**Contribution of African Indigenous Vegetables to Food Security: A household Nutrient Intake Analysis in Kenya.**

**Mwanga O. Ronald*, Dr. Sindi W. Kebede*, Prof. Wolfgang Bokelmann**

*Horticultural innovations for improving livelihoods in East Africa (HORTINLEA), Humboldt University of Berlin, Invalidenstr. 42, 10115, Berlin Germany*

**Introduction**

- Food security is a serious recurrent problem in developing countries.
- Dietary modification which is a food-based strategy to combating malnutrition is a novel intervention.
- Incorporating African Indigenous Vegetables (AIVs) meets daily dietary nutrition and energy requirements.
- However, AIVs have received little attention in the debate on food security.
- An analysis of the nutritional advantages of incorporating AIVs in the diets reveals that they indeed play a significant role in providing the needed nutritional security.

**Study area - Kenya**

**HORTINLEA KENYAN SURVEY SITES (2014)**

**Methods and Tools**

- We use data from the HORTINLEA survey collected in rural and peri-urban areas of Kenya in 2014 using household level structured questionnaires.
- 1232 Household interviews.
- Price questionnaire
- ADePT-Food security Module of (ADEPT-FSM) data analytical software.
- The average dietary energy and protein supply from indigenous vegetables is remarkable. Our results are consistent with earlier findings but reveal several new insights.

**Food Security Framework**

**Composition per 100g of edible portion of AIVs**

<table>
<thead>
<tr>
<th>AIV</th>
<th>Protein</th>
<th>Fiber</th>
<th>Fat</th>
<th>Moisture %</th>
<th>Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amaranth</td>
<td>4.6</td>
<td>1.8</td>
<td>0.3</td>
<td>84</td>
<td>8.2</td>
</tr>
<tr>
<td>Cow peas</td>
<td>4.7</td>
<td>1.8</td>
<td>0.3</td>
<td>86.5</td>
<td>5.5</td>
</tr>
<tr>
<td>African night</td>
<td>4.3</td>
<td>2.0</td>
<td>1.0</td>
<td>87.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Spider plant</td>
<td>4.2</td>
<td>1.3</td>
<td>5.2</td>
<td>86.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Ethiopian kale</td>
<td>1.9</td>
<td>2.0</td>
<td>0.4</td>
<td>91.2</td>
<td>3.6</td>
</tr>
</tbody>
</table>

**Results**

AIVs constitute about 3.3% of total energy consumption per food group with the urban being 1.37% and the rural being 3.47%.

African night shade is the most consumed AIV with values of 97.94 and 111.90 g/person/day in the peri-urban and rural areas, respectively.

**Energy consumption**

- AIVs Contribute at least 8% of the energy RDA (Recommended Daily Allowance).
- They have an average median energy unit value of 55.5Kcal/1000Kcal.

**Protein Consumption**

- AIVs Contribute 10.4% and 5.9% of the total Dietary Protein in Rural and Urban Areas, respectively.
- Amaranth contributes 4.6g/person/day of dietary protein. Has a median protein unit value of 37Kcal/100g.

**Conclusion and Recommendations**

- AIVs play a great role for the food security situation of poor rural and peri-urban households through provision of micronutrients such as protein and energy.
- This is especially important for farm households who require a lot of energy and calorie for agricultural activities.
- AIVs production enhances accessibility and availability of food.
- Therefore, diversifying diets by incorporating AIVs improves food security.
- However, more research needs to be conducted to analyze the contribution of AIVs in the provision of micronutrients.