ANALYSIS OF DIFFUSION STRATEGIES IN NORTHEAST BRAZIL FOR NEW CASSAVA VARIETIES WITH IMPROVED NUTRITIONAL QUALITY

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Analysis of Diffusion Strategies in Northeast Brazil for New Cassava Varieties with Improved Nutritional Quality

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Introduction

More than 130 million pre-school children suffer from vitamin A deficiency (Meenakshi *et al.*, 2010), which increases the prevalence and severity of infectious diseases (morbidity and mortality) and may cause severe eye problems, including permanent blindness. In addition, VAD results in high costs for the health system and the economy as a whole (Qaim *et al.*, 2007).

In 2006, EMBRAPA supported by the HarvestPlus Program and CIAT, released in Northeast of Brazil four yellow cassava varieties with improved levels of provitamin A: BRS Dourada, BRS Gema de Ovo, Amarelo I and Amarelo II (Fukuda *et al.*, 2008). The provitamin A levels in the new yellow cassava varieties varied between levels of 4 and 12µg per g. of fresh weight.

Source www.texbrasil.com.br

Methods

Two comprehensive surveys were carried out in Northeast Brazil, the first with producers involved in a participatory research process (Group 1 – sample of 359 farmers) and the second with producers who requested stakes (seeds) following a launch event via telephone or internet (Group 2 – sample of 40 farmers).

For Group 1, in addition to descriptive analysis, a logit model was implemented in data analysis, using a dichotomous dependent variable of the potential adoption rate (whether or not producers would continue planting the new cassava varieties based on their experiences). This variable provided an indication of the success of the transfer process.

Results Group 1

✓ 62% of the sample group responded affirmative to the question of whether they intended to plant the new varieties (potential adoption rate).

✓ The main reasons for adopting the new varieties were: nutritional content (90%), family preference for their flavor (7%) and acceptance in the market (3%).

✓The reasons given for not adopting the new varieties were: not knowing how to obtain the seed (43%), dislike of the taste (27%), lack of tradition in the region for planting yellow cassava varieties (21%) and low productivity compared to traditional varieties in combination with low resistance to diseases (10%).

Table 1. Improved yellow varieties versus conventional varieties (% afirmative answers)

Variable		Group 1 (n=359) %	Group 2 (n=40) %
Culinary quality	More than six months	15.6	15.0
	Less than six months	3.6	2.5
	Same as conventional varieties	5.3	2.5
	Don't know or no answer	75.5	80.0
Perishable*	Slower	10.3	5.0
	Faster	6.1	2.5
	Same as conventional varieties	7.2	10.0
	Don't know or no answer	76.3	82.5
Ease of harvesting	Easier	35.1	42.5
	More difficult	1.7	2.5
	Same as conventional varieties	8.4	17.5
	Don't know or no answer	54.8	38.0
Ease of peeling	Easier	33.7	47.5
	More difficult	1.4	0
	Same as conventional varieties	8.9	10.0
	Don't know or no answer	56.0	42.5

*Ref.: Conventional varieties used in their region

Results Group 2

✓ 75% of the producers remembered having received seed of the two varieties from EMBRAPA, and 62.5% planted the seeds in 2007.

✓ The reasons given for not planting generally related to a lack of seed availability and adaptability of the new varieties to the region.

✓37% professed to have given away their new variety stakes to neighbors and friends.

✓17.5% used the new varieties in purposes other than direct consumption, such as cassava flour and starch consumption.

✓The main reasons for replanting yellow varieties were: a high level of acceptance by family members (40%) and their improved nutritional value (26%).

Results of the binary model – Group1

Variable	Coef.	s.e.
Income > 2 minimum monthly wage	-1.52 **	0.40
Farm size (hectares)	0.02***	0.01
Pulp color preference (white=1)	-0.68 **	0.34
Involved in participatory research activities (yes=1)	0.59 *	0.35
Main sources of information (Private)	-0.88***	0.30
Does not look for information	-1.30***	0.39
Perceives differences in crop management (yes =1)	-1.65***	0.54
Perceives differences in culinary quality (yes=1)	2.36***	0.53
Aware of nutritional advantages (yes=1)	0.68 *	0.38

*,**,*** Statistically significant at the 0.10, 0.05 and 0,01 level, respectively

✓Producers with low income levels were found to have more probability of adopting the new varieties, while producers who preferred the white flesh cassava tented not to adopt these.

✓Variables related to the diffusion process that increased the probability of adoption included: involvement in participatory research, knowledge about the nutritional advantages of new cassava varieties and access to information from a public source (i.e. EMBRAPA).

Conclusions

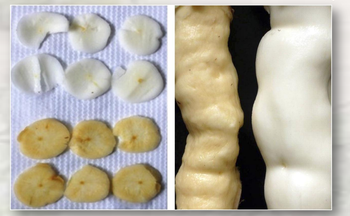
❖Awareness of the nutritional advantages of new varieties, to promote participatory research activities and to socialize projects among producers are strong determinant s in the success of the adoption process.

❖The lack of seed availability has been the main factor limiting the adoption of the new cassava varieties.

❖ Seed production and distribution systems should be improved.

❖It is important to continue exploring other low-cost diffusion strategies such as agricultural products stores, launch events., web pages and publications, although they need to be complemented with field work given that many poor producers typically do not have access to these information sources.

❖The overarching recommendation is that future studies about cost-effectiveness should be undertaken, in combination with the development of an impact evaluation of different diffusion strategies for providing information, so as to facilitate future decisions about the diffusion programs.



Source: Welsch R et al. Plant Cell 2010;22:3348-3356

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