTA has much experience it can share with others, and much to gain. With its limited resources, RGTA cannot expect to develop new implements and farming systems in isolation. Indeed it would be inefficient to do so, when other projects in the region are working on similar issues. It is therefore important that RGTA continues with a networking approach at both national and international level.

Among the main areas where RGTA could benefit from networking are rice cultivation systems, animal-drawn transport, blacksmith training, farmer training and extension (eg, for weed control). There are other areas of lower priority where information from other countries would be useful (eg, soil enriching crops; use of heavy equipment; labour-intensive road construction using animal carts).

RGTA would benefit from the reactivation of the West Africa Animal Traction Network (WAATN/ROATA). Indeed it would benefit greatly from hosting a workshop on one or more of its important themes. For reasons of logistics, communication and accommodation options, Guinea is not an easy country to hold an international workshop, particularly one where field visits would be important. However, the benefits could be great for the RGTA (gaining information and experience, while increasing in national and international stature). It should be possible to hold such a workshop without adversely affecting the present extension programme.

There will be further possibilities to discuss this during a workshop to be held in Burkina Faso in November. This will be attended (among others) by the President and Vice President of RGTA, the present author, Mr Jan Primo and members of ATNESA and the West Africa Animal Traction Network. At this meeting, it will also be possible to assess other networking options, such as bilateral collaboration and study visits within the region, to assess key issues (such as equipment for rice cultivation systems).

Some other points

SOMATA

On this mission only a little time was spent with SOMATA. It continues to be impressive, and a good example of appropriate, labour-intensive production. The Director seems in control, and well aware of the main issues (cash flow, primary materials, implement weight, need for quality control, etc). Prices are high, particularly for carts. However, the prices appear justified by the reported costs of inputs, but there will be a continued need to aim for lower prices. SOMATA is attempting a very difficult task, and many other implement manufacturers in Africa have failed due to the problems of cash-flow, supply problems, irregular sales and competition from subsidised imports. SOMATA does not have a comparative advantage in implement design (witness problems with the fore-carriage of the heavy plow). Continued close association between SOMATA, RGTA and ACT will be needed in the foreseeable future.

Blacksmiths

During this mission, there was little time to review the blacksmith programme. The idea of working with master blacksmiths seems appropriate. There is need to liaise with other programmes in the region, to share experiences and ideas.

Plowing competitions

The main plowing competition in Guinea Maritime was very impressive. It provided very good publicity (aimed at farmers, officials and donors). It was well organised. Although it might have been good to have had more involvement of women, and greater emphasis on the importance of carts, these are not criticisms. RGTA should be proud of its undoubted success.

The preliminary heats for the competition in Haute Guinea raised a few questions. The organisation was weak (so project staff and farmers waited unnecessarily). The value was limited, as there was little technical value (few pairs were rejected) and no significant village demonstration element (a mini-competition might stimulate greater village interest). The project should question whether such events are justified: it could be that the time of the farmers and the project staff could be better spent on other activities. The project should be self-critical and ensure it is prioritising its actions and making best use of its limited resources (human, transport, etc).

Statistical accuracy

RGTA should be careful to ensure that its technical reports do not contain unrealistic suggestions of accuracy of information. Some documents cite percentages to two decimal places, when the population surveyed was quite small and/or the data were not particularly accurate. For example, “Molota enregistre la plus forte proportion avec 90,48% des paysans encadés, suivre de Kolenté (89,66%)”. Similarly, 2 out of 13 animals inherited in Samaya is reported in a table as 15.38%. Unless data are very accurate, there is no need for decimal places in percentages between 10 and 100.

A new equipment possibility

Low-cost plows and seeders that can be made in small workshops have become quite poplar in Central America (over 10,000 sold). It may be interesting to test these in Guinea (or elsewhere). Options can be discussed during the meeting in Burkina Faso, where illustrations and addresses will be available.