

**ANNEX 10**

**POSITION PAPER: E-VOUCHER SCHEME & MECHANISATION PILOT**

# **E-Voucher Scheme & Mechanisation Pilot in the FISRI Project**

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## **1. Capacitating Small-scale Farmers Through Improved Input Subsidy by Electronic Voucher System**

### ***1.1. How the E-Vouchers Scheme was Implemented***

The e-voucher is intrinsically tied to the agro-dealer and is meant to be a cost effective means of targeting agricultural inputs in the form of incentives to smallholder farmers practicing conservation Agriculture. The model involves the issuance of an e-voucher by FAO, the programme implementer, to a farmer as a bond worth a certain monetary value that can be spent or redeemed for specified agricultural inputs at a local agro-dealer's outlet. Each beneficiary is issued with vouchers to enable him/her access inputs or services for the season. The agricultural inputs against which vouchers are redeemed include basic inputs and CA tools. The scheme is a departure from direct procurement model that requires the programme implementer to inputs in bulk and distribute them to targeted beneficiaries.

The beneficiaries are linked to the e-vouchers using any mobile phone over a specified interface. The e-voucher serial number is linked to the farmer's NRC number for security, so that only the farmer can redeem the voucher.

The scheme works in the following manner:

1. The client or programme implementer (FAO) deposits funds with MTZ to back up the value of vouchers issued to beneficiaries into their client account accessible only to the transactions allowed. Beneficiaries are targeted, and preloaded into the platform for added security
2. Beneficiaries are registered in the system and then receives an electronic voucher scratch card
3. Beneficiaries redeem their e-vouchers at one or more registered retailers. The system keeps track of what products are received by the beneficiaries.
4. The retailer is automatically paid the value of the products redeemed from the funds in the client account.
5. The implementer monitors the information about beneficiaries and redemption in real time.

Overall, the system included the selection of agro dealers qualified by set criteria to offer the service to farmers. The beneficiaries are also selected and registered in the system. Vouchers are prepared and linked to the beneficiaries by students. The Extension service distributes them to the farmers.

### ***1.2. Agro-Dealers***

#### ***1.2.1. Location and Criteria of selection:***

The participation of Agro-dealers in the FISRI project required that they be identified for the purpose that supports the projects' objectives. In this regards the selection of Agro-dealers was to be purposive, but open/fair and transparent to avoid any monopoly. There was observed a variation of selection criteria from district to district, yet guidelines for the selection of Agro-dealers were available.

Criteria for selection of a participating Agro-dealer were:

1. Registered Zambian Company. An established agro-dealer (registered) with fixed premises
2. Have physical presence in the beneficiaries district
3. At least one year of proven record in either seed or fertilizer and agricultural equipment sales. Though not expected upfront an Agro-dealer that can cushion shocks in business (due to delays in transactions and/or sudden change in transactional costs) was preferred.

4. Stocks more than one type of agricultural input (chemicals, seed and farming equipment)
5. Holders of seed traders' license (in case of seed supplier)
6. A physical survey is recommended annually to review the performance and ascertain if there are new agro-dealers actively selling agro-inputs in rural areas

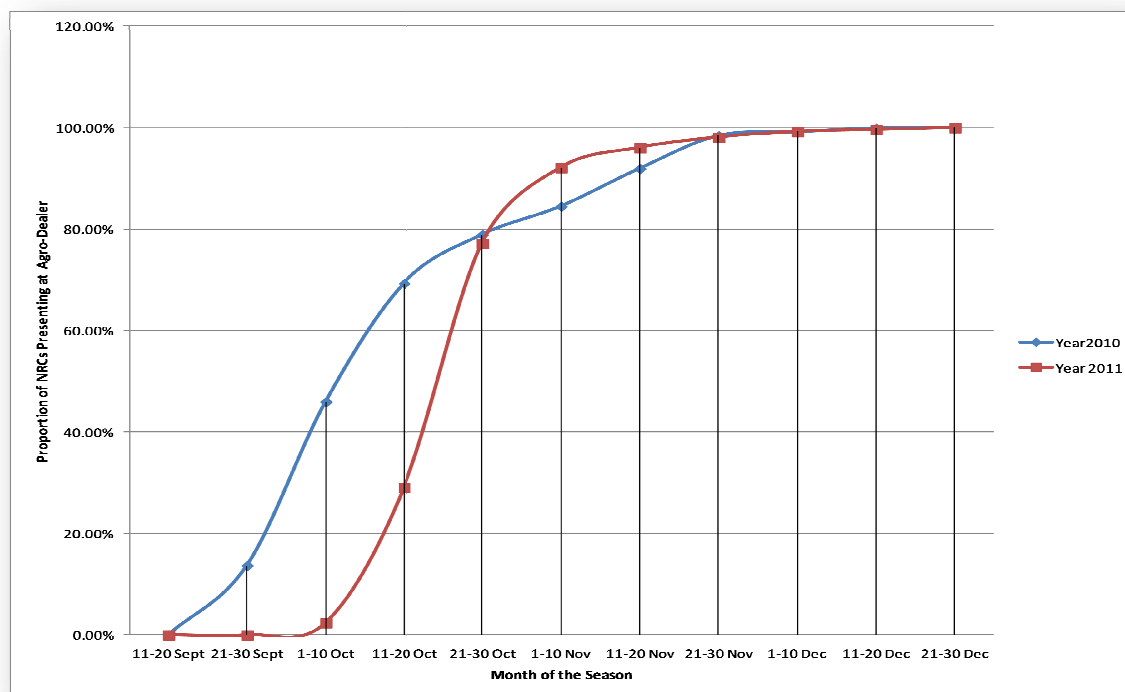
Through the Project, Agro-dealers were able to increase their sales and the scope of products, with special inclusion of CA technology tools such as chaka hoes, rippers, accessories of ripper attachments etc. Procurement of products is guided by past season performance and the projected sales for the coming season.

### 1.2.2. Experience of Agro-Dealer with e-vouchers

The value of the voucher presented to the agro shop does not cover all the inputs required let alone the whole farm, consequently, vouchers come second to “cash purchases” as a source of inputs at the farm.

The purchase of implements and other inputs is supplemented by the farmer topping to cover the full cost. The Top up is very small ranging from 1.1 percent to 2.8 percent. Many agro dealers were not willing to share their records, especially cash sales. From the ones that shared and from verbal statements, the vouchers were a significant proportion of total sales; some reporting up to 75% of sales being from vouchers during the season.

The impact of the voucher scheme on agro-dealers has been remarkable for many. From selling seed, vet drugs and fertilizers, the agro-dealer has expanded to CA implements and inputs such as herbicides, ripper assemblies, chains, and sprayers. The vouchers have allowed agro-dealer to expand to other districts. In addition to expanding his transport fleet, an agro-dealer in Chongwe has clinched a deal to import agro-chemicals in his trade name. Resulting from the higher sales during the voucher season the voucher shops tended to embark on expansion programme.<sup>1</sup>



**Figure 1 Timing and Rate of Voucher Redeeming at Agro-dealers for 2010 and 2011 seasons.**

<sup>1</sup> The case of the Kaoma agro-dealer who was opening another outlet in Senanga and TBZ in Kaoma; there is currently no agro-dealer in TBZ nor Senanga. The case of Kumawa in Chinata that has outlets in Petauke and Chonowe).

In year 2010, the e-voucher season was early. In comparison the 2011 season started almost 30 days later than the previous season<sup>2</sup>. In 2011, the season started in the first week of October whereas at this time last year, 46% of the transactions of 2010 were already presented. However, in 2011, the presentation of transactions was much faster the first 40 days such that by 30 October, the number of transactions in 2011 was practically the same as was the rate at this time in 2010, 80% of transactions presented. The 80% mark was reached in 40 days last season but in half the time in 2011.

The period of validity of the voucher was a fixed for one month only but in all cases the vouchers were delivered late thus the redeeming period was reduced (Figure 1 above). This resulted in ‘panic buying’ by farmers: a situation that predisposes the farmers to exploitation by Agro-dealers as there is no time for ‘shopping’ to compare prices and indeed negotiate. Because vouchers were redeemable only in certain shops a situation presents itself for formation of a price cartel by agro-dealers to exploit farmers by increasing prices of items on the vouchers.

### ***1.3. Farmer Experiences with the voucher***

The e-voucher has been very helpful for the farmer to gain access to inputs and implements that gave them the capacity to implement CA. Although the selection of lead farmers appears to lean towards “Wealth” farmers who might not need the supplemental subsidy, the importance to the farmers may also be gauged by the feeling of exclusion expressed by follower farmers for not receiving the voucher. The farmers looked at price and availability of items to arrive at a decision to buy from a given shop.

#### ***1.3.1. Challenges for the Farmer***

1.3.1.1. Pricing of inputs, the difference between voucher and non-voucher shops.

Prices of inputs between voucher and non-voucher shops was not investigated but it is envisaged that non-voucher shops paid no attention to the voucher system in their pricing rather presented their business as attractive as possible for the general farming community. Agro-dealers cater for the farming community at large and thus ascertain that they do not differentiate between voucher and non-voucher holding farmers.

Further agro-dealers state that pricing of the inputs is determined by that obtaining price structure from the suppliers.

1.3.1.2. Difference between before and after the voucher season for both types of shops.

Farmers using vouchers noted a change in prices of inputs before and after the voucher season among the voucher shops, being higher during the voucher season, though the agro-dealers state the contrary.

The farmers strongly believe that Agro-dealers increased input prices for the items on the vouchers during the voucher redeeming period. The M&E system ought to catch this change in prices.

#### ***1.3.2. Challenges faced by agro dealers***

Vouchers are released by MTZ and delivered to the districts. There has been varied ways through which the vouchers were delivered ranging from MTZ using students only to MTZ working with the MAL staff.

MAL staff linked the vouchers to the farmers and distributed the vouchers. Prior to redeeming the vouchers farmers ‘shop’ for better prices for the specified goods among Agro-dealers.

Agro-dealers who have lost clients due to problems with redemption process of vouchers and from other reasons not discovered by this study are suspicious of a third force influencing the buying behaviour of farmers.

We prefer to ask for the type of services agro-dealers offer to attract customers to their shop:

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<sup>2</sup> The impact of an Election year

1. The emerging competition among the agro-dealers has instilled a sense of entrepreneurship evidenced by some agro-dealers offering **transport** for farmers' inputs.
2. At the **risk** of vouchers not being redeemed, due to some error/problem in the redeeming process, some agro-dealers gave inputs before the vouchers are redeemed. This has led to some serious problems of unredeemed vouchers with agro-dealers; a financial challenge that should be addressed quickly to ensure success of the voucher system.
3. Evidence of expired and slow moving items sold on vouchers to farmers would indicate herding
4. Farmers are able to obtain goods **NOT authorized** by the contract. Left to themselves, the farmers buy seed and fertilizers only<sup>3</sup>. The agro-dealer has to try and get the balance right in terms of the type of agriculture the farmer is supposed to practice
5. The Agro-dealer may use the extension worker as his agents and give them commission for **herding** the lead farmers his way.
6. In the 2011/12 season, many vouchers in were rejected by the system. The suspicion fell on the registration process carried out by university students. Some dealers could not redeem any vouchers this season due to the difficulties with the system and have let the season pass. The start of the redeeming season was late and so did not leave much room to sort out the problems with the system. An agro dealer in Kalomo ordered rippers, sprayers, herbicides in advance but this stock has not been bought due to the difficulty in voucher redemption.
7. There were a lot of problems with redeeming vouchers this 2011/12 season. To resolve them, MTZ had to train the extension staff to have access to the system and assist the farmers in need. Lead farmers in Simujika confirmed that the redeeming exercise was perfect and got assistance from an appointed extension when they needed it. This was in contrast to Kalomo district where the registration process appears to have been the main source of errors encountered at redeeming.
8. The agro-dealers are generally content with the FISRI programme. Some dealers report that the vouchers account for over 70% of sales. Challenges experienced by dealers are varied but the common challenge is the frustrations encountered when vouchers fail to redeem for a variety of reasons. Other problems are:
  - i. Input availability—items such as chaka hoes are sourced from Zimbabwe by one company only. Agro-dealers do not have the leeway to source on their own. Other implements are the rippers and tines. In the absence of these items, some agro-dealers have substituted them with spares, sprayers etc.
  - ii. When they arrive at the agro-dealer, some farmers appear not to know what they want while some come very prepared after having earlier sent a reconnaissance survey over prices and availability of items.
  - iii. In some districts up to 90% of farmers top up the vouchers to get their inputs or equipment. However the amount of top up is often small averaging 2.85 at most.
  - iv. Agro-dealers face pressure to sell items not listed on the voucher. Farmers may argue that they do not need to buy a chaka hoe because they bought one the previous year. This encounter has led agro-dealers to suggest that the farmers be **rotated** to permit other access to CA implements<sup>4</sup>. Alternatively, the voucher should include other inputs aimed at augmenting the CA practice such as attention to soil health.
  - v. The redeeming started 30 days later than last year thereby restricting the window of execution. The procurement process requires ample notice time. A larger window of redemption would give the dealer and the farmers to plan their purchases.
  - vi. In Chipata and Chibombo, some agro-dealers felt they were being disadvantaged by some forces that are diverting all the vouchers to a preferred shop below.

<sup>3</sup> The Follower farmers in Sinazongwe were asking for seed only---if they could not get the package that the lead farmers were getting.

<sup>4</sup> CA takes long; effects may not show in one year. The voucher does not permit a farmer to buy all the equipment at once—it is expected that the farmer would start with the priority instrument and build the full complement over time.

## **2. The way forward**

For a long time, development workers lacked the means to show in real life the way the models, equipment, systems of production etc were working. The market did not stock the items because there was no demand, and the farmers could not demand it because they were yet to be convinced. The e-voucher has been able to address the two needs simultaneously. We are certain herbicides have been known to small farmers or extension for a long time but not to the extent of actually using the herbicides. What the voucher scheme has done is to put the herbicides to work on a large scale and on many farms. The spike in demand for herbicides attests to the effective contribution of the voucher and the demonstration effect of the lead farmer as many purchases were by cash and by farmers outside FISRI. This analysis will be better done at the end of 2012-13 season when the MTZ implement a more detailed database.

The voucher is thus recommended for out scaling where we need to demonstrate the solution to a felt need. In FISRI the voucher was tied to the teaching role of the lead farmer and camp officers. In this role, the voucher enabled a demonstration of the CA technology components to all. Whether it has had the desired impact on the target group; the follower or participating farmer is open to question until the project collects appropriate data on this group. This is strongly so because the follower farmers are despondent for not receiving the voucher. They are also the least reported beneficiaries.

## **3. Establishment and supporting of Conservation Agriculture mechanization and system of equipment hire.**

In conjunction with MAL, FAO and ZNFU the project identified service contractors based on elaborate selection criteria guided by the rationale that the most limiting factor to agricultural production in smallholder farming sector is labour for land preparation, planting and weeding; Also that with increase in land area per farm household which stands at 3.27 ha hand cultivation is not practical.

In selecting the contractors the following were among the important criteria:

(1) Interest in setting up and managing agricultural contracting business on a commercial basis, (2) Capable of comprehending contractual obligations, (3) Experience with agricultural machinery especially tractors, (4) Having a customer care policy (5) Knowledge of agricultural chemical inputs (herbicides, pesticides, fertilizers etc. (6) Good marketing policy and strategy for agricultural machinery

Conservation Agriculture is characterized by operations that are done earlier than in the conventional cultivation practices as such timeliness is of essence and the project facilitated the scheme for hire of tractor or oxen services. The Zambia National Farmers' Union was contracted to manage the scheme using a revolving fund concept.

The scheme was supported by the project, indirectly, through provision of e-vouchers to Lead Farmers (LFs) valued at 50% of the cost of CA land preparation, which included ripping, planting and spraying: an amount of ZMK 750,000 was attached to the voucher.

### ***3.1. Conservation Agriculture Mechanization Pilot***

#### ***3.1.1. Operation***

The business model of a mechanization service provider centres on providing tractor and ox-drawn planter to operators who would provide a service to farmers in their locality. A total of 10 tractors and 234 animal drawn no-till/mulch planters have been distributed in Chongwe, Mazabuka, Choma, Kalomo, Monze and Kazungula. The tractor includes a ripper, trailer, sprayer, planter, and a sheller which is yet to be delivered. The tractor loan is K252million payable in three years. The operator is supposed to make three payments per year: (i) in January, (ii) after harvest, and (iii) after ripping in October. The business is performing well as by October 2012, K740 million was the target expected from the 10 tractors. Instead, the operators paid a total of K1.4 billion to date, effectively doubling the repayment. At this rate, the loan of 3.4 billion would be paid in less than the three years agreed.

**Table 1. The number of clients served by one mechanization service provider, 2011/12**

Gender	Service	Cash		Voucher		Total for Cash and Vouchers	
		Number of Clients	Total Paid	Number of Clients	Total Paid	Number of Clients	Total Paid
F	HAULING	2	1,250,000			2	1,250,000
	PLANTING	1	600,000	5	1,000,000	6	1,600,000
	RIPPING			13	3,900,000	13	3,900,000
Female Total		3	1,850,000	18	4,900,000	21	6,750,000
M	HAULING	7	6,020,000			7	6,020,000
	PLANTING	5	5,900,000	14	5,800,000	19	11,700,000
	RIPPING	13	17,850,000	37	11,000,000	50	28,850,000
	RIPPING AND PLANTING			1	300,000	1	300,000
	SPRAYING	7	5,100,000			7	5,100,000
	TRANSPORT	6	3,390,000			6	3,390,000
Male Total		38	38,260,000	52	17,100,000	90	55,360,000
Grand Total		41	40,110,000	70	22,000,000	111	62,110,000

The tractor covered a wide area of almost 20 km radius to service the clients. For the operator, a total of 111 clients were served of these 19% were female. Of the 111 clients, 37% paid for the services by cash while the rest used vouchers. This indicates the high demand for ripping and the viability of the service. Though only 37% of the clients, this number accounted for 65% of the total cash earned from the mechanization service.

The mechanization service providers were over stretched during this first season of operation. Firstly they have had to figure out how to source funds for operations while attending to a long queue of voucher carrying customers. In the end some voucher clients will only be attended to this 2012/13 season while some cash paying clients had their cash returned. The cash paying clients were a significant proportion of the clients and they enabled the operator to access cash for operation of the tractor service. The timing of the operations for the tractor service was generally late due to several factors:

- a. The modalities of the tractor service was spelt out clearly towards the end of the year
- b. Ox-drawn animal drawn no-till/mulch planters were only distributed in November

Due to the limited number of tractors, there was a lot of confusion in the season. Some farmers resorted to conventional farming when the CA tractor could not be accessed on time. Yet other farmers could not wait for the tractor to come and plant, instead used a hoe to plant along the rip lines. This need to carry out the services in sequence has led to the operator in Chongwe to put a second tractor on the budget so that he could satisfy his customers better. One would rip while the other would plant and spray.

Below, it is evident that the vouchers were used only for ripping and planting. Other services were paid for by cash. Taking only the activities using hectare as a unit of charge, we note that the cash paying clients had the biggest land worked at 126.5 ha, accounting for 60% compared to 85ha for vouchers. This difference in size of land serviced plus the other services bought for cash like haulage resulted in cash payment being 57% of the total income despite the cash clients accounting for 27% of hectare based services.

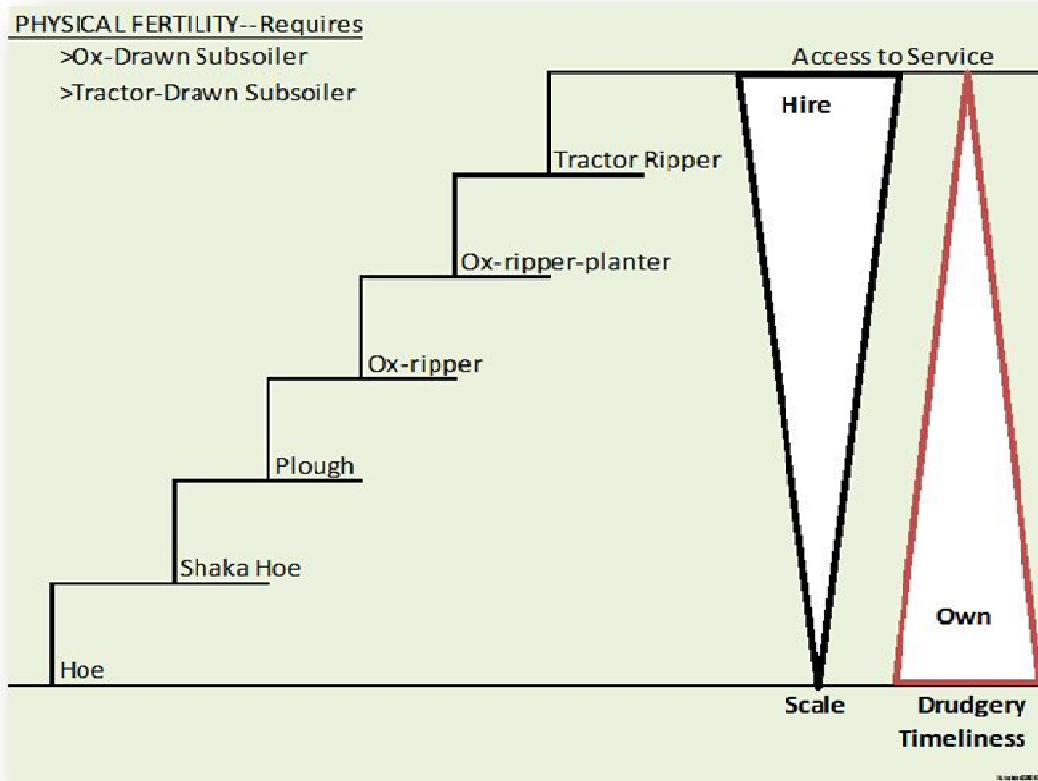
**Table 2. The number of units delivered by a Mechanization service Provider**

Gender	Service	Cash Payment		Voucher Payment		Grand Total
		Bags	Ha	Trip	Ha	
Female	HAULING	150		2		152
	PLANTING		3		5	8
	RIPPING				13	13
Female Total		150	3	2	18	173
Male	HAULING	470		18		488
	PLANTING		29.5		29	58.5
	RIPPING		60		37	97
	RIPPING AND PLANTING				1	1
	SPRAYING		34			34
	TRANSPORT			19		19
Male Total		470	123.5	37	67	697.5
<b>Grand Total</b>		<b>620</b>	<b>126.5</b>	<b>39</b>	<b>85</b>	<b>870.5</b>

Ever since the use of the chaka hoe for basin making has come up against the constraint of the hoe in general which oxenization programmes have been trying to solve since the 20th Century, FISRI is one in line of projects that are promoting faster, larger and earlier land preparation. Planting basins may be earlier but they are not faster or lighter on the practitioner. The ox-drawn ripper solves the scale and speed limitation of the chaka hoe and conventional ploughing. Going further up the ladder, the tractor drawn ripper and planter improves upon the ox-drawn implements. This stage, however, is accessible largely by hire (see Figure 2 below), removing the control of time in the hands of the operator. As long as the barrier to entry is the cost of the tractors, operators will enter the business until profits become zero. To avoid over-concentration of the service in the hands of a few, the financing institutions should vary the repayment period from 3 years when the demand is high to 6 years when the demand is in equilibrium with supply. Keeping the number of operators high in this manner will open access to more farmers.

As the farmers associations grow financially, the ZNFU may find it profitably to lend to the group. Past experience on group ownership of machinery suggests private ownership or by organizations closely associated than farmer groups is to be preferred.





**Figure 2. The trends in drudgery, timeliness and scale of operation for different land preparation methods**

The access to tractor services was facilitated by vouchers given to lead farmers. The fact that the farmer bought the herbicides, it meant that the mixing was done at the farmer's farm. This exposes the herbicides to water of differing pH and other mineral composition that may affect the efficiency of the herbicides. In the interim, the tractor service providers should be responsible for buying the herbicides and other inputs and let the farmer pay for full service at a price that includes the cost of inputs. The same is true for the ox-drawn mechanization providers. Here also the sprayer teams should bear the risks of poor mixing of chemical and should provide the farmer with advice on choice of chemical given the timing of spraying. By the end of a few years, the farmers would have gained insight from the operator and be more comfortable to own his own sprayer and chemicals.

### **3.1.2. Advantages of Mechanization**

The tractor service has unearthed the middle income farmer who was not catered for by the chaka hoe. Among the impacts of mechanization is that women will not feel compelled to stay in polygamous marriages. In polygamy, the man provides the equipment to prepare parcels of land for each wife and for him in exchange for their labour in all other field activities from ploughing to harvest. If the women can access draft power for seedbed preparation from a mechanization service provider, polygamy may not be very attractive. For the man, the reduced labour demand for weeding, by using herbicides, means he too may not need more wives. In the short term, wives look more health and attractive due to reduced drudgery. The extra time at the hands of the women may also go into better care of the children and diversifying into poultry and other income generating activities<sup>5</sup>.

With ripping, a hectare takes only two days, the kilometers travelled have reduced from 11km to 4 km.

<sup>5</sup> Interview with ZNFU

The Tractor Mechanization Service Provider sees several advantages of using the ripper:

1. Timely planting
2. Short time taken to rip a hectare
3. Spraying herbicide has encouraged the farmers a great deal and many more will seek the service again next season. The demonstration effect of herbicides was quick and effective because it was addressing an acutely felt need in the farming community.

Farmers in general continue to use the plough for several reasons tied mainly to the need to control weeds. If a farmer is late in implementing CA activities, ploughing is the default they fall back to.

The per capita availability of Farm Implements such as a ripper or plough is still at the same or lower rate as in the 1980s or from the time the plough became part of smallholder agriculture in Zambia. In the interim, before all farmers own their own draft power or can afford to hire, we shall experience delays in crop establishment. The solution in the interim is the chaka hoe until such time that the per capita income rises to permit independence in draft power. Ownership of assets (Ox, Tractor, ripper, plough etc) determines whether a farmer would rip at the right time. Other determinants are the overall planning of annual activities by the farmer.

In scaling-up to meet the demand, more tractors per operator instead of many one-tractor operators is suggested. MSP in Chongwe is already budgeting to buy the second tractor to enable him serve all clients effectively.