

C3P

Crop Crisis Control Project

C3P ON-FARM VOUCHERS: PILOT USE OF ON-FARM VOUCHERS TO DISSEMINATE CASSAVA PLANTING MATERIAL IN WESTERN KENYA

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Brief 5



Introduction

Cassava cuttings can begin to lose germination capacity within five days after being harvested. Even with ideal handling and conditioning, germination is significantly compromised within two weeks of harvesting. Hence, cassava cuttings need to be planted quickly after being cut from a field because they are very prone to drying out which compromises germination rates. This brief explores the use of vouchers in Western Kenya to promote the dissemination of cassava cuttings in a manner which reduces loss, provides choice, and encourages transparency in diffusion. The lessons learned in Western Kenya were shared with project participants in other Great Lakes countries.

Why On-Farm Vouchers (OFV)?

The goal in piloting the use of On-Farm Vouchers was to understand how this new methodology, using a demand subsidy to promote an efficient allocation of planting material between consumer and producer, could work. On-Farm Vouchers had never been systematically attempted by seed aid practitioners with vegetatively propagated planting material. CRS had nearly a decade of voucher-based experience with seed across nearly twenty countries – the Seed Voucher & Fair approach – but no experience with the use of On-Farm Vouchers to promote the dissemination of vegetatively propagated crops (CRS. 2002, Remington et al. 2002, Sperling et al. 2008, Walsh et al. 2004).

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Conventional dissemination of cassava planting material by seed aid practitioners (National Research Organizations, local and international NGOs, UN Agencies such as FAO), has been focused on promoting the supply of CMD-resistant cassava varieties. The conventional approach tends to rely heavily on trucks to distribute bundles of cuttings in bulk to farming communities. These bundles are then broken down and redistributed to farmers.

This dissemination approach tends not to focus explicitly on how cassava cuttings move from the point of harvest to the establishment of fields nor on the spatial orientation of fields and communities targeted by the dissemination. The result is relatively high loss rates due to both the short shelf life of cassava planting material and bruising of cassava cuttings that can result from bulk loading and offloading, and transport over rough roads¹.

Conventional dissemination of cassava cuttings by seed aid practitioners does not enable for ready tracking or follow-up. In the case of western Kenya,

which on paper produced enough CMD-resistant cassava planting material for planting over 22 000 ha by 2004, the conventional approach used to disseminate this material resulted in very little capacity to track where specifically the material was planted or what sort of losses occurred as it moved from origin to destination.

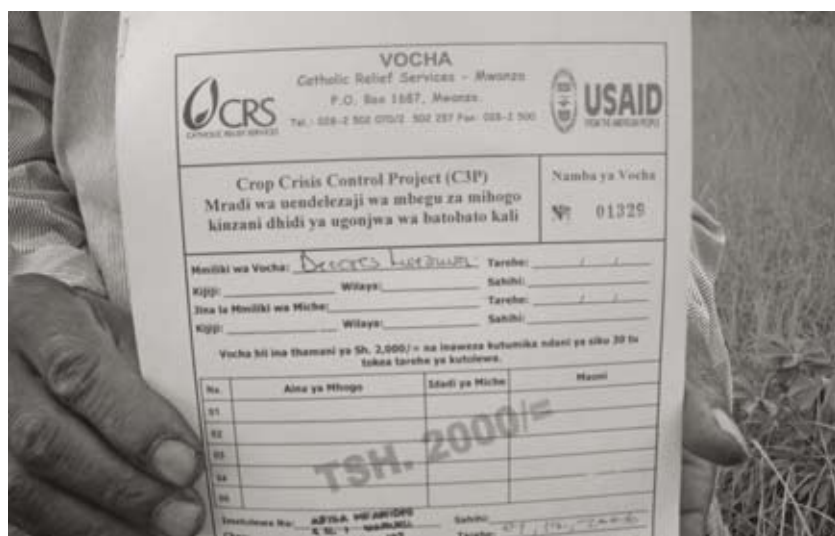
Conventional dissemination is also carried out without much consideration for the most advantageous planting period for the targeted farmers. Generally speaking, the most appropriate time for farmers to plant cassava is when they know they can access good quality planting material, and when the rains are deemed sufficient, and when they have time to prepare their land.

Farmer assessment and understanding of cassava planting material performance is most effective via on-farm evaluation where the farmer can see the physiological make-up of the plant through assessing the stock (source of cutting), leaf, and root development. On-site plant assessment enables the farmer to gain a far more robust picture of the



Kagera District, Tanzania. A farmer receives vouchers for his CMD-resistant cassava planting material.

¹ Given the relatively low multiplication rates and long duration of cassava, it is extremely important to identify factors that cause the loss of cassava planting material and to take steps to reduce the losses associated with the dissemination of its planting material (see Brief 4 “Cassava Cutting Movement from Primary to Bulking Sites - Case Study Burundi”).



Kagera District, Tanzania. A voucher used by a farmer to access CMD-resistant cassava planting material.

performance of planting material than if the farmer was simply to inspect a bundle of cassava cuttings in a central location. Because quality is so important, farmer inspection is critical.

In introducing a disease-resistant cassava variety, the primary goal of the dissemination strategy should be to increase the speed at which the variety is made available to as many farmers as possible in an equitable manner within a target zone. With the conventional approach to cassava dissemination, this combination of high losses and low emphasis on the spatial orientation on fields and communities targeted by the dissemination leads to a slow rate at which a new disease-resistant variety reaches a point of saturation within a geographic zone.

Being attentive to such practical considerations of the point of view of the recipient farmers is characteristic of the OFV program. The OFV methodology piloted in Western Kenya aimed to operationalize a new way of promoting cassava dissemination. The objectives were to confirm the feasibility of the methodology and to draw lessons learned so as to inform the application of this methodology to other seed practitioners in the six-country program area served by the Crop Crisis Control Project. Kenya was an ideal testing ground for this pilot initiative because cassava inventory surveys which explicitly identified the availability and location of CMD-resistant cassava planting material in Western Kenya were completed four months before the pilot.

Cassava in Western Kenya

Cassava is an important crop in Western Kenya which produces 60% of the country's total cassava crop. It is cultivated on a small scale by many poor households for food and income generation. Since the late 1990's it has been threatened by a virulent form of Cassava Mosaic Disease (CMD) resulting in over 80% yield losses estimated at 150 000 t and valued at 10 million USD per year. CMD has caused average yield declines from 10 t to less than 3 t per ha and reduced area under cassava production from 25 000 to less than 17 000 ha in Western Kenya, rendering poor small-scale farmers food insecure. (Annals of Applied Biology 149:137-144.)

The spread of CMD is mainly through cassava cuttings used as planting material or whiteflies, which typically feed on the underside of plant leaves and have been shown to transmit and spread the virus. Farmers conventionally source cuttings from their neighbors. With the advent of CMD, this led to rapid disease spread and high yield losses, which forced many farmers to abandon the cassava crop entirely.

In the past decade, efforts to mitigate CMD impact in Western Kenya have been coordinated by the Kenya Agriculture Research Institute (KARI) based at Kakamega. KARI coordinated multiplication and distribution of CMD-free planting materials to farmers.

Through 2004, it is estimated that farmers in Western Kenya planted over 22 000 ha of cassava using CMD-resistant cassava planting materials. These materials were disseminated to farmers in a centralized manner, whereby large multiplication fields were harvested and cuttings disseminated in bulk to onward multipliers who were then expected to provide planting material to the larger community.

The Crop Crisis Control Project (C3P), through partners working in Western Kenya, piloted the use of On-Farm Vouchers (OFV) to disseminate CMD-resistant cassava planting material. The OFV methodology is radically different from prior dissemination methodologies. OFV enables for closely tracking the origin and destination of material disseminated, it demands that the consumer of the material is present to inspect and confirm the planting material in advance of its harvesting, and it provides consumers with flexibility in terms of when and from whom to access CMD-resistant cassava planting material.

Overview of the On-Farm Vouchers Process in Western Kenya

A series of consultative meetings on the use of On-Farm Vouchers were held with cassava stakeholders

comprising farmers, Ministry of Agriculture (MoA) field staff, local provincial administration, and partner staff. The meetings were intended to explain our Fair vouchers, to gain support and ideas from stakeholders on how to operationalize this new approach, and to develop a consensus moving forward so that all stakeholders were fully on board and aware of their responsibilities in making the pilot program a success.

One key outcome of the stakeholders meetings was an expressed resolve to discourage free distribution of cassava cuttings and to require OFV beneficiaries to cost-share. As the late Mrs Maguta, district Agricultural Officer for Busia District noted, “We have learned that when it is given for free – and not well targeted – it is not to be well adopted.” The OFV beneficiaries were hence expected to meet their transportation costs in visiting farmer confirmed fields, that is fields confirmed to have CMD-resistant cassava planting material meeting varietal purity standards, and in transporting the planting material back to their own fields.

During the consultative meeting to discuss OFV use in Busia, stakeholders also suggested that the value of an individual voucher should be about 0.75 USD and that each household should receive vouchers equivalent to between 1.50 and 12.00 USD, depending on the individual farmer’s allocation of land to cassava. These



Vouchers used by farmers to access CMD resistant cassava planting material from Namolonge Research Station in Uganda.



Vincent Mbirindeko, farmer group trainer and voucher recipient in Bukavu, DRC, April 2008.



Voucher recipients in Bukavu, DRC, April 2008.

voucher values were based on an estimated value of a cutting of approximately 0.01 USD.

Vouchers were distributed to recipients over the course of two months and redemption of vouchers was allowed over a two-month period from receipt of voucher.

A process of field confirmation of cassava cutting sellers was carried out by a team from the International Institute of Tropical Agriculture (IITA), Kenya Agricultural Research Institute (KARI), Ministry of Agriculture, Rural Energy and Food Security Organization (REFSO) and farmers. The field confirmation process served the purpose of providing voucher recipients with a list of farmers and varieties in the project area that were deemed resistant to both CMD and cassava brown streak disease (CBSD). The provision of this information also enabled voucher recipients to exercise choice as they had the right to procure cassava cuttings with vouchers at any of the fields that were certified.

Field confirmation criteria included fields with a clean, pure stand of any of the three preferred CMD-resistant cassava varieties in the region (Mygera, SS4 and MH95/0183) on a plot of minimum one acre in size. The varieties selected had demonstrated both high tolerance to CMD and cassava brown streak disease, a cassava disease which had also recently emerged as a threat to cassava production in Western Kenya.

Local governing authorities identified households to receive vouchers after holding several public sensitization meetings. Key criteria for beneficiary selection included land ownership and ability to plant and maintain the crop. Recipients were targeted as future cassava planting material sources and not primarily on the basis of their need for cassava planting material to meet their food security requirements. Local implementing partners carried out consultative discussions with both sellers and communities targeted for voucher receipt. These discussions were geared towards explaining the “rules of the game” for the exchange of vouchers against planting material. Local partners also supervised the selection process for voucher recipients, the distribution of voucher to pre-identified beneficiaries, and managed the redemption of vouchers from seed sellers.

Analysis of the OFV Experience in Western Kenya

In October 2006, the management of the Crop Crisis Control Project commissioned an evaluation of the pilot. The evaluation was conducted to determine farmers’ perception on the use of vouchers to access CMD-resistant cassava planting material. At the time of the evaluation in November 2006, only 221 instead of the 500 targeted beneficiaries had been issued with a total of 1888 vouchers to exchange

with cassava planting materials. Thirteen confirmed suppliers of CMD-resistant varieties participated in the voucher pilot. Eighty-four voucher beneficiaries were subjected to questionnaire interviews that explored their characteristics, crops grown, cassava cultivation, the individual households' responses to CMD, issues affecting cassava production at the household level and the use of On-Farm Vouchers in exchange for planting materials. Evaluation respondents were asked to rate the OFV experience on a scale of 1-4, 98% of respondents rated the experience as either (1) very satisfying or (2) satisfying.

In the first month in which the pilot ran, 221 farmers received cassava planting material at an average voucher value of approximately 7 USD per farmer (Table 1).

As Table 2 indicates, the amount of vouchers and resulting cassava planting material received by the interviewed beneficiaries varied greatly because the voucher package provided to each recipient depended

on the amount of land they allocated to cassava. In order to allocate cuttings in proportion to the amount of land a farmer allocated to cassava, the partner tried to conduct systematic field visits to inspect and confirm a farmer's intended cassava land area as well as to verify that the land had been prepared for planting.

This may have led to a bias towards larger and more wealthy farmers who could hire labor and prepare land quickly. Because the poor and more marginal tend to work as hired labor, they are often among the last members of a farming community to prepare land and plant crops.

Despite the fact that slightly more than half of respondents indicated that they had previously accessed CMD-resistant varieties, less than 15% (see Table 3 & 4) had noted that they used clean (or resistant) material as a control measure against CMD. Rouging, the removal of infected plants, was practiced by over 40% of respondents. When broken down by gender, there are no significant differences in response.

Table 1: Summary of On-Farm Voucher Dissemination in Pilot Program through November 2006

Vouchers	Total Voucher Value (USD)	Estimated Area Planted (in hectares)	Total Number of Cuttings	Total Number of Farmers Accessing Cassava with Vouchers
1,888	1,452	46.60	466,000	221

Source: own survey data

Table 2: Summary of Cassava Material Disseminated in OFV Pilot through November 2006 (N=221)

	Received by 41% of Beneficiaries	Received by 25% of Beneficiaries	Received by 16% of Beneficiaries	Received by 11% of Beneficiaries
Range of cuttings received	250-1000	1250-2000	2250-2500	2750-4000
Range of Potential Area Planted in ha	0.125 - 0.2	0.25 - 0.1	0.2250 - 0.250	0.2750 - 0.4

Source: own survey data

Table 3: Voucher Recipients' Use of Different CMD Control Methods (N=84)

Control method	Frequency of respondents	% respondents
Rouging	36	43
Use of clean materials	11	13
Rouging and clean materials	18	21
None	19	23
Total	84	100

Source: own survey data



Voucher recipients in Busia, Kenya, inspect a cassava field of a farmer selected to participate in the OFV pilot.

Nearly half of respondents accessed improved CMD-resistant varieties for the first time despite the disease being present in the region for nearly a decade and despite an enormous investment in production schemes to promote the multiplication of CMD-resistant varieties dating back to at least five years in the region.

While a slight majority of respondents indicated that they had accessed improved CMD-resistant varieties in the past, nearly 40% (19 of 47) of these respondents could not remember or identify the varieties (Table 4).

Lack of knowledge of where to get the materials was the reason cited by 88% of respondents for not accessing improved CMD tolerant cassava varieties (Table 5). This may be an indication of the scarcity of farmers or institutions that multiply CMD-resistant cassava planting material in the area where the pilot was launched as well as of the lack of systematic sharing of information and transparency among previous multiplication efforts in the region.

The fact that only 6% of the respondents said the materials are too expensive indicates that farmers may

Table 4: *Voucher Recipients' Previous Access to Improved CMD-Resistant Varieties (N=84)*

Varieties accessed	Number of respondents	Percent accessing
SS4	4	8.5
Mygera	14	29.8
MM 96 series	5	10.6
MH 95/0183	5	10.6
Other varieties	19	40.4
Total	47	100

Source: own survey data

Table 5: *Voucher Recipients Reasons for not Previously Accessing New Varieties (N=36)*

Reason	Frequency	Percent
Lack of knowledge of where to get the varieties	32	88
Too expensive	2	6
Others	2	6
Total	36	100

Source: own survey data

be willing to purchase the improved CMD-resistant cassava planting material if locally available.

This underlines the need to put more focus on raising awareness on the benefit and location of new and improved cassava varieties.

Benefits of On-Farm Vouchers (OFV)

Vendors of cassava planting material that participated in this pilot were satisfied. They received money for their planting material and more importantly the experience enabled them to develop new contacts with individual farmers and expand their cassava network.

Cassava vendors indicated that with conventional dissemination, when cuttings are given out freely and without targeting end users, there are high loss rates as they can eventually be used as firewood or left to

dry. They also noted an increased awareness on CMD-resistant varieties from the series of OFV sensitization meetings carried out in Western Kenya.

Farmers accessing cuttings through the OFV pilot reported an increase in germination rates. This was likely due to the high viability of cassava planting material sourced through this pilot where there was a very short time lag between cutting and planting. Also, because the vouchers were redeemable against planting material over a six-week period, beneficiaries were able to use their vouchers to access material when it made most sense to them.

Challenges to On-Farm Vouchers (OFV)

There was a lack of experience in dealing with vouchers with vegetatively propagated material and this was



Farmers contracted to multiply CMD-resistant cassava planting material in Busia, Kenya access clean planting material at a field site confirmed by KARI.



Farmers inspect cassava planting material bundles (Uvira, DRC).

clear in the pilot use of the on-farm voucher approach to disseminate cassava planting material.

Spatial availability, proximity to the source of planting material, is important because of the bulky nature of cassava planting material and its short shelf life.

Vulnerable farmers were not explicitly targeted to receive vouchers by this pilot as the criteria for selection was based on the capacity of the farmer to produce material for other farmers and not strictly on the specific need of the farmer.

Given the importance of the spatial orientation of fields within a community, in order to promote the saturation

of a specific variety within a geographical zone, more vulnerable households should be expressly targeted not strictly due to their inherent vulnerability but also as a way to promote spatial dissemination and achieve saturation.

Determining a proper unit of measure was problematic. Farmers preferred quantifying the cuttings in bags of mini-stems but the size of the bag and the numbers of mini-stems per bag were points of contention. The unit of measure for trade should be readily measurable and acceptable as a unit of measure for both voucher holders and certified sellers. A specific number of cuttings per voucher should be the unit of measure for voucher backed dissemination.

Because of the limited number of certified fields, this pilot did not have that level of choice which would have promoted greater price differentiation. While voucher holders were told that they could use their vouchers at any of the certified fields in the pilot, most evaluation respondents sourced material from a single field. This was likely due to the high cost, primarily in time, incurred by voucher holders in visiting more than one field.

Moving forward, C3P target areas in Western Kenya need to focus on bulking of CMD-resistant varieties on a smaller scale and increasing the number of sellers and the spatial dispersion of certified fields so that future OFV experiences can be marked by greater choice and lower travel distances.

Key Lessons Learned

1. Despite the pilot challenges, On-Farm Vouchers are a preferred dissemination option by voucher holders, vendors of disease-resistant cassava planting material, and local authorities.
2. Small is beautiful: On-Farm Voucher programs with an aim to speed the saturation of improved materials within a geographical zone should give priority to smaller farmers.
3. By focusing on the spatial orientation of recipient farmers within a geographical zone, practitioners can speed farmer access to new materials by leveraging the traditional neighbor to neighbor transmission of cassava planting material.
4. The confirmation process, the steps taken to validate farmer fields and publicize the information to voucher holders, is a critical starting point for promoting a more market-based dissemination process characterized by choice and quality differentiation.
5. Success of the OFV methodology is dependent upon the understanding, support, and active participation of local authorities and representatives of the Ministry of Agriculture.



Farmers in Busia, Kenya, exchange vouchers for CMD-resistant cassava planting material.



Farmers in Busia, Kenya, exchange vouchers for CMD-resistant cassava planting material. Bicycles were the predominant form of transport for farmers accessing and transporting planting material during the OFV pilot.

6. Units of measurement for trade must be accepted universally by cassava vendors and recipient farmers.
7. Monitoring and Evaluation (M&E) accompanying an OFV activity should be oriented to tracking the dissemination and redemption of vouchers and to understanding the reasons why farmers selected certain fields and varieties for purchase.
8. The OFV methodology promotes the ability of seed aid practitioners to track origin and destination of cassava planting material and to more effectively and explicitly execute a well targeted dissemination strategy.

Conclusion

On-Farm vouchers are a preferred means to promote the allocation of planting material from confirmed fields to recipient farmers. The OFV approach promotes accountability and enables practitioners to track origin and destination of planting material. On-Farm voucher programs can empower recipient farmers with the knowledge that the material they plant is confirmed as being of quality and with the choice over when to plant and from where to access material. OFV approaches can facilitate more targeted dissemination strategies and promote transparency in carrying out those strategies.

C3P

Crop Crisis Control Project
(C3P) Cassava Mosaic Disease (CMD)
Clean Planting Material Voucher

No.
0001

Voucher owner..... ID/No

Supplier Name ID No

KSHS 50/-

	Variety of Cassava	No. of Cuttings
1		
2		
3		
4		
	TOTAL COST	

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