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).

EMBRAPA supported by the HarvestPlus Program and CIAT released in Northeast of Brazil four yellow cassava varieties with improved levels of provitamin A: BR5 Dourada, BR5 Gema de Ovo, Amarelle I and Amarelle II (Fukuda et al., 2008). The provitamin A in the new yellow cassava varieties varied between levels of 4 and 12 μg per g of fresh weight.

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 to know information (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 (% affirmative answers)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1 (n=359)</th>
<th>Group 2 (n=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culinary quality</td>
<td>15.6</td>
<td>35.0</td>
</tr>
<tr>
<td>quality</td>
<td>3.6</td>
<td>2.5</td>
</tr>
<tr>
<td>More than six months</td>
<td>Same as conventional varieties</td>
<td>5.3</td>
</tr>
<tr>
<td>Less than six months</td>
<td>Don’t know or no answer</td>
<td>75.5</td>
</tr>
<tr>
<td>Perishable* Slow</td>
<td>10.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Faster</td>
<td>6.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Same as conventional varieties</td>
<td>7.2</td>
<td>10.0</td>
</tr>
<tr>
<td>Don’t know or no answer</td>
<td>76.3</td>
<td>82.5</td>
</tr>
<tr>
<td>Ease of harvesting</td>
<td>35.1</td>
<td>42.5</td>
</tr>
<tr>
<td>Easier</td>
<td>1.7</td>
<td>2.5</td>
</tr>
<tr>
<td>More difficult</td>
<td>8.4</td>
<td>17.5</td>
</tr>
<tr>
<td>Same as conventional varieties</td>
<td>54.8</td>
<td>38.0</td>
</tr>
<tr>
<td>Don’t know or no answer</td>
<td>33.7</td>
<td>47.5</td>
</tr>
<tr>
<td>Ease of peeling</td>
<td>3.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Easier</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>More difficult</td>
<td>8.9</td>
<td>10.0</td>
</tr>
<tr>
<td>Same as conventional varieties</td>
<td>56.0</td>
<td>42.5</td>
</tr>
</tbody>
</table>
| Don’t know or no answer   | 27% 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% preferred to have given away their new variety staked 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%).

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 to know information (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.

Conclusion

Awareness of the nutritional advantages of new varieties, to promote participatory research activities and to socialize projects among producers are strong determinants 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.

References