

French Embassy at Lusaka

# Backing up the Cotton Development Trust of ZAMBIA (november 4<sup>th</sup> - november 18<sup>th</sup>, 2005)

- Training Cotton growers representatives to the Role of Farmers organisations
- Identification of cotton production constraints
- Proposal for strengthening Cdt-Cirad linkages
- Recommendations to the Board of trustees



Dr J. Lançon (Cirad, Unité de Recherche Coton)

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# SUMMARY

# TOR

This consultancy had three main objectives:

- to identify fields of common scientific interest for Cdt and Cirad and propose a program of training and visits;
- to identify activities to strengthen the just born Cotton Growers Association of Zambia;
- to deliver courses on cotton production and the role of farmers' organisation in the cotton sector

More emphasis was put upon the first and the third items.

# **Cotton in Zambia**

Cotton production in Zambia has steadily increased for the past 10 years. In 2005, it reached a pick of 200 thousand tons SC. This could be attributed to several factors including (a) a price is announced by Dunavant before the season starts; (b) inputs are provided on credit, and (c) the crop is paid on time by the major promoters.

Dunavant and Clark Cotton purchase over than 87% of the national production. Dunavant is represented in the three cotton producing Provinces, where Clark Cotton only operates in Eastern Province. This Province produces now more than 60% of the total production.

F 135 and Cza 88 (Eastern Province), are still the major varieties, although Research is proposing CDT II as a replacement for F135.

#### Major stakes

The government tries to withdraw from this sector, which has still to face organisational problems, like seed cotton pirate buying and unsufficient producers organisation. Liberal economists (D. Tschirley and B. Zulu) think that the sector is now well run and benefits to the growers (high price share). They acknowledge the need for increased coordination among SHs to ensure good quality genetic material, to maintain competition between the ginners / promoters and to improve the mean export value per ha.

We also consider that the price paid to the farmers is too low for them to adopt more sustainable growing management systems. Improving the price should be taken as an absolute priority. This requires increased coordination at both national and international level:

• At the national level, (a) adding value (productivity or quality) through improved coordination among SHs, (b) increasing the share devoted to the growers through better farmers organisation and (c) improving the sustainability of the cotton production systems with more sustainable agronomic and industrial practices.

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• At the international level, (a) getting a higher world price (lobbying, marketing) and (b) increasing the locally added value (transformation).

A new Cotton Act has recently been redrafted. It proposes to create a Cotton Board, which will perceive a levy and act as a regulatory body.

# **Cotton Research**

CDT is the major actor in cotton research. However, CFU (Conservation farming unit) is also contributing to on farm research, through the development of conservation farming techniques in Southern Province (basin planting, ridging, rotation, agroforestry eg Acacia ...).

Since 2002, CDT has recruited two new technical staff, Mr D. Simujika, Extension and Training specialist, and Mr Bbebe, junior plant breeder.

For its Board, CDT needs to be more in relation with other scientific institutions. Plant breeding should remain a priority with two key activities ie maintenance of the nucleus seed and test of imported varieties. Adaptative research on cropping systems should also be developed as well as training activities. Cdt could develop a training centre for farmers or trainers, like the one developed in Zimbabwe. Magoye seems now too far from the main cotton growing area.

#### Support to CDT

We should not forget that the varieties which are grown today, came from breeding activities that were initiated in the seventies and developed in the eighties and nineties. Cotton research, particularly breeding, gives its best results on the long term basis.

Cotton research needs to build up credibility to attract private money and that of the other donors or backers. Hence CDT has to target two major objectives: (a) to convince the private SHs that its results may add value to the whole sector, and (b) to convince the development agencies tat this added value can benefit to the growers and contribuete to pverty alleviation.

Our proposal is to make CDT part of the international research network facilitated by CIRAD. The following research themes should be given a priority.

<u>In plant breeding:</u> increasing the access to foreign germplasm; strengthening the variety trial network, developing participatory on farm evaluation; appraising seed quality control; training the young national breeder; advice and exchange of information on GMO cotton.

<u>In agronomy:</u> assessing the most limiting agronomic factors to yield increase; developing and evaluating new and more sustainable CMS (economic, environmental, social).

<u>In entomology:</u> appraising pest control quality in the cotton growing areas; assessing insect resistance build-up; developing a sustainable program.

In technology: developing low cost equipment for plant breeding; including existing labs in round checks.

<u>In research-extension and training:</u> improving the quality of the existing on farm tests ; developing a training program on the cotton sector for SHs decision makers.

Donors commitment should be long enough to build a sustainable relationship between CDT and CIRAD (3 years minimum). We need a minimum amount of 24.5 K $\in$ / year, which could be implemented at 75% by CIRAD and at 25% locally by the French Embassy.

# Cotton growers' association of Zambia

Considering the development of the sector, specially in Eastern Province, a Cotton growers' association is being formed under the umbrella of ZNFU. Supported by EU, this association should help to promote farmers interests at the national as well as at the international level. It will be officially launched on November 25th.

#### Support to CGAZ

The CGAZ needs time to build up its foundation from grass root organisations. Priority should be given to facilitating an exchange of experience with West African cotton growers organisations). In a longer term, networking with West Africa should be supported, particularly in the field of common interests eg world prices, national subsidies to cotton export and organisational aspects.

# Recommendations to the board

Updated recommendations have been made.

The Board of CDT could expres its interest in (a) developing more activities in Eastern Province, (b) recruiting a plant protection officer, (c) promoting the junior breeder's training, (d) densifying the national variety trial, (e) organising quality tests with the cotton classifiers, (f) including Dunavant (HVI) and NISIR (Conventional) labs in international and national round tests, (g) improving the on farm trials, (h) supporting the emergence of the CGAZ and (i) helping CDT to develop key training sessions and to limit its involvement in training farmers.

#### Conclusion

I propose the CDT Board and its staff (a) discuss the informations and proposals made in this report, (b) send their own conclusions to the French Embassy, and (c) draw an action plan to implement the actions in the fields.

# Courses

The list and the support of the presentations are given in the Annexes.

# ACRONYMS

Afdi: Association des agriculteurs français pour le développement international Caro: chief agricultural research officier Cdt: cotton development trust Cfu: conservation farming unit Cga: cotton ginners association Cgaz: cotton growers association of Zambia Cgrai: groupement des centres internationaux de recherche agronomique **Cirad**: centre de coopération internationale en recherche agronomique pour le développement Gart: Golden Valley agricultural research trust Fsp: fonds de soutien prioritaire (France) Hvi: high volume instrument **Irct**: institut de recherche sur le coton et les fibres textiles (Cirad) Itk: itinéraire technique cultural (cropping system / ensemble des opérations appliquées à la culture du coton) Maco: ministry of agriculture and cooperatives **Opa**: organisation professionnelle agricole (farmers union) **Pcot**: programme coton (Cirad Cotton program) Scac: service de coopération et d'action culturelle de l'Ambassade de France (French Embassy)

Znfu: Zambian national farmers unions

# Main personalities that have been met

F. Sodubray	HE, French Embassador	Lusaka		
J.L. Riddell	Counsellor, French Embassy	Lusaka		
B. Cox	Farmer	Mazabuka	Board trustee	
W. Chitah	CDT Director	Magoye		<u>cdt@zamnet.zm</u>
J. Villa Chacon	Attaché, Social sector and civil society, European Union	Lusaka		Juan.villa-chacon@cec.eu.int
B. Mbebe	CDT Plant breeder	Magoye		<u>cdt@zamnet.zm</u>
J. Musanya	CARO, Agronomy	Lusaka		
J. Nkole	ZNFU – CGA coordinator	Lusaka	Technical committee	joenkole@zamtel.zm caz@zamtel.zm
T. Jones	Commercial farmer (Monze)	Monze		
S. Fleming	Farmer	Mazabuka	Board trustee	sfleming@zamnet.zm
B. Siamasonta	CDT plant breeder	Magoye		<u>cdt@zamnet.zm</u>
T. Isherwood	Managing Director Dunavant	Lusaka	Board trustee	IsherwoodA@Dunavant.co.zm
C. Hayward	Production Manager Dunavant	Lusaka		
R. Gipson	CFU agronomist	Lusaka		Geogipson@zamnet.zm
D. Simujika	CDT training officer	Magoye		<u>cdt@zamnet.zm</u>

# MANY THANKS

First of all, to His excellency, the French Ambassador, Mr F. Sodubray and to Mr J.L. Riddell, first councellor, who took the initiative and supported this consultancy.

Then of course to the whole Cdt team and more specifically Mr Chitah for the organisation. A lot of the information included in this report has been provided by Cdt staff, Dr Siamasonta, Mr Simujika and Bbebe, and also from their 2004 Cotton News review.

At last, but not at least because their advises were of major interest, to the Cdt board members I had the chance to meet, Mr Cox, chairman, Mr Mukutu, v-chairman and M. Chalabesa, trustee.

I hope that the proposals and remarks that are formulated in this report will be found relevant and reinforce Cdt and Cirad through strengthened connections.

Above all, I hope that they will contribute in some way to the future of cotton growing in Zambia and to the welfare of the tens of thousands Zambian people who rely on it.

# TERMS OF REFERENCE AND PROGRAMME

This consultancy has been financed by the French Embassy in Zambia on the request of the Cotton Develoment Trust (Cdt). Its objectives were formulated as follows:

- & to deliver courses on cotton production and the role of farmers' organisation in the cotton sector.

However, with the authorisation of all involved parties, more emphasis was put upon the first and the third items as Zambian contribution to Fircop had already been achieved.

Most of my time has then been dedicated to the three training courses which had been organised by Cdt in Southern, Central and Eastern Provinces. Training represented about 70% of my time (see Annex 1) while the remaining 30% were used for meeting some of the Board trustees, identifying the demand and working out a proposal for strengthening Cdt-Cirad connections.

The terms of reference were predominantly strategic. However, part of expert time (about 40%) was dedicated to prepare and organise three training courses, organised by Dunavant or Cdt at Monze and Magoye in Southern Province (see Annex 1). The other 70% were used for meeting board trustees and identifying the needs for useful strengthening the collaboration among Cirad and Cdt scientists.



Figure 1. Production trend.

# CONTEXT

# **COTTON IN ZAMBIA**

# Production

Cotton in Zambia seems still to be in a development phase. The production has rather steadily increased for the past 10 years. In 2005, it has reached a pick of 200 thousand tons SC (see figure).

This recent and fast increase could be attributed to the fact that Dunavant is now announcing a guaranteed price<sup>l</sup> before the season starts.

Ginner	Volume of SC	%	South + Central	East	%
Dunavant	130 000	65	62 000	68 000	52
<b>Clark Cotton</b>	44 000	22		44 000	100
Continental	6 000	3	3 000	3 000	50
Others	20 000	10	10 000	10 000	50
Together	200 000	100	75 000	125 000	63

#### Production per ginner and province in 2004/5 (tons of seed cotton).

*Others: include Mulungushi cotton and cooking oil + Chipata cotton. after Dunavant* 

Two promoters are dominating the cotton sector. Dunavant and Clark Cotton purchase over than 87% of the national production. Dunavant is represented in the three cotton producing Provinces, where Clark Cotton only operates in Eastern Province. This Province produces now more than 60% of the total production.

# Organisation

The sub sector has still to face organisational problems, like seed cotton pirate buying from the ginners who are not committed in pre-financing the inputs to the growers. Also, farmers are only starting to become full members of the commodity chain.

# Extension

The EU has approved a \$2Million project for strengthening the small scale farmers ability to grow cotton. 5 themes will be promoted among which early planting, plant stand, regular weeding, good plant protection, conservation farming techniques which include ripping and planting in basins.

The involvement of the government into the development of the sub sector has been gradually reduced (400 K\$ in 2002 put either in seed production or for pre-financing the crop).

Note that all varieties grown in Zambia have been provided by Cirad either directly (F135 and CA 223) or through common work with CDT (CZA 87 and 88).

<sup>&</sup>lt;sup>1</sup> Although, the price mechanism seems rather obscure and it had to be changed during the last season because of low world market prices.

# The sector in 2005

# Stakeholders

Extension / promoters:	Zcga (Cdt), MA Coop., Cfu (Znfu), Dunavant, Clark Cotton
Ginning:	Dunavant (Lundasi, Petauke, Mumbwa, Gwembe, Katete), Clark cotton (ChipataA, ChipataB), Continental (Kalomo/Choma), Mulungushi cotton and cooking oil (Kabwe), Mukuba textiles (Ndola), Chipata cotton company (Chipata), Great Lakes (Sinazongwe)
Crushing:	Dunavant (Lusaka), Mulungushi cotton and cooking oil (Kabwe),
Ginning wastes:	
Spinning :	(Potential 25750 T), Swarp (Copperbelt), Kafue textiles (Kafue), Mulungushi textiles (Kabwe), Mukuba textiles (Ndola), Excel (Copperbelt), Starflex (Copperbelt) and Continental (L/stone)
Weaving + printing:	Kafue textiles (Kufue), Mulungushi textiles (Kabwe), Continental (L/stone)
Research:	Cotton development Trust (Magoye)

# Varieties grown in 2004-2005

F 135	: ±	= 108.000 ha	Cza	88	······	$\pm$ 192.000 ha
And in the multiplication z	one, Cza	a 88 for Eastern	Province,	F 135, an	d CA 223 (Lundazi)	
TOTAL :	: ±	300 000 ha				
Very indirect estimates						

# 2005 results

	Ensemble	
Seed cotton production (t)	200000	
Seed cotton yield (kg/ha)	$\pm 700$	
Ginning out turn (%)	<i>n.a.</i>	
Fiber production (t)	n.a.	

# Varieties grown in 2005-2006 (previsions)

F 135:	?	Cza 88	 ?
And in the multiplication zone, Cza	88 for Eastern	n (Province) et F 135	
TOTAL :	? <b>ha</b>		

the last seasons.					
Year	2001	2002	2003	2004	2005
SC price (\$US)	0,20	0,25	0,30	0,20	?
Cotton pack (\$US)					195000
50 kg Urea					120000
( D 1.0D	<b>T</b>				

<u>Changes in the actual price of seed cotton (US\$ cts/kg) and running costs (in Kwachas) along the last seasons.</u>

after Dunavant and CDT

There is an indicative price quoted in Kwachas by Dunavant at the beginning of the growing season. This price is generally admitted by the other promoters. It may vary at the time of harvest with the World market price. On the other hand, its actual value may also be affected by inflation.

#### ANALYSIS OF THE SECTOR PERFORMANCE

#### Achievements of the sector: positive effects of privatisation

This thesis was developed by <u>D. Tschirley and B. Zulu</u> (may 2003) in a paper entitled "Zambian cotton in a regional context: performance under liberalisation and future challenges" (policy synthesis, MACO – US AID project).

The authors compare the performance of the cotton sector in several African countries, including two in West Africa (Benin and Mali) where the government is still playing a major role and Zambia where the sector is essentially driven by private promoters / ginners. They conclude that the Zambian sector has been successful in improving production and quality while paying a higher average price share than any of the other countries:

- ≻ between 1995 and 2002, the Zambian model showed in average the highest producer price share,
- ➤ this was performed under "the almost complete absence of government in production, marketing, regulation or direct financial assistance to the sector" whereas West and Central African production had to be supported with \$30 Millions subsidies in the year 2001 alone.

The authors acknowledge the role played by cotton research, essentially through providing the commodity chain with good quality genetic material.

They identify the challenge to maintain competition between the ginners / promoters while strengthening the coordination needed to improve the <u>mean export value per ha</u>.

In this respect, they recommend that external assistance (government or donors) should be provided (a) to assist the private companies in delivering the insecticides on credit, (b) to promote continuous innovation and improved quality through competition among private firms, (c) to prevent the two largest companies to further consolidate their market positions, (d) to support CDT in developing, maintaining and disseminating new varieties and (e) to lobby for "free trade" cotton.

# Discussion

# ≻ <u>An ambiguous indicator</u>

This paper is quite stimulating and I could not resist to discuss some of its conclusions. It focuses on the price fixing mechanism as an indicator of good liberalisation practice. A high price share and the development of the crop should indicate that there was no bias during price fixation, which could disadvantage the Zambian cotton growers. However, small scale farmers' decisions are not solely driven by commodities' prices.

Cotton production also increased in WA countries, during the same period. The major factors responsible for the farmers' attraction to the crop were primarily linked with <u>risk management</u>: (a) price determined in advance, (b) inputs provided on credit, and (c) reliable payment of the crop. The final seed cotton price comes only second in small scale farmers decision. The Zambian sector probably benefited as much from organisational measures, as from a favourable price.

The price share is an ambiguous indicator. A high share can be seen as positive or negative. Very positive when it reflects a lot of value added by the growers to their crop (superior varieties, high ginning out-turn, good quality, processing, lobbying etc.). Very negative also in a situation where there is <u>very</u> <u>little value added</u> all along the commodity chain due to the lack of efficient coordination among the actors. And this could rather apply to the Zambian situation. In this case, <u>actual prices<sup>2</sup></u> should also be taken into account, as indicating how the farmer has been rewarded for his contribution to the sector productivity.

At last, although the authors acknowledge the role played by cotton research, they should also pinpoint that the genetic material used in Zambia has been produced with external support, and benefited from research work done in other countries, including WA.

≻ Some improvements are still needed

We fully agree with the authors when they point out the actual limits of the Zambian sector: a lack of coordination between actors and an insufficient external financial support.

Comparing to the previous period, private companies have been particularly successful in increasing the productivity of the staff involved in the sector (input sale, purchase, ginning, credit, extension etc.) thanks to more efficient management.

However they could not increase farmer's productivity and revenue. The <u>mean export value per ha</u> is much higher in WA (\$600 to 650 in Benin and Mali compared with about \$300/ha in Zambia). This reflects also a better gross margin, although the value is produced in WA with higher running costs, due to the spread of mineral fertilisers.

The actual price paid to the farmers is <u>too low</u>. The fact that not a single commercial farmer produces commercial cotton in Zambia clearly points that out. Improving the price should be taken as an absolute necessity and a priority. This requires negotiation and coordination either at a national level, or at an international level. On this issue, Dr M. Fok<sup>3</sup> (Cirad) proposes that the US, European, and other countries, which subsidize their crop, abound a fund equivalent to the subsidies they pay to their growers. The fund could be used to promote cotton production in the developing countries.

WA countries <u>maintained a higher revenue</u> for their cotton growers through <u>subsidizing the sector</u>. According to the authors, subsidies amounted \$30 millions in 2001. For a crop of 2 millions tons of seed

<sup>&</sup>lt;sup>2</sup> Actual prices paid in different countries are difficult to compare in the case of high inflation rates.

<sup>&</sup>lt;sup>3</sup> *Michel.fok@cirad.fr* 

cotton, this was equivalent to about 2,5 cts per kg of SC, between 5 and 10% of the price paid to the farmer<sup>4</sup>. It only accounted for 10% of the 250/ha difference between WA and Zambian farmers' revenue, the remaining 90% being due to increased added value at the farm level. Such subsidies benefited to the farmers either directly through improving the SC price, or indirectly in contributing to the coordination costs (eg research or seed multiplication, purchase of inputs and other intensification costs, etc). In a fully private driven sector, external financial support can only be obtained if there are clear rules that guarantee that the farmers will be the actual and primary beneficiaries.

The sector seems economically efficient. It has settled the market basis for agricultural development. However, it cannot guarantee on its own its sustainability on the long run. At the moment, the sector does not contribute significantly to poverty alleviation in the rural areas. Cotton gives only a small return to the farmer and it is not yet a vector for more intensive practices and productivity gains. Better regulation is required, as a weak regulatory system always benefit to the strong and, worse, to those who by-pass the rules for their personal interests. Pirate buying jeopardizes the credit system and the chances for farmers to improve their productivity. Research and extension cannot be sufficiently founded. And at last, unorganised SHs are disadvantaged by not having access to useful information etc.

# FARMERS ASSOCIATIONS

# The mother organisation: ZNFU

The Zambian national farmers union (ZNFU) represents all Zambian farmers, among which commercial are among the most active. It is formed of District Farmers Associations (DFA). The DFA's members elect their representatives at each Commodity Committee (Fish, Beef, Coffee, Tobacco, Export vegetables, Oil seed, *etc.* and now Cotton).

These representatives form the national Commodity Council, and they elect an Executive Board of 6 members. The secretary of ZNFU is chosen among these Executive Boards trustees.

# The Cotton Growers Association of Zambia

Considering the development of the sector, specially in Eastern Province, a Cotton growers association is being formed under the umbrella of ZNFU. This association should help to promote farmers interests at the national, and at the international level. At the moment, it is supported by the European Union, who takes in charge the salary of a coordinator, Mr J. Nkole, former cotton promoter.

Its first assembly will be on November 25<sup>th</sup>, leading to the formation of its executive board and representatives at the ZNFU secretary.

It has still to develop grass root organizations to support the national association.

Its role could be as follows:

- $\succ$  To collect feed back from farmers,
- $\succ$  To provide feed back form farmers and advises to them,
- $\succ$  To negotiate and lobby in the name of the cotton growers.

A new Cotton Act has recently been redrafted from the previous one, which dated from the begining of the 20<sup>th</sup> century. The Act describes the rules organizing the sector (production, organization,

<sup>&</sup>lt;sup>4</sup> This percentage could be compared with 100% direct subsidies in Europe, 50% in the US and 20% in China.

# Rehabilitation of the breeding lab

# **Buildings:**

- 1 lab (40 m<sup>2</sup>) equipped with benches, shelves and closets
- 1 smaller lab (10 m<sup>2</sup>) also equipped with benches, shelves and closets for specific tests which have to be done in a confined environment
- 1 storage room (20 m<sup>2</sup>) equipped with shelves and closets for long term seed storage
- 1 shelter (40 m<sup>2</sup>) for short term storage (samples arriving from the field)

All rooms should be carefully designed rat-free.

# Major equipement:

- 2 lab gins (?)
- 10 saws gin (maybe already in place)
- lab and field scales
- 2 fibronaires
- 1 SCF tester, 1 sticky cotton detector

regulation). It proposes to create a Cotton Board which will perceive a levy and act as a regulatory body.

# AREAS OF COTTON PRODUCTION IN MOST NEED OF SUPPORT

After W. Mwale and T. Isherwood (Cotton News 2004, p.11)

The following areas have been identified as major for the production of seed cotton:

- ≻ extension and training of farmers
- $\succ$  support to cotton research
- ➤ strengthening farmers associations
- ≻ rehabilitation and expansion of improved infrastructure.

See also J. Lançon (2002, production constraints at the farmer's level).

# **COTTON RESEARCH**

# THE COTTON DEVELOPMENT TRUST

Origin: see J. Lançon (2002).

**The general objective** is to build a self sustaining Trust that, by way of improved service delivery, fosters the prosperity of cotton farmers and increases production of seed cotton of good quality to satisfy the needs of the ginners, spinners, textiles and export market, through increased seed cotton yields and through farmer participation in value-adding processing of seed-cotton.

# The specific objectives of CDT are:

- ➤ To promote, develop and improve cotton particularly through research, extension farmer/extension staff training and seed multiplication and production.
- ➤ To contribute to the agricultural development of Zambia through innovative commercial production and enhanced partnerships in agricultural technology development and information dissemination with local and international research institutions.

**A board of trustees** is supervising CDT. Each trustee stands as a representative of one of the main SH of the sub sector. The Board is in charge of setting priorities and making strategic decisions.

It is now composed of B.J. Cox (Chairman and commercial farmer), N. Mukutu (Vice chairman and ex Permanent secretary of the Ministry of Agriculture and Cooperatives, MACO), H.S. Melvill (ex ginner), Dr R. Kamona (Deputy Director of field services, Extension and Training, MACO), S. Fleming (Zambia National Farming Union, ZNFU representative and farmer), A. Chalabesa (Deputy director of Research), T. Isherwood (Chairman of the Cotton Ginners Association and Director of Dunavant), Mr R. Chizwuka (Permanent Secretary, MACO).

Two small holders are due to complete the Board.

A technical committee is in charge of reviewing cotton research results and programmes. It is chaired by Mr Kwalombota (Clark cotton) and composed of Mr E. Mpata (Dunavant) + 3 other ginners representatives (Mulungushi, Continental and Stuhardt Cotton) + Mr Kanyemba (MACO field services) representatives + Mrs C. Mungoma, Chief Agricultural Research Officer for Crops +

# Long term consultancies

Expert	Origin	Main activities	Based at	Duration
G. Pauly	Irct	Expertise (historique, bilan et définition d'un programme de recherche cotonnière)	Mount Makulu	6 mois (1979-80)
JM. Dick	Irct	Mise en route du programme de sélection	Mount Makulu	1 an (1980-81)
G. Jouve	Irct	Protection du cotonnier (molécules, méthodes, équipement)	Magoye RRS	4 ans (1980-84)
J. Lançon	Irct	Poursuite du programme de sélection	Magoye RRS	4 ans (1981-86)
G. Rocamora	Vsn	Mise en route du programme d'agronomie, cartographie	Magoye RRS	1 an (1984-85)
JM. Lacape	Irct	Poursuite du programme de sélection	Magoye RRS	4 ans (1986-89)
B. Billmann	Vsn	Poursuite du programme d'agronomie	Magoye RRS	1 an (1985-86)
F. Levassor	Vsn	Poursuite du programme d'agronomie	Magoye RRS	1 an (1986-87)
<b>B. Marcoud</b>	Irct	Poursuite du programme de protection	Magoye RRS	2 ans (1987-89)
J. Pons	Vsn	Poursuite du programme d'agronomie	Magoye RRS	1 an (1987-88)
?	Vsn	Poursuite du programme d'agronomie	Magoye RRS	1 an (1988-89)
R. Courtial	Atd?	Poursuite du programme de protection	Magoye RRS	3 ans (1989-92)

# Short consultancies

Name	Origin	Discipline	TOR	Period
S. Gutknecht	Irct	Technology	Backup	1980
G. Roux	Irct	Breeding	Backup	1980
C. Romuald-Robert	Irct	Breeding	Backup	1981, 1982
J. Boulanger	Irct	Breeding	Backup	1984, 1985
J. Laboucheix	Irct	Plant protection	Backup	1983, 1984
M. Crétenet	Irct	Agronomie	Backup	1985, 1986, 1987, 1988, 1989, 1992
J. Gouthière	Irct	Breeding	Backup	1989
B. Hau	Irct, Cirad	Breeding	Backup	1990, 1992, 1993
J. Cauquil	Irct	Plant protection	Backup	1990, 1991, 1992
S. Goebel	Irct	Breeding	Backup	1991
J.M. Lacape	Cirad	Breeding	Expertise / Project	2000
J. Lançon	Cirad	Breeding	Expertise / Backup	2002, 2005

Mr Nkole (Cotton growers association). The members usually meet twice a year.

**Funding sources** include governmental grants, stakeholders contribution, contracts (15 to 20%), seed multiplication or donors funded projects. At the moment, the stakeholders are supposed to contribute up to about 45 K\$, out of which 60% should be spent on training activities and 40% for conducting specific and agreed upon research activities on agronomy, breeding and seed production.

The personnel of Cdt is composed of 14 employees directly funded by the trust:

- ≻ 5 staff involved mainly in management (W.K. Chitah, Director; K. Kasonde, Financial and administrative manager; A. Zulu, farm manager; 2 secretary)
- ➤ 7 technical staff (Dr B. Siamasonta and Bbebe, senior and junior plant breeders; W.K. Chitah, agronomist; D. Simujika, Extension and Training specialist; 3 technicians).

# THE CONSERVATION FARMING UNIT

This Ngo aims at developing conservation farming techniques in Zambia (basin planting, ridging, rotation, agroforestry *eg Acacia* ...). It conducts on farm trials as well as extension activities.

A 2 years project has been approved by EU (\$2 millions). It aims at helping good cotton growers selected by Dunavant to diversify their sources of revenue and to improve the sustainability of their cropping system. They will receive on credit a pack of seeds and fertilizers and commit themselves to apply CF techniques. The fund is a revolving one. It will beneficiate to other growers after its reimbursement.

#### CIRAD IN ZAMBIA (REMINDER)

Irct (former Cirad) contribution to Zambian Cotton Research started in 1980 with a 3 months consultancy by G. Pauly (plant breeder) and ended up when R. Courtial (entomologist) left in 1992. It was made possible with the support of the French Embassy in Zambia.

Between 1980 and 1992, the contribution amounted about 20 men-years of scientists posted at Magoye and working in the fields of cotton breeding, pest control and agronomy. It also involved 15 short consultancies on various aspects (see table).

# PRIORITY AREAS IN COTTON RESEARCH

Three Board trustees could be met *ie* B. Cox, chairman and seed producer, T. Isherwood, director of Dunavant and S. Fleming, representative of ZNFU and seed producer. They all expressed the need for a backup by other scientific institutions to keep quality in the research conducted by CDT.

They also considered that <u>plant breeding</u> should remain a priority (stake: ensure the continuity of the whole seed system) with two key activities *ie* maintenance of the nucleus seed and test of imported varieties.

Adaptative research on cropping systems should also be developed as well as training activities: training of trainers, on farm demonstration plots, leaflets and booklets. Cdt could develop a training centre for farmers or trainers, like the one developed in Zimbabwe;

They also mentioned that Magoye was now too far from the main cotton growing area, in Eastern Province and that other sites were being looked for (Chibombo, Nanga?).







- *(iii)* To produce crosses every year (<u>10 per year</u> for example), in order to ensure a constant volume of breeding activities.
- (iv) To increase the importance of <u>G. hirsutum x G. hirsutum crosses</u>. The number of <u>interspecific</u> <u>crosses</u> should be limited, as they did not bring significant improvements in the past with usual breeding methods; geneticists at Cirad are trying now to develop new hybrids with the assistance of molecular markers, hoping to increase the gene transfer efficiency from barbadense to hirsutum.
- (v) To realise <u>five new crosses</u>, eg CA336 (high quality) x CZA 73 (productive), CA347 (good quality) x MF 20K (promising), CA336 (high quality) x F135 (adapted), Rockett (early) x CA336 and MF20K x Rockett.
- (vi) To favour <u>top crosses</u> to create variability (a limited number of locally well adapted varieties crossed by exotic material). They are more appropriate than diallel crosses<sup>5</sup>.
- (vii) To promote and monitor fibre <u>quality testing</u> at the national level. Fibre quality results provided by Dunavant (HVI) and NISIR (Conventional) labs are <u>not quite comparable</u>, in particular for Strength and Micronaire (see graphs). This situation has to be further appraised and improved. The breeder could suggest the labs to participate to one or several round tests<sup>6</sup> (which international lab organising?) and monitor their results. He could also send duplicate samples to both labs and provide a the results analysed by the breeder.
- (viii) To organise a <u>systematic test</u> with samples (anonymous of course) of the NVT distributed to the classifiers if there are any at the ginning companies. The decision of releasing a new variety should be based on <u>complementary observations</u> which may be performed either visually or by instruments (colour, + b or yellow index in particular, and the amount of seed coats fragments in the fiber after ginning).
- (ix) To reorganise <u>fibre testing for breeding</u><sup>7</sup>. The sustainability of African breeding programmes is threatened by the increasing <u>cost of fibre analysis</u>. A good breeding programme should be based on about 2000 analysis per year and never fall below 800. The cost of this amount of analysis can represent up to 80% of the total running costs of a breeding program. During the last season, the breeder got only 200 results instead of the usual number of 400 to 600. Dunavant lab provided free analysis but it could not analyse all the samples. At NISIR, the costs are about 16000 Kwachas (about \$4) for length, 8000 Kwachas (about \$2) for micronaire and 16000 Kwachas for strength. At such a cost, the number of analysis can only be limited and it is proposed to reintroduce <u>Halo length</u><sup>8</sup> which could be achieved with local trained personnel and at a cost of 300 to 600 Kwachas only (about 10 to 15 cts). We also propose to equip these programs with Fibronaires (cost about \$1500 to \$2000) which can be operated in rather lousy conditions, to get Micronaire estimates at a cost of 150 to 200 Kwachas (about 5 cts). Strength is usually well related to length. It could be estimated at later stages of experimentation (PET or NVT).
- (x) To maintain the breeding lab always <u>clean of any seed</u> to prevent genetic contamination. It should preferably be kept separate from the other labs.

<sup>&</sup>lt;sup>5</sup> Lançon J., Hau B., Gawrysiak G., 1993. Le top cross appliqué à l'amélioration génétique du cotonnier. Coton et Fibres Tropicales, vol. 48, n. 3, p. 159-175.

<sup>&</sup>lt;sup>6</sup> J.P. Gourlot as a resource person (jean-paul.gourlot@cirad.fr).

<sup>&</sup>lt;sup>7</sup> This could be developed in collaboration with NISIR and CIRAD.

<sup>&</sup>lt;sup>8</sup> Lançon J., Klassou C., 1989. Comparaison des mesures de longueur obtenues avec le fibrographe ou selon la technique du halo. Coton et Fibres Tropicales, vol. 44, n. 4, p. 335-342.

# ≻ Activities and results

There is no activity going on at the moment. A project has been submitted to FAO for an expert to reinforce CDT in the field of entomology (environmental impact of cotton protection).

A CIRAD expert (Dr M. Vaissayre) is due to come to Zambia in February or March 2006, through the French Embassy's support to DCT.

- ≻ Proposals as TOR for Cirad consultancy
- 1. To summarize the work done through IRCT collaboration (either at Cirad or at Cdt, if relevant reports are available)
- 2. To assess the pest control management (how it is done, major problems encountered by the farmers, by the promoters) and its efficiency
- 3. To assess boll worms' resistance to pyrethroid and to propose alternative management if any
- 4. To appraise the possibility for Cdt to support the cost of a pest control specialist
- 5. To define his (her) job
- 6. To define the qualification he (she) would need
- 7. To propose a research program

# EXTENSION AND TRAINING

#### ≻ <u>Activities and results</u>

Newly recruited by CDT, D. Simujika has been graduated in Agronomy (BSc) and Crop protection (MSc). He has worked in the extension field for the government (7 years) and for an Ngo (2 years in seed production).

Most of his present activities are related to training in various fields (crop production, animal husbandry, HIV) and directed to contact farmers or companies agents. He is also in charge of organising field days and demonstration tests.

In 2004-5, a combination of improved management techniques were tested for their relevance for small holders. These techniques are recommended by research and they combine conservation farming and proper use of inputs. 24 tests were conducted in 2004/5 with a group of 24 "model farmers" around Magoye.

#### On farm trial on Conservation management in 2004: seed cotton yield.

Management		Nb farmers	SC Yield t/ha
<b>Conservation farming techniques</b>	+ Fertiliser (200 kg Compound + 100 kg urea)	14	1,36
Control		14	0,29
<b>Conservation farming techniques</b>	+ supplementary Foliar Fertilisation (3 l)	10	0,93
Control		10	0,37

There was an important drought spell in 2004, and the results showed the efficiency of the CF techniques (planting in ripping furrows or in basins prepared during the dry season). In appropriate conditions, they could improve farmers yields by about 0.5 ton/ha. However, the application of fertiliser did not increase the gross margin by much. It seemed to be efficient for only half of the

# **RESEARCH PROGRAMS AND RESULTS**

#### BREEDING

A junior breeder, Mr Bbebe Nchimunya, has been recruited in January 2005 to reinforce the senior breeder, Dr. Siamasonta. Mr Mbebe has qualified in Agriculture and Crop Sciences (Bachelor).

The breeding section is carrying on a breeding programme (crosses, single plant selection and line selection, variety testing in preliminary and 5 national trials).

The variety CDT 2 has been released in ... by the National Variety Release Committee. Its dissemination has just been approved by the board, for F135 replacement.

Variety	Origin	Yield t/ha	%F	2,5 SL mm	IM
CDT II	Cirad – CDT	1,20 / 1,54	42,4 / 42,3	29,1 / 29,9	4,3 / 4,2
CCA 336	Cirad	0,98	45,6	30,0	3,9
F 135	Cirad	1,10 / 1,58	41,6 / 42,4	28,5 / 28,8	4,4 / 4,1
Chureza <sup>1</sup>	CDT	0,76 / 1,33	40,7 / 42,9	28,5 / 29,1	4,3 / 4,2
1					

National variety trial (5 locations) in 2004 and average 4 previous years.

Poor stand?

The variety CDT II was selected from the cross (G319-16 x CZA) x (BIII-F3 x G319-16). It should give more stable yields and almost 1 class of length above. Information on the other characteristics of the variety was not provided, its color in particular.

It has been released in 2004 and approved by the Board to replace gradually F135.

Variety	Origin	Yield t/ha	%F	2,5 SL mm	IM
CDT II	Cirad – CDT	0,83	42,0		
Albar SZ 9314 <sup>1</sup>	Zimbabwe	0,66	42,5		
F 135	Cirad	0,74	42,6		
Chureza	CDT	0,85	41,8		

#### On farm tests (4 locations) in 2003/4.

<sup>1</sup> Poor stand?

Although it is difficult to conclude out of a very limited number of on farm tests, these results seem to confirm the good productive potential of CDT II. However they also indicate a slight loss in GOT, which could not be expected at the NVT level. To be confirmed in order to limit the risk of exchanging F135 with CDT II.

#### Recomendations:

- (i) To make sure that Magoye library holds a copy of all the <u>previous works</u> and reports on breeding (agronomy and entomology as well).
- (ii) To organize the breeding program in view of producing <u>two types of varieties</u>: (a) productive varieties with average gin% and fiber maturity in early planting conditions / plateau, and (b) early varieties with high gin% and fibre maturity performing well under late planting / plateau or short rainy season / valley.

farmers, taking into account their very high cost in comparison with the SC price.

Manag	gement	Supplem Yield <sup>1</sup> (t/ha)	Supplem cost (t/ha)	Dif GM <sup>2</sup> (t/ha)	% benef farmers <sup>3</sup>
CET	+ supplementary Foliar Fertilisation (3 l)	+0,56	+0,05	+0,51	29
CFI	+ Fertilizer	+ 1,07	+0,50	+0,57	40
In	1 1				

On farm trial on Conservation management i	in 2004:	analysis of effects.
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Over the control.

 $^{2}$  Gain as gross margin.

<sup>3</sup> Beneficiary farmers: those who produced more with the CFT by at least 0,51 +the cost of the fertilizer application (0,55 for Foliar fert and 1,01 for Fertilizer). SC price: 20 ct/kg (2004). Cost of cotton pack (seed + insecticide): 0,15 ton. Cost of compound-fertilizer: 0.13 ton/bag; urea-fertilizer: 0.15 ton/bag.

Among the 24 farmers who tested the recommended package in 2004, 16 were present at Magoye's meeting (nov 9) to discuss their results. Four groups were formed. Women were more frequent (11) than men (6). Another meeting had been called at the same time and the couples divided in two groups according to their interest for each meeting. Surprisingly, among the participants, 80% of the men had a relatively good crop in 2004 (above average), and only less than 40% of the women. Several explanations come to my mind<sup>9</sup> but this point should be further explored.

With the support of AGRIFU (Netherlands and Norway), the test is going to be developed in 2005/6 at Magoye on a 1 ha field per farmer instead of 1 lima (0,25 ha) previously and at two new sites (Chibombo in Central and Nyimba in Eastern Province).

Group	Relative result in 2004	Men	Women	Difficulties in implementing the recommendations
Minaral Fartilisar	Success	1	2	No <sup>10</sup>
winneral rerunser	Failure	0	3	No
Foliar fertilizer	Success	4	2	<ul> <li>soil too dry, hard for the ripper to penetrate</li> <li>basins take too long to implement</li> <li>emergence of weed prior to cotton</li> <li>insufficient manpower for weeding</li> </ul>
	Failure	1	4	• poor germination (replanting)
Together	Success	5 (84%)	4 (36%)	
	Failure	1 (16%)	7 (64%)	

#### Analysis of failure and success of farmers in 2004.

Most of these farmers (11 out of 16) did not intend to plant more cotton than the test itself with free inputs provided. The 5 who wanted to plant more cotton on a spare piece of land, indicated that they would apply foliar fertiliser at the rate recommended by Research (4 litres/ha). None chose to apply mineral fertiliser.

# ≻ Recommendations

(i) To move from demonstration tests to participatory research. Because it is part of a general research program, this activity should be monitored scientifically. More information could be

<sup>&</sup>lt;sup>9</sup> Men were more successful in this group? Men who did not succeed were shy to participate to this meeting? Men who participated were the most committed to the crop?

<sup>&</sup>lt;sup>10</sup> Though nobody would apply fertiliser the following year.

collected either through direct observation or through interviews in order to support data interpretation.

(ii) To implement more <u>indicators</u> in order to explain the variability of performances obtained by the growers. Ex. rainfall, stand at harvest, dates of cultural operations (specially planting) and actual amounts of inputs applied. Although tedious to record, such information can then be used to understand failures and successes both at an agronomic and economic level.

Treatments	Yield (tons SC)	GOT (%)	2,5 % SL (mm)	Date of planting	Input cost (tons SC)	Labour (mdays)	Nb sprays
Cons Farming	2,56	42,5	29,5	Early	0,65	82	6
Control	0,64	40,1	29,1	Late	0,15	36	3

- (iii) To conduct <u>semi structured interviews</u> with the farmers: Why did they grow cotton? What were the constraints they faced in cotton growing? How did they appreciate the results they got with the recommended management? Which difficulties they faced to implement it, which difficulties they could face if they wanted to implement it on their own? What assistance they could need etc. The answers are to be collected on an individual basis so as to get quantified data.
- (iv) To limit the volume of <u>direct training</u> activities to the trainers employees of the ginning companies rather than targeted towards individual contact farmers (3000 only for Dunavant). It should include the design of the training sessions (content and methodology) towards different target groups. Contact farmers, farmers themselves (through Farmers field schools), Innovative farmers through participatory research etc.

# AGRONOMY AND CONSERVATION FARMING

# ➤ Activities and results

In 2003/4, this section has conducted tests on insecticide rates (Decis), Cotton ratooning, termite control, tillage methods, lime and fertilizer (mineral and foliar) and on farm variety trials.

Results on lime and fertiliser showed that 200 kg/ha of fertiliser and 100 kg/ha of lime increased the production by about 0,50 and 0,20 ton/ha respectively. Effects are mainly additive. This confirms on farm results obtained with the Model group.

Ratooning was tested on station. It showed a positive effect when the stand could be maintained through the dry season and a negative effect when too many plants were lost. The pest pressure increased on the ratooned plants, and 5 supplementary sprays 3 bollworms and 2 aphids) were needed.

► <u>Conservation farming</u>

Conservation farming experiments were tested in 2001 (136 tests) and in 2002 (49 tests).

# Response to fertiliser and lime (2001/2 and 2002/3).

Supplem cost

Supplem SC Yield (t/ha)

<sup>&</sup>lt;sup>11</sup> These indicators are necessary for the SHs to make their own mind on the advantages and limits of the crop management systems that have been tested. Yield, planting date, input costs and labour requirement specially for the farmer, GOT and 2,5 SL for the ginner, nb sprays for the policy maker etc.

	(t/ha)		Monze		C&C		Mumbwa	
	Year 1	Year 2						
Control (average SC yield)			0,96	0,70	1,00	0,74	1,19	0,94
Mineral Fertiliser	0,39	0,25	+0,31	+0,25	+0,59	+0,27	+0,48	+0,29
Lime (350 as Basal)	0,07	0,04	+0,05	+0,05	+0,12	+0,05	+0,07	+0,03
Combination	0,46	0,29	+0,30	+0,30	+0,71	+0,37	+0,66	+0,34

Mineral fertiliser as 200 kg/ha Cotton Mix as Basal in 2001 and 200 kg/ha D compound as Basal in 2002 C&C: Chibombo and Chongwe Districts

After CFU, 2003.

The general results are not very impressive and quite comparable with those obtained with the Models group (see above). The average 0,92 ton/ha is above the national yield probably due to the conservation farming techniques which improved the water availability to the crop. None of the more intensive techniques could be economically justified. The economic ratio is always inferior to 2 and only in one occasion, at Chibombo and Chongwe districts in 2001, above 1.5. In return, the physical ratio (kg nutrient per kg SC) is probably much nearer to more general findings.

- ≻ <u>Recommendations</u>
- *(i)* To densify the network of on farm <u>variety tests</u> and to organise it in a more <u>decentralized and</u> <u>participatory</u> way (see recommendations to the board).
- (ii) To appraise the factors <u>limiting the productivity</u>. A careful appraisal is needed before developing any global program for increasing yields and productivity. Either the cost of fertilisers is too high, or their efficiency has to be improved in conjunction with other limiting factors (liming, ratoon, crop protection?). Crop protection has to be included as resistance to pyrethroids has already been found in many cotton producing countries around the world. Among the solutions to investigate: (a) to reduce fertilisers costs, (b) to increase the price of seed cotton, (c) to improve the crop management / protection / weed control / plant stand, (d) to adjust the fertilisers rates to cotton production, (e) to improve the water availability at a level where a good crop can be produced and (f) to restore soil fertility and promote more sustainable techniques.
- (iii) To explore the theme of <u>ratoon cotton</u>. Water and SC price seem to be the limiting factors, probably the most prominent ones at the moment and especially in the South of Zambia. As a consequence it is difficult to recommend a coherent growing strategy based on higher use of inputs. Ratoon cotton is currently used by the farmers, especially in Eastern Province. It has two important disadvantages: (a) the number of plants that survive during the dry season may be drastically reduced and so the yield potential of the crop and (b) it increases the pest pressure and the number of sprays (Cotton News, p. 30). At present, it seems highly justified to ban ratooning in cotton. How could the practice contribute to a more efficient and sustainable cotton management system?
- *(i)* To take the <u>variability of results</u> into account should improve this very global analysis if complementary data (see above) were available.



# **PROPOSALS FOR EXTERNAL SUPPORT**

# **STAKES**

Pros and cons for developing a partner relationship between CDT and CIRAD have already been listed in my previous report (J. Lançon, 2002, p. 14). They have not changed much. The local and regional situations are even stressing the need for increased networking between Cirad, West Africa and Zambia. The importance of cotton in Zambian economy has increased. Neither Zimbabwe, Tanzania or South Africa seem to be in a position to provide a significant scientific backup to CDT. And at last, West African countries have gain a valuable experience in the field of farmers organisation and Zambia should join their effort at the international level, to get better prices for cotton.

However, to make cotton contribute significantly to poverty alleviation and rural development, several objectives must be targeted:

- At the national level, (a) <u>adding value</u> (productivity or quality) through improved coordination among SHs, (b) increasing the <u>share</u> devoted to the growers through better farmers organisation and (c) improving the <u>sustainability</u> of the cotton production systems with more sustainable agronomic and industrial practices.
- At the international level, (a) getting a higher <u>world price</u> (lobbying, marketing) and (b) increasing the <u>locally</u> added value (transformation).

# SUPPORT TO RESEARCH

# Themes

After considering the demand (farmers, Board, scientists, French Embassy) on one hand and Cirad skills on the other hand, the following proposals seem to make sense:

- In plant breeding : increasing the access to foreign germplasm; strengthening the variety trial network, developing participatory on farm evaluation; appraising seed quality control<sup>12</sup>; training the young national breeder; advice and exchange of information on GMO cotton. These themes could be developed through networking with the French speaking cotton breeders (Cameroun, Benin and possibly Brasil). In case of further development of the plant breeding program, the lab could be rehabilitated (see table).
- $\swarrow$  In agronomy : assessing the most limiting agronomic factors to yield increase<sup>13</sup>; developing new and evaluating more sustainable CMS (economic, environmental, social)<sup>14</sup>. A workshop could be

<sup>&</sup>lt;sup>12</sup> A survey of seed quality in Zambia could be developed in coordination with INRAB (A. Hougni).

<sup>&</sup>lt;sup>13</sup> In-field development of a conceptual crop functioning and management model: a case study on cotton in southern Mali. B. Rapidel et al, 2006. ESA, in press. Or see also M. Crétenet et H. Guibert for their experience in Cameroun.

<sup>&</sup>lt;sup>14</sup> Prototyping integrated cotton crop management systems for specific ecological and socioeconomic constraints in Western Africa. J. Lançon et al, 2004. VIII European Society for Agronomy Congress, Copenhagen, Denmark, 11-15 July 2004.

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organised in view of developing a new CMS, which could even be ratoon based in some areas. It could involve growers (2 commercial and 6 small scale farmers), extension (2-4 Dunavant and Clark cotton agronomists), and research (4 CIRAD scientists in plant breeding, agronomy, entomology and economy, 3 scientists from CDT + invited scientists). The prototype could further be tested for a two years program.

- In entomology: appraising pest control quality in the cotton growing areas; <u>assessing insect</u> <u>resistance build-up</u>; <u>developing a sustainable program</u>. This could be developed through networking with the French speaking teams working on Ipm.
- ✓ In technology: developing low cost equipment for plant breeding; including existing labs in round checks. This could be developed with the support of the NISIR and CIRAD labs.
- In research-extension and training: improving the quality of science in the on farm tests (participatory approach and documentation); developing a training program on the cotton sector for SHs decision makers, including growers representatives (assistance on training contents and organisation, production of specific leaflets or booklets for training and communication), This course should help the sector's SHs to develop win-win negotiations and more sustainable relationship.

# Budget

It is highly recommended that the CIRAD backup program be based on a sustainable commitment from the donors. This is a condition to build a real partnership with CDT and CIRAD institutions, and to increase the level of interaction between scientists. Once established, this partnership will provide the basis for more ambitious and more costly projects to be submitted to conventional donors.

We need a budget of 24.5 K€/year. Each year, it could pay for 2 CIRAD consultancy missions, 1 CDT mission, some (limited) documentation and a small operational budget which is absolutely necessary to make the consultancies actually contribute to improve the quality of on farm research.

If agreed, this fund could be implemented partly by CIRAD (75% of the total: consultancy missions, documentation, and operational budget) and by the French Embassy (25%: CDT mission, and leaflets).

# SUPPORT TO CGAZ

Too much pressure should not be stressed on the arising Cotton growers association of Zambia. It still needs time to build up its foundation from grass root organisations.

Priority should be given to facilitating an exchange of experience with West African cotton growers organisations (*eg* FUPRO<sup>15</sup> in Benin), which started 10 years earlier. A joint visit CGAZ – CDT (Mr Simujika?) to Benin and possibly Mali could be organised next year.

In a longer term, networking with West Africa should be supported, particularly in the field of common interests *eg* WTO (OMC), world prices, national subsidies to cotton export and organisational aspects. Several French operators have already shown their skill in supporting the empowerment of farmers' organisations: AFDI<sup>16</sup>, French cooperation<sup>17</sup>, or Cirad-Tera<sup>18</sup>).

<sup>&</sup>lt;sup>15</sup> Fédération des organisations de producteurs du Bénin (BP 2252, Goho-Abomey).

<sup>&</sup>lt;sup>16</sup> Association française pour le développement international

<sup>&</sup>lt;sup>17</sup> Several programs were supported eg in Benin, Ivory-Coast and Mali.

# **RECOMMENDATIONS TO THE BOARD**

Some general recommendations have previously been suggested to the Board (see J. Lançon, 2002). Most of them are still relevant and I invite the trustees to get back to my previous report. The following are new and probably more adapted to the present situation.

# GENERAL

- To develop more activities in Eastern Province, where cotton is more and more widely grown.
- To organise a <u>library</u> with at least copies of previous years results.
- Recruiting a <u>plant protection officer</u> should not be delayed as (a) the chemicals used in the country have not been tested locally, (b) resistance of insects to pyrethroids has to be carefully monitored before it becomes a widespread issue, and (c) chemical companies will probably soon be due to test their products (herbicides or pesticides) locally before selling on the national market. This potential market should be estimated, in order to let Cdt take over this very crucial task.

# PLANT BREEDING

- The <u>plant breeder</u> must remain at the heart of the commodity chain. With priority missions (1) to test and to assess the quality of the genetic material proposed to the SHs, (2) to co-ordinate and to assess the efficiency of the seed multiplication system, and (3) to provide new genetic material.
- The junior breeder, Mr Bbebe Nchimunya, should be associated to the senior staff, in a way that he can at the same time learn from the eldest (dependence), while developing his own creativity (independence). CDT should make its best to (a) promote him to the level of <u>MSC</u> (as he may get external support only for phD training), (b) expose him as often as possible with <u>other scientists</u> and more specifically breeding programs either at a local or international level, (c) have him <u>sponsored</u> by one of the Technical committee's member and (d) make him <u>responsible</u>, with the assistance of senior scientists form CDT and his sponsor, for a specific experiment through which he will be able to prove himself. He has to be quickly confronted to a real research problem, to other ideas and to a scientific <u>evaluation</u> network which may encourage him to improve his professional scientific skill.
- To strengthen <u>the variety testing network.</u> With the dramatic raise in cotton production, the variety choice has become crucial (with the economic risk of selecting a wrong variety). We then propose each promoter takes over a number of variety tests in its own growing area. Basic informations (stand at harvest, yield + seed cotton samples) could be recorded and sent to CDT for analysis and synthesis. Depending on the facilities made available, further observations could be completed by the breeder himself (date of planting and field operations, resistance to diseases, plant development and general observations on each trial, GOT and fibre analysis).
- To organise a <u>systematic test</u> with samples of the NVT, with the ginning companies cotton classifiers.
- To include Dunavant (HVI) and NISIR (Conventional) labs in international and national <u>round</u> <u>tests</u> to assess their reliability (see J. Lançon, 2002).

<sup>&</sup>lt;sup>18</sup> Supporting small-scale farmers and rural organisations : learning from experiences in West Afria. A handbook for development operators and local managers. V. Perret et al, 2003. Protea Book House, Pretoria.

# ON FARM RESEARCH AND TRAINING

- To identify means of increasing the <u>level of information</u> collected from the demonstration trials (staff supported by Mulungushi or Clark cotton is needed on the two AgriFU programs in Chibamba and Katete).
- The <u>socio-economic constraints</u> seem to have gained in importance after 3 years (see Annex 2). The Board should support the emergence of the Cotton growers association of Zambia, as a SH able to express and to promote growers' position in the sector decision making process. This could strengthen the sector and contribute to its sustainability.
- To restrain the volume of <u>direct training</u> activities. These should be limited to the trainers employees of the ginning companies rather than scattered among individual contact farmers (3000 only for Dunavant). They should include the design of the training sessions (content and methodology) according to the different target groups. Contact farmers, farmers themselves (through Farmers field schools), Innovative farmers through participatory research etc.

# **CONCLUSION**

I recommend that this report be discussed by CDT Board and staff.

An <u>evaluation of this report</u>, the consultancy and the proposals, should be sent to the French Embassy (and to CIRAD).

The proposals should be examined, either rejected or validated. An action plan to implement the validated ones should be described.



# ANNEX 1: CONSULTANCY PROGRAM

Friday 4 nov.	Morning	11 h 00 : Arrival in Lusaka Welcoming by MM. J.L. Riddell (MAE) et Chitah (CDT) Lusaka – Mazabuka				
	Afternoon					
Saturday 5	Morning Afternoon	Mazabuka – Nakambala guest house Working on presentations.				
Sunday 6	Morning Afternoon	Working on presentations.				
Monday 7	Morning	Magoye CDT K.W. Chitah, Director of CDT B. Siamasonda and N. Bbebe, Plant breeders				
	Afternoon	T. Jones farm (commercial farmer)				
Tuesday 8	Morning	Magoye CDT D. Simujika, Extension and Training officer				
	Afternoon	Session with Dunavant extension staff and leading farmers				
Wednesday 9	Morning Afternoon	Proposal for Cirad – Cdt project on breeding (B. Siamasonda)				
Thursday 10	Morning	J. Fleming (chairman of the Cotton Association of Zambia)				
	Afternoon	Magoye Session with Productivity Model group of farmers				
Friday 11	Morning	Lusaka Dunavant T. Isherwood (Managing director) and C. Hayward (Operations director)				
	Afternoon	French Embassy				
Saturday 12	Morning Afternoon	Report writing				
Sunday 13	Morning Afternoon	Report writing				
Monday 14	Morning	Lusaka J. Nkole (Cotton Growers Association of Zambia, National co-ordinator) P. Agaard (Conservation farming unit co-ordinator), D. Gibson				
	Afternoon	Mazabuka B.J. Cox (chairman of the CDT board)				
Tuesday 15	Morning	Magoye Session with representatives of the Cotton producers association				
	Afternoon					
Wednesday 16	Morning	Magoye Report writing / Proposal for Cirad – Cdt collaboration (W. Chitah)				
	Afternoon	Mr J.L. Riddell				
Thursday 17	Morning	10H30: Synthesis with Mr Riddell and H.E the France Ambassador at Lusaka, Mr F. Sodubray				
	Afternoon	14 h : leaving for Johannesburg and Montpellier				

Constraints	Southern	Province
Economic and social constraints	52%	73%
Unfavourable economic factors		
S Low seed cotton price	0 70	0.85
<ul> <li>High inputs price</li> </ul>	0.48	0,05
I ate payments	0,40	0,15
<ul> <li>Transport costs to the ginnery</li> </ul>		0.23
Fransport costs to the gimery Labour cost		0,25
Cabour cost Access to credit		0,10
Lack of Resources		0,20
<u>Lack of Resources</u>	0.50	0.28
Animal draught power	0,30	0,28
> Land	0,17	0,40
Social and individual	0,00	
$\sim$ Food crops first	0.23	
Four crops mist Late planting due to funerals	0,25	
<ul> <li>Discusses (Hiv, malaria)</li> </ul>	0,10	0.05
Extension and training		0,05
Lack of knowledge and training (use of chemicals or other cultural	0.20	0.15
technics economics crop management)	0,20	0,15
Lack of extension backup	0.02	
Creanisational	0,02	
<u>Cattle free range</u>	0.12	
<ul> <li>Packing hags not available</li> </ul>	0,12	0.30
<ul> <li>Durchase market places too few</li> </ul>		0.03
<ul> <li>Lack of association to present farmers views</li> </ul>	0.07	0,05
<ul> <li>Promoters in monopolistic position</li> </ul>	0,07	0.28
	220/	0,20
Environmental constraints	32%	15%
<u>Climate</u>	0.00	0.20
> Rainfall pattern	0,98	0,28
$\succ$ Off season rainfalls	0,02	
	0.60	0.42
$\succ$ Soil fertility	0,60	0,43
Environment	0.09	
> Abandonned (and poisoned) crops being eaten by animals	0,08	
Technical constraints	16%	12%
Due to pest control		
<ul> <li>Spraying equipment (inadequate or not distributed)</li> </ul>	0,40	0,28
≻ Pests attacks	0,28	
➤ Inadequate inputs supply		0,25
$\succ$ Exposure to chemicals		0,03
Others		
➤ Limited choice of varieties	0,08	
➤ No cheap soil testing facilities (solubor, lime)	0,05	0,03

Comparison between 2005 and 2002 constraints as identified by the growers

In thick numbers and italic, weights over 0,2 is ranking mentioned at least twice as among the 5 main constraints.

# **ANNEX 2: WORKSHOP ON CONSTRAINTS**

# Method

The participants are divided into groups of 5-6 people formed at random (except for farmers who are preferably kept together). They are given about  $\frac{1}{2}$  hour to draw a list of 5 to 10 constraints they judge to be major ones for the SS farmers and about  $\frac{1}{4}$  hour more to rank them.

At the end, one member of each group reports the group work.

The synthesis is made on the spot by the animator and the groups are formed again to work on questions to be addressed to research for further experimentation.

The constraints are given a weight which is computed from their ranking in each of the group: from 10 when it comes  $1^{st}$  to 1 when it comes  $10^{th} - 12^{th}$ . The sum in all groups is then divided so that the final result for each constraint is a number comprised between 0 and 1.

# Caution

Although the question bears attention on the constraints that small holders may encounter when they grow cotton, this workshop has been held with people, mainly extension staff, that may not be very representative of the target. As a consequence, the results that follows cannot be taken for granted unless cross checked with other sources.

# First ten ranking constraints

Donk	Provinces						
1	Southern	Eastern	Central				
1	Rainfall pattern	Rainfall pattern	Rainfall pattern				
2	Low price	Soil fertility	Lack of $ADP^{(1)}$				
3	Soil fertility	Low price	Lack of manpower				
4	Lack of manpower	Lack of manpower	Low price				
5	Inputs price	Pests attacks	Lack of know-how				
6	Spraying equipment	Lack of $ADP^{(l)}$	Soil fertility				
7	Pests attacks	Inputs price	Food crops first				
8	Food crops first	Land limitations	Inadequate inputs supply				
9	Lack of know-how	Spraying equipment	Inadequate equipment				
10	Lack of ADP <sup>(1)</sup>	Exposure to chemicals	Inputs prices				

#### 2002 results (reminder)

(1) ADP stands for animal draught power.

In 2002, some of the major factors affecting the cotton production by the SS farmers were common to all three regions as (i) the rainfall pattern, (ii) pest control and spraying equipment, (iii) low price, (iv) soil fertility, (v) lack of manpower, (vi) high price of inputs. Most of these constraints have technical, socio-economic or organizational components which can be addressed by research or by negotiation between SH.

When arising as in Central Province, organizational aspects tend to hide technical aspects. Pest pressure was little considered as being a limited factor because inputs and sprayers were not made available to the farmers by Mulungushi in that particular area.

Eastern Province tend to differentiate form the other two Provinces in the fact that (a) lack of ADP and

# Details and costs (per year)

<b>T</b> /		Costs (€)				
Items	Nb	Unit	Total	Cirad	Embassy	
<i>Cirad experts (consultancy toward Cdt)</i> General consultancy (research management, organisation) Specific consultancy (technical point)	2	9122	18244	4894	13350	
<i>Exchange of Cdt scientists</i> « Journées scientifiques de Pcot », Montpellier + bibliography research + training on specific subjects Visit to other field programs (West Africa)	1	5050	5050		5050	
<b>Documentary, editorial and scientific backup</b> Subscription to specific bibliography Documentation (books, papers, brochures) Working results and papers circulated within Pcot network	3	200 On justif	600 1000 500		600 1000 500	
Specific experimentation (linked with the specific consultancy) Field complementary data collection		On justif	4000 <b>29394</b>	4894	4000	
TOTAL			29394	4894	24500	

Un petit appui complémentaire géré sur place pour assurer des cours de soutien en Français pour faciliter l'interaction avec les autres chercheurs du réseau francophone (en particulier les non anglophones) et la lecture de documents en Français.

Our proposition is 1 entomologist in 2006, 1 agronomist in 2007, 1 breeder in 2008.

land limitations seemed more prevalent there and (b) the priority to food crops was not as much

# **Classified results**

highlighted.

We classified these criteria according to their weight (between 0 and 1).

It is striking to consider that socio-economic constraints ranked first in all Provinces, accounting for at least 50% of the total. In Central Province, where Mulungushi operated, they were found even more predominant (70%). Purely technical problems were raised more prevalently in Eastern Province.

	ites (common and anter ent)					
Rank	Magoye's Workshops					
Naiik	2002	2005	<b>Contact farmers</b>			
1	Rainfall pattern	Seed cotton price	Lack of extension			
2	Seed cotton price	Lack of ADP	Lack of labour			
3	Soil fertility	Inputs price and lack of credit	Soil fertility			
4	Lack of labour	Soil fertility	Inputs price			
5	Inputs price and lack of credit	Harvesting bags not available	Late delivery of inputs			
6	Spraying equipment	Rainfall pattern	Lack of ADP and implements			
7	Pests attacks	Lack and cost of labour	Seed cotton price			
8	Food crop first	Monopolistic promoters	Rainfall pattern			
9	Lack of skill and training	Lack of spraying equipment	Land availability			
10	Lack of ADP	Inputs inadequate	AIDS			

2005 results (common and different)

(1) ADP stands for animal draught power.

The first exercise was done with two groups of men and women. Almost the same constraints were identified. The women considered first the human-dependent constraints (access to input or credit, price) and as last important (actionnable?) the "natural" ones, like rainfall. The men put organisational and natural issues first.

Between 2002 and 2005, more stress comes from organizational and marketing problems. Environmental factors (rainfall, soil fertility) are still considered but not with the same priority level. The lack of ADP may be due either to the widespread of foot and mouth disease in the province or to the increasing number of inexperienced newcomers with limited resources.

As expected, the contact farmers are more sensitive to the constraints related to their own field of experience (extension, inputs and AIDS) and less to the socioeconomic ones (*eg* seed cotton price).

# ANNEX 3 : CONSTRAINTS TO COTTON PRODUCTION



















# <u>Are such recommendations</u> <u>always appropriate?</u>

If not, it is first necessary: to specify its *validity* domain to identify, rank producers' constraints so as to elaborate *target groups* 

# Questions to be solved

To **set** *priorities* : what are the main constraints and how do they rank ? To specify farmers *objectives* To identify possible *solutions* : what are the technics available to put them into practice?

#### Method

The participants devide themselves in homogenous groups (5 to 8 per group) 1 participant to take notes and report 30' to list the 10 major constraints to cotton production 15' to rank these constraints by importance Plenary session, synthesis and discussion In groups, solutions if time available

# **Guide to constraints**

climate
soils
pests and pest pressure
socio-economics
environmental
international market

# Major constraints identified by Zambian growers (2002)

- erratic *rainfall* pattern,
- pest *control* and spraying *equipment*,
- low *price* of seed cotton,
- low soil *fertility*,
- lack of *manpower*
- high price of *inputs*.

Constraints	Provinces			
Constraints	Southern	Eastern	Central	
Environmental constraints	32%	32%	22%	
Climate				
➤ Rainfall pattern — — — — — — — — — — — — — — — — — — —	-> 0,98 🜗	0,78	0,72	
➤ Off season rainfalls	0,02			
Soil				
Soil fertility	- 🕨 0,60 🤫	0,70	0,40	
Environment	0.08			
<ul> <li>Abandonned (and poisoned) crops being eaten by</li> </ul>	0,08			
animais		0.02		
> Deforestation		0,05		
Technical constraints	16%	19%	9%	
Due to pest control	_			
<ul> <li>Spraying equipment (inadequate or not distributed) -</li> </ul>	-> 0,40 🚺	0,23	0,29	
Pests attacks — — — — — — — — — — — — — — — — — — —	- > 0,28 7	0,40	0,13	
<ul> <li>Inadequate inputs supply</li> </ul>	-		0,35	
<ul> <li>Exposure to chemicals</li> </ul>		0,20		
Others	0.00			
<ul> <li>Limited choice of varieties</li> </ul>	0,08			
► Lack of fertilizers	0.05	0,08		
<ul> <li>No cheap soil testing facilities (solubor, lime)</li> </ul>	0,05			

		Provinces	
Constraints	Southern	Fastern	Central
	Southern	Eastern	Central
Economic and social constraints	52%	49%	69%
Unfavourable economic factors	_		
Low seed cotton price	→ 0,70 <b>(2)</b>	0,62	0,42
<ul> <li>Lack of incentives</li> </ul>			0,02
<ul> <li>High inputs price</li> </ul>	→ 0,48 5	0,25	0,22
<ul> <li>Late payments</li> </ul>			0,18
Lack of Resources	-		
➤ Manpower	<b>-</b> ►0,50 <b>4</b>	0,52	0,50
<ul> <li>Animal draught power</li> </ul>	0,17	0,37	0,53
<ul> <li>Inadequate tillage equipment</li> </ul>			0,32
≻ Capital			0,22
► Land	0,08	0,25	0,02
Social and individual			
Food crops first	→ 0,23 <b>8</b>	0,13	0,40
<ul> <li>Late planting due to funerais</li> <li>Conder</li> </ul>	0,10		0.02
<ul> <li>Diseases (Uis, malasia)</li> </ul>			0,02
Fytopsion and training			0,02
Lack of knowledge and training (use of abamicals or	- 0 20 <b>O</b>	0.15	0.43
other cultural technics, economics, cron management)	• 0,20 <b>9</b>	0,15	0,45
<ul> <li>Lack of extension backup</li> </ul>	0.02		0.12
Organisational	0,02		0,12
► Cattle free range	0.12		
Lack of association to present farmers views	0.07		
<ul> <li>Poor road networks (inputs delivery)</li> </ul>		0,07	0,12

# Major constraints identified by Zambian growers (2002)

• Most of these constraints have *technical*, *environmental*, *socio-economic* or *organizational* components which can be addressed either by research or by all SHs through negotiation.

# **Questions to the participants**

Satadah

These constraints were identified 3 years ago.

Do you think they have much *changed*? Which are getting *better* and which are getting *worse*?

What would you *suggest* to improve the situation and bring it to your expectation?

# ANNEX 4 : FACTORS AFFECTING COTTON PRODUCTION AND QUALITY



# **Headings**

















time.























































# ANNEX 5 : THE ROLES OF FARMERS' ORGANISATIONS







# **Headings**

CIRAD

- The cotton *commodity chain*
- First role of a farmers' organisation: *influencing* the *strategic decisions*, opportunities for the African cotton
- Second role: *improving the services* delivered to the farmers, the factors affecting quality in cotton production



# CIRAD

- The cotton *commodity chain*
- First role of a farmers' organisation: *influencing* the *strategic decisions*, opportunities for the African cotton
- Second role: *improving the services* delivered to the farmers, the factors affecting quality in cotton production

Some recommendations and questions













#### The actors

- Processing
  - Ginners
  - Textiles (spinners, weavers, clothing industry)
- Marketing
  - Export traders
  - Shipping companies



# <u>First role of farmers'</u> <u>organisations</u>

To represent and support their members' interests as often as they may be in conflict with other actors' whether within or outside the national commodity chain

#### Examples:

- price setting
- *strategic organisational decisions* within the commodity chain
- international policies









Compared varieties	Α	В		commentaire
seed cotton (tons)	200000	210000		5% more yield
fibre %	40	41		1% increase in GOT
seed %	57,0	56,0		
losses %	3,0	3,0		
Price hypothesis				
seed cotton (\$ / kg)	0,25	0,25		
fibre (\$ / lb)	0,50	0,48		minus 1 class of length
seed (\$ / kg)	0,05	0,05		
Gross values				
seed coton (millions \$)	50,00	52,50	2,50	millions \$
fibre (millions \$)	88,89	91,84	2,95	millions \$
seed (millions \$)	5,70	5,88	0,18	millions \$
total	3,13 1	nillions \$ t	to be sh	nared between stakeholders as :
production	50,00	52,50	2,50	millions for the growers (from 64 to 65%)
transport, processing etc	44 59	45.22	0.63	millions for the other SH





Case	A	В		commentaire
seed cotton (tons)	200000	200000		
fibre %	40	40		
seed %	57,0	57,0		
losses %	3,0	3,0		
Price hypothesis				
seed cotton (\$ / kg)	0,20	0,25		change in SC price (+ 5 cts/kg)
fibre (\$/lb)	0,50	0,60		change in world price (+ 5 cts/lb)
seed (\$ / kg)	0,05	0,05		
Gross values				
seed coton (millions \$)	40,00	50,00	10,00	millions \$
fibre (millions \$)	88,89	106,67	17,78	millions \$
seed (millions \$)	5,70	5,70	0,00	millions \$
total	17,78 n	nillions S	to be sl	nared between stakeholders as :
production	40,00	50,00	10,00	millions for the growers (from 64 to 65%)
transport, transformation	54 59	62.37	7,78	millions for the other SH

/(\$)/		
	•	The cotton <i>commodity chain</i>
	•	First role of a farmers' organisation:
eration		influencing the strategic decisions,
onale rche lique		opportunities for the African cotton
pement	•	Second role: improving the services
		delivered to the farmers, the factors
		affecting quality in cotton production
	•	Some recommendations and questions

# Zambian position

At the international level, cotton farmers organisations have to collaborate with other SHs sharing the same interests.

The situation for African cotton:

- Favourable factors: low cost, competitive, China's demand increasing, the raise of the oil price makes synthetic fibres and intensive agriculture less competitive (they require capital and energy),
- <u>Unfavourable factors:</u> not very sustainable, in the industrial states, where intensive agriculture is used, cotton production is heavily *subsidized*

# World production : about 22 millions tons of fibre 1/3 exported: about 8 millions tons







mecanisation **50\$**/ha

Africa: running costs animal drought **?\$/ha** 









Africa: running costs pesticides 65\$/ha (insect control)

USA: running costs pesticides 285\$/ha (insect control, growth regulation)







# Zambian position

At the international level, cotton farmers organisations have to collaborate with other SHs sharing the same interests.

The situation for African cotton:

- **Favourable factors:** low cost, *competitive*, China's *demand* increasing, the raise of the oil price makes *synthetic fibres* and *intensive agriculture* less competitive (they require *capital* and *energy*),
- <u>Unfavourable factors:</u> not very sustainable, in the industrial states, where intensive agriculture is used, cotton production is heavily *subsidized*

#### **Subsidized Lint production** (1000 t)

Far more than the volume internationally traded

	Year		
	1998	1999	
Brazil	521	622	
China	4 501	3 830	
Egypt	230	229	
Greece	390	428	
Mexico	219	137	
Spain	104	125	
Turkey	882	795	
USA	3 030	3 964	
All countries	9 877	9 860	
		After M. Fok	

# IRAD

#### • The cotton *commodity chain*

• First role of a farmers' organisation: *influencing* the *strategic decisions*, opportunities for the African cotton

 Second role: *improving the services* delivered to the farmers, the factors affecting quality in cotton production
 Some *recommendations* and *questions*

# Second role of farmers' organisations

Commitment to contribute to the CC sustainability, in increasing the *productivity* and the *efficiency* of all the services due to the farmers, through control and management activities.

#### **Examples:**

- quality control of the *inputs* provided to the farmers (seed, fertiliser, insecticide, herbicide) and their equipment
- quality control of cotton *production* (seed cotton, fibre, seed)



























# IRAD

#### • The cotton commodity chain

- First role of a farmers' organisation: influencing the strategic decisions, opportunities for the African cotton
- Second role: *improving the services* delivered to the farmers, the factors affecting quality in cotton production

• Some recommendations and questions

# Some recommendations (1/3)

#### **Before the negotiation:**

- Identify the different *interests* of the members (maybe different groups of interests / on an environmental or socio economic basis
- Example: access to resources, labour, credit, inputs, market, water, land etc.

# Major constraints identified by Zambian growers (2002)

- · erratic rainfall pattern,
- pest control and spraying equipment,
- low price of seed cotton, •
- low soil fertility,
- lack of manpower
- · high price of inputs.
- Most of these constraints have technical, environmental, socioeconomic or organizational components which can be addressed by the involvement of farmers organisations in the decision process within actors of the CC

# <u>They can be addressed</u> by Farmers' organisations ...

- erratic rainfall pattern >>> irrigation, early varieties
- **pest** control and spraying **equipment** >>> access to credit or equipment and quality control
- low price of **seed cotton** >>> national and international rules
- soil fertility >>> access to lime and inputs
- lack of manpower >>> access to ADP
- high price of **inputs** >>> national policy

# <u>... but priority may be different</u> <u>among groups of farmers.</u>

C	netrointe	Provinces		
-	onstraints	Southern	Eastern	Central
En	wironmental constraints	32%	32%	22%
Cli	imate			
۲	Rainfall pattern	0,98	0,78	0,72
≻	Off season rainfalls	0,02		
So	<u>il</u>			
≻	Soil fertility	0,60	0,70	0,40
En	vironment			
≻	Abandonned (and poisoned) crops being eaten by	0,08		
an	imals			
≻	Deforestation		0,03	
Technical constraints		16%	19%	9%
Dı	ie to pest control	~		
۲	Spraying equipment (inadequate or not distributed)	0,40	0,23	0,29
≻	Pests attacks	0,28	0,40	0,13
≻	Inadequate inputs supply		× .	0,35
≻	Exposure to chemicals		0,20	
Ot	hers			
≻	Limited choice of varieties	0,08		
≻	Lack of fertilizers		0,08	
≻	No cheap soil testing facilities (solubor, lime)	0,05		

# <u>Some recommendations (2/3)</u>

#### Before and during the negotiation:

- Should the organisation be represented by the government, by themselve or by other allies (eg Ngos), make sure the persons that have been mandated will clearly *support* the members' interests.
- **Example:** an Association of West African cotton farmers organisations was created to promote African growers interests through reducing subsidies to cotton growing in the US.

#### Some recommendations (3/3)

#### **During the negotiation:**

- Take into account *short term* (individual farmers) as well as *long term* (all actors) interests,
- **Example:** in general win-win positions are more sustainable.

# **Questions to the participants**

Farmers' organisations can play a *prominent role* in many fields of cotton production.

How do you *feel* after my presentation?

What are you *ready* to begin?

What are your *priority* and how did you establish them?

Do you feel any *limitations* for the future?

# Farmers' organisation in Benin 1/4

"*Groupements villageois*" were primarily settled by the cotton company (Sonapra) in each village to reduce the organisational costs:

- **input and seed delivery** (inventory of producers and needs, reception and delivery)
- **credit** records and credit recovery (collective solidarity)
- purchase of seed cotton (weighing)
- transport (part)

# Farmers' organisation in Benin 2/4

#### They *federated* later on (mid 90's):

- at the **districts** level ("Unions de producteurs")
- at the **province** level ("Unions départementales de producteurs") and, more recently
- at the **national** level (FUPRO)

# Farmers' organisation in Benin 3/4

Their *roles* have increased a lot with CC privatisation, they are now officially involved in many decision taking instances:

- the AIC (Professional Cotton Association with ginners and ?)
- the **variety** release committee (with research and ginners)
- the seed multiplication committee
- the selection of **input** providers (through AIC)

# **Farmers' organisation in Benin 4/4**

They now have permanent staff (technical) at the UDP level (province).

Their *funding* come from different sources:

- the GV get get a **premium** for the activities taken in charge
- at the other levels, contributions from the villages
- support from donors through specific projects