Pulses: solutions to human health and cropping systems sustainability
Pulses are grown in climate ranging from tropics to temperate.
Why Pulses?

- Improved food security
- Improved livelihood
- Improved nutrition & health
- Sustain natural resources
Pulses are climate smart crops with less water requirements

Water efficiency in food production (measured in gallons per ton)

- Pulses: 2,500 gallons
- Eggs: 3,200 gallons
- Chicken: 4,500 gallons
- Pork: 5,900 gallons
- Beef: 20,700 gallons

Daal (1kg): 1,250 liters
Chicken (1kg): 4,325 liters
Mutton (1kg): 5,520 liters
Beef (1kg): 13,000 liters
Yield of all pulses in different countries, 2011-13

- There is large inter-regional and inter-country yield variation

- Average yields of developed countries was > 1.2 t/ha
  - Canada > 2 t/ha; US near 2 t/ha

- Developing countries average yield was <1 t/ha
  - Myanmar and Ethiopia are exception
  - Most of the African and S Asian countries yields are < 500 kg/ha

Source: P.K. Joshi, IFPRI
Chickpea – the No. 1 Pulse in Australia

Ascochyta blight

0.6 MHa

M = Million, K = Thousand
Global pulse trade: about 12 million tons

North America: +4.9
Latin America and the Caribbean: -0.5
Europe: +0.2
Sub-Saharan Africa: +0.1
South Asia: -1.7
WANA Region: -4.5
Oceania: +1.3

Sources: FAOSTAT (2011)
in million MT by region (2011)
Growing importance of pulses in many countries - especially more vulnerable population

Share of pulse area in arable land (%)
Pigeon pea success story in Eastern and Southern Africa

Source: Dr Ganga Rao
### Pigeon pea growth trends in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>In ‘000 t</th>
<th>% increase</th>
<th>Production</th>
<th>Area</th>
<th>Yield</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
<td>2014</td>
<td></td>
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<tr>
<td>Tanzania</td>
<td>87.1</td>
<td>249.3</td>
<td>186</td>
<td>106</td>
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<tr>
<td>Mozambique</td>
<td>31.6</td>
<td>120.9</td>
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<tr>
<td>Malawi</td>
<td>105.8</td>
<td>301.0</td>
<td>184</td>
<td>69</td>
<td>68</td>
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<tr>
<td>Kenya</td>
<td>73.46</td>
<td>274.5</td>
<td>274</td>
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<td>122</td>
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<td>Uganda</td>
<td>80.0</td>
<td>93.6</td>
<td>17</td>
<td>28</td>
<td>-8</td>
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<tr>
<td>Africa</td>
<td>380.6</td>
<td>1047.3</td>
<td>175</td>
<td>96</td>
<td>40</td>
</tr>
</tbody>
</table>
India imports about 570,000 t annually

50% from Myanmar and 50% from Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>5 year range</th>
<th>2016 (expected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>75-90</td>
<td>70</td>
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<tr>
<td>Mozambique</td>
<td>55-75</td>
<td>75</td>
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<tr>
<td>Malawi</td>
<td>60-90</td>
<td>70</td>
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<td>Kenya</td>
<td>15-20</td>
<td>18</td>
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<td>Uganda</td>
<td>8-14</td>
<td>12</td>
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<tr>
<td>Sudan</td>
<td>40-50</td>
<td>45</td>
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<tr>
<td>Africa</td>
<td>253-339</td>
<td>290</td>
</tr>
</tbody>
</table>

Source: Jayesh Patel 2016, ETG
Pigeon pea Drivers of Success

- High yielding, wilt resistant MD varieties
- SI through ICM with women participation
- Regional and international export and participation of large traders
- Innovative seed systems in partnership with local farmers, NGOs and Government
- Value addition and then export to regional and international markets
- Very strong participation of partners, donors (BMGF, USAID, Irish Aid etc.,) Governments initiatives - Kilimo Kwanza, Input subsidy

Mrs. E. Mollel of Kikatiti, Tanzania
*In front of her old house of 1988*

*In front of her new improved house*
Global investment in pulse R,D&E is too low compared with cereal crops: (US $ 175 million per annum in 13 pulse crops)

Neglecting legumes has compromised human health and sustainable food production

Conclusions and way forward

- Demand for pulses is growing but supply constraints will lead to rise in prices and increase trade
- Pulses production and trade scenario is changing
  - New countries producing pulses and exporting to deficit countries

- **Global level**
  - Increase funding for pulse R,D&E
  - Incentives for improved technologies to public as well as private sector
  - Effective trade

- **National level**
  - Bridge yield gaps to increase domestic production
  - Improve pulse value chains to benefit producers and consumers
  - Attract private sector in pulses production, processing and marketing
  - Promote innovative institutions for scale