Evaluation of drought tolerant common bean varieties for adaptability, yield and acceptability in the drought prone areas of Burundi

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Introduction

• Beans are among staple food and major source of proteins for Burundians in addition to micronutrients particularly iron and zinc;
• In Burundi, bean production is declining due to multiple constraints such as climate change and variability, low soil fertility, poor crop management practices, limited access to improved bean seeds;
• Climate variability, especially drought conditions are the most bean production in Moso and Bugesera regions;
• Therefore, the adoption of drought tolerant bean varieties is an alternative to increase bean production in these regions, considered as drought prone areas of Burundi;
• The objective of this study was to evaluate and promote drought tolerant bean varieties in the drought prone areas of Burundi.

Methods

• Drought tolerant bean varieties KATB1, KATB9, KATX56 and KATX69, were tested for adaptability, yield and acceptability in drought prone area of Moso and Bugesera. Two early maturing varieties from ISABU (IZO201245, MOORE88002) and the local check were included in this evaluation;
• The evaluation started by on station trials in 2006 followed by on-farm trials using participatory approach with bean farmers in Moso and Bugesera;
• In collaboration with local partners selected varieties and improved agronomic practices, were promoted since 2011 to facilitate farmers access to improved bean seeds;
• The promoted agronomic practices include the use of organic manure (10tha⁻¹) and inorganic fertilisers (DAP 100kg/ha⁻¹ and KCl 50kg/ha⁻¹);
• In 2015, an impact assessment survey was conducted, using a structured questionnaire, to assess the adoption rate of drought tolerant bean varieties in drought prone areas of Burundi;
• Data collected, on agronomic and organoleptic parameters, during evaluation stage were analysed using GenStat 14th Edition. Survey data, on adoption trend, were subjected to SPSS 16.0.

Results

• The drought tolerant bean and ISABU improved varieties yielded above 1,000 kg/ha while the local check yielded 987 kg/ha, though P>0.05;
• The drought tolerant bean varieties are early maturing (65 days after planting) compared to the local check (70 days after planting)

• KATB1 and IZO201245 were the most preferred varieties, their grain size and yellow colour provide to them a higher price at the market;
• Regarding organoleptic criteria KATB1 is the most appreciated and was ranked first due to the cleaness of its yellow seeds, high rate of swelling after cooking and short cooking time;

Table 1: Selection of drought tolerant varieties for adaptability and acceptability

<table>
<thead>
<tr>
<th>Varieties</th>
<th>DM</th>
<th>Yield (kg/ha)</th>
<th>Coating time</th>
<th>Swelling rate</th>
<th>Taste</th>
<th>Marketability</th>
<th>Appreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KATB1</td>
<td>67</td>
<td>1022</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>KATB9</td>
<td>60</td>
<td>950</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>85</td>
</tr>
<tr>
<td>KATX56</td>
<td>65</td>
<td>903</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>KATX69</td>
<td>66</td>
<td>855</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>MOORE88002</td>
<td>67</td>
<td>1275</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>90</td>
</tr>
<tr>
<td>Local check</td>
<td>70</td>
<td>887</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>80</td>
</tr>
</tbody>
</table>

Figure 1: Adoption rate of the promoted varieties in the surveyed area

Conclusion

The drought bean varieties were adopted by farmers in drought prone areas of Burundi. These varieties were appreciated because of their high yielding, early maturing, high market demand and thus their ability to generate income. Still, more efforts are needed to get more improved bean varieties accessible to farmers.

Acknowledgement

The authors acknowledge the financial and technical support provided by CIAT/PABRA, Bio-Innovate, PADAP-Kirundo, Extension Services (DPAEs) and farmer’s organizations.

Acknowledgement