Why sweetpotato as animal feed?

- Quality feed concentrates are too expensive for many farmers, so they tend to use locally available feed ingredients
- Outbreak of Napier grass diseases have necessitated for alternative feed resources
- Sweetpotato vine provides more protein and dry matter per unit area than other staple feeds and requires less land to produce
- Kenyan researchers have found that 4 kgs of vines could replace 1 kg of dairy concentrate.
- In contrast to China, where 25-30% of sweetpotato is used as animal feed, the potential of dual purpose and forage varieties in SSA has not been fully exploited.

Objective of the study

- Identify the appropriate adapted dual purpose and forage varieties for specific livestock production systems and specific agro ecologies

Results

Table 1: Effect of harvesting (days) on mean vines and root DM yield (t/ha)

<table>
<thead>
<tr>
<th>Harvest stage (days)</th>
<th>Number of vines (Mar 2009)</th>
<th>Different harvest stages</th>
<th>R/V ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>46</td>
<td>1.90</td>
<td>1.79</td>
</tr>
<tr>
<td>150</td>
<td>46</td>
<td>1.90</td>
<td>2.23</td>
</tr>
<tr>
<td>150 (full growth)</td>
<td>46</td>
<td>3.10</td>
<td>1.73</td>
</tr>
</tbody>
</table>

- Forwards feeding the same letter (a-c) are not significantly different at 0.05 under Bonferroni mean test.
- Harvesting (last (a-c)) did not yield statistically more forage from a single harvest (z) at p<0.05.

Table 2: Root: vine (R:V) ratios of different cultivars across the AEZs in Kenya

<table>
<thead>
<tr>
<th>R:V ratio</th>
<th>Gweri</th>
<th>Kemb23</th>
<th>Kemb36</th>
<th>Naspot1</th>
<th>Wagabolige</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (wet)</td>
<td>0.8</td>
<td>0.9</td>
<td>0.4</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Mid (wet)</td>
<td>0.7</td>
<td>0.7</td>
<td>0.4</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Mid (dry)</td>
<td>0.6</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>High (dry)</td>
<td>0.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Mean</td>
<td>0.6</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Design

Comprised 4 AEZ’s x 6 varieties (including 2 local checks) x 2 harvesting regimes of 75 days (vines only) & 150 days (vines and roots) post planting.

Approach to the study

- The on farm participatory trials were researcher led and farmer managed
- The dairy management groups (DMGs) belonging to the Dairy Farmers Business Association (DFBA) were used as a platform for introducing and screening the sweetpotato varieties
- At least one representative DMG was selected from each of the four AEZs
- Trials were replicated on three (3) farms selected by each DMG members in each AEZ
- Farmer group meetings were held in each AEZ to sensitize farmers about the trials, develop work plans, and agree on the modus operandi with farmers
- Researchers provided inputs and collected data while farmers provided labour and managed the plots

Data collection: parameters measured

- Total yield (forage and root)
- Nutritive value (NIRS)
- Climatic data (rainfall)
- Pre and post planting soils samples (N, P and K), data not shown
- Participatory farmer evaluation (150 days), data not shown

Main findings and conclusions

- Overall, low vine and roots yields were realized across all sites probably due to the low rainfall levels in the year
- One variety (Gweri) has been identified as the most promising for forage
- Four other varieties (Kemb23, Naspot1, Wagabolige and Kemb 36) have been identified as “best bet” dual purpose varieties
- Another (103001.152) was for good root but poor vine production
- There is no clear correlation between root and vine digestibility however there are distinct cultivar differences.
- Varieties performed well across different agro ecological zones, ensuring that farmers in each zone have at least one suitable dual purpose variety
- Farmers will have to make tradeoffs between forage, dual purpose, and root varieties depending on feed needs on farms. It is likely that farmers facing acute feed shortages will opt for forage or dual purpose varieties.