Pulses: solutions to human health and cropping systems sustainability

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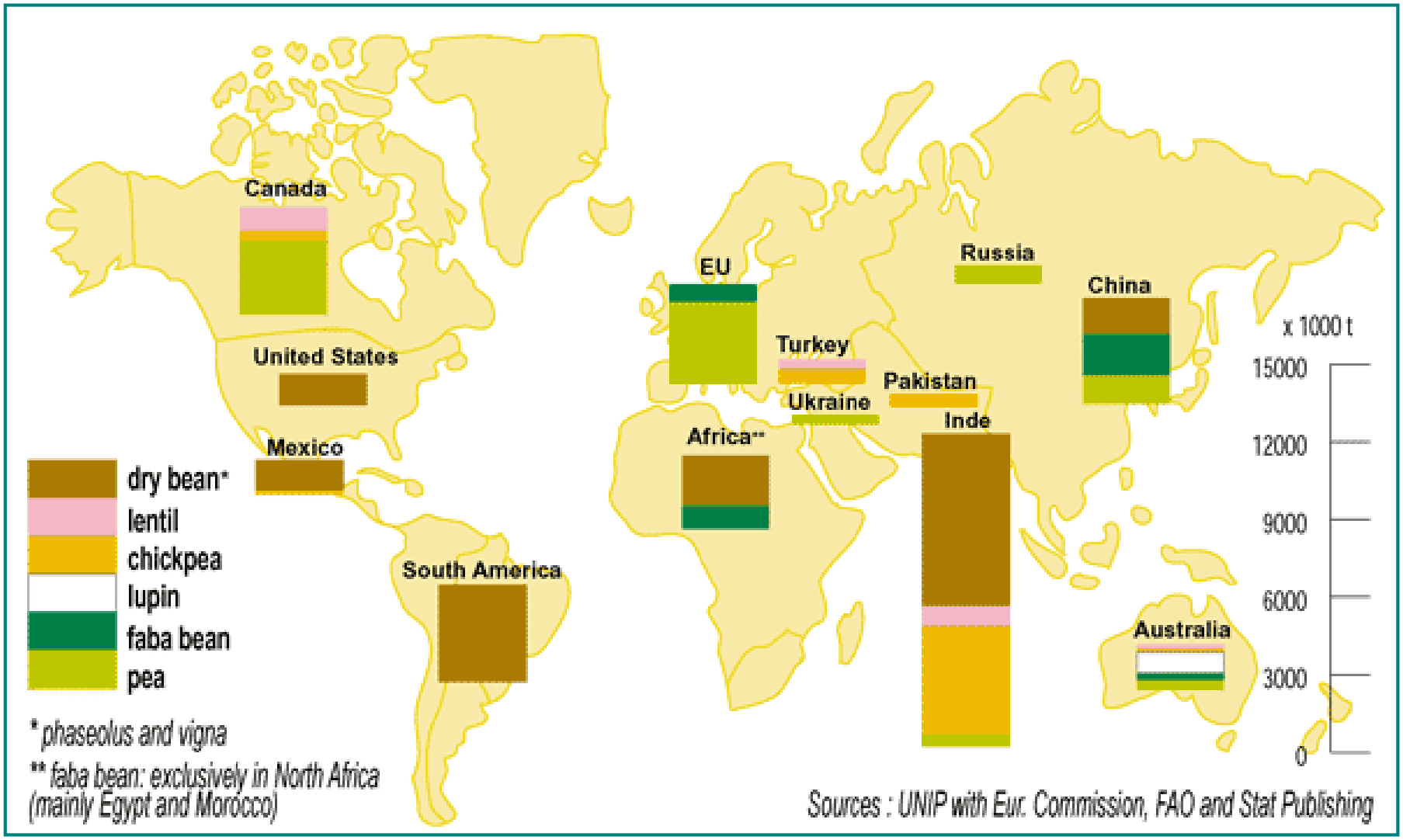
2016 INTERNATIONAL YEAR OF PULSES

nutritious seeds for a sustainable future

Food and Agriculture Organization of the United Nations

fao.org/pulses-2016 | pulses-2016@fao.org | #IYP2016

Pulses are grown in climate ranging from tropics to temperate



Why Pulses?

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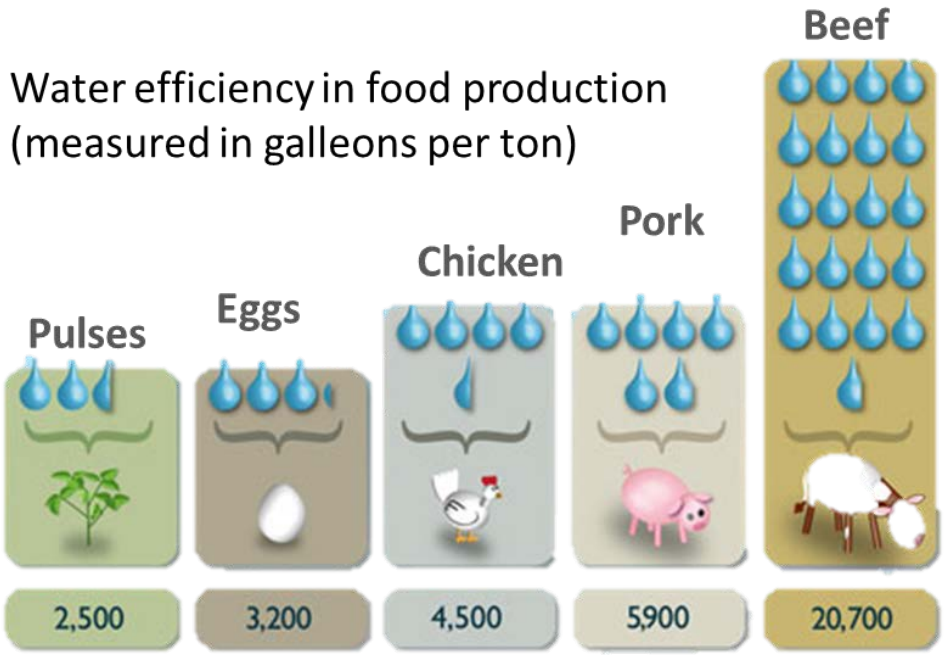
Pulses are climate smart crops with less water requirements



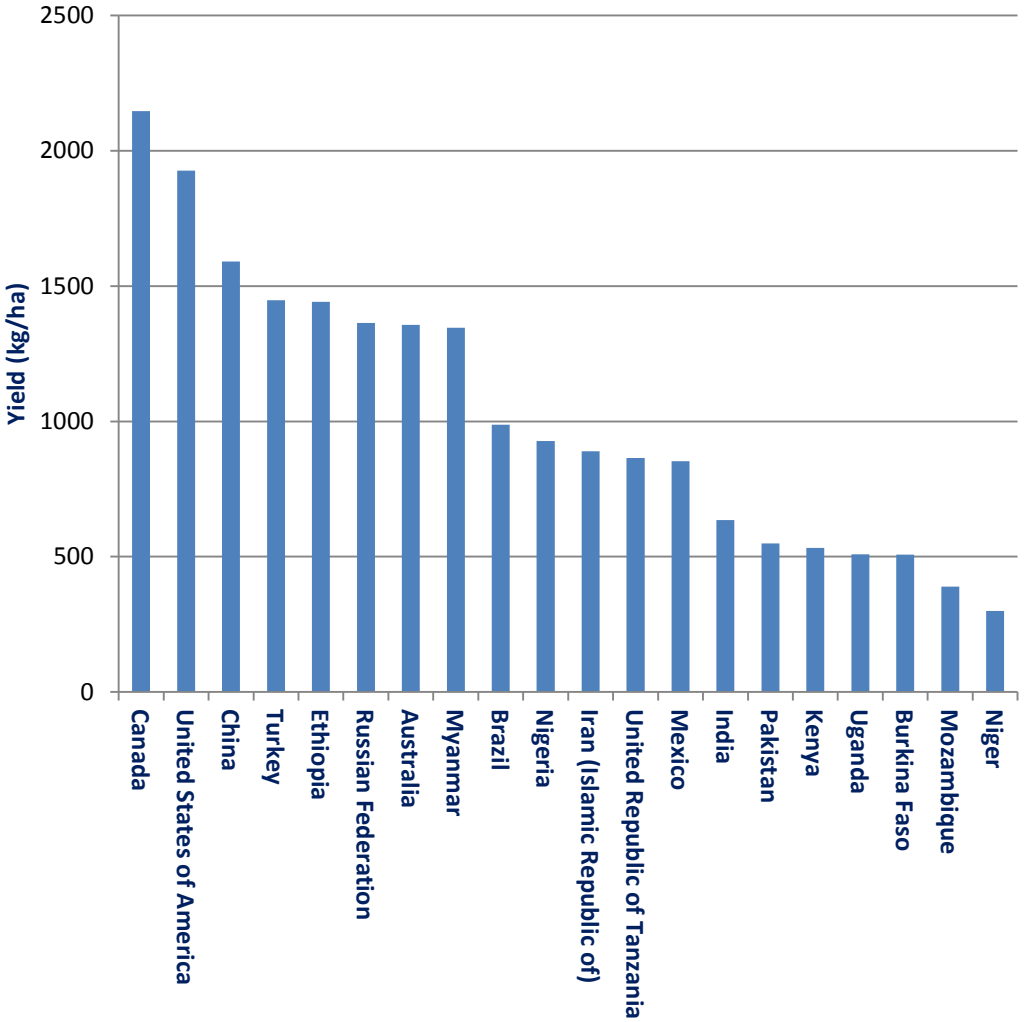
Daal (1kg)
1250 liters

Chicken (1kg)
4325 liters

Mutton (1kg)
5520 liters

Beef (1kg)
13000 liters

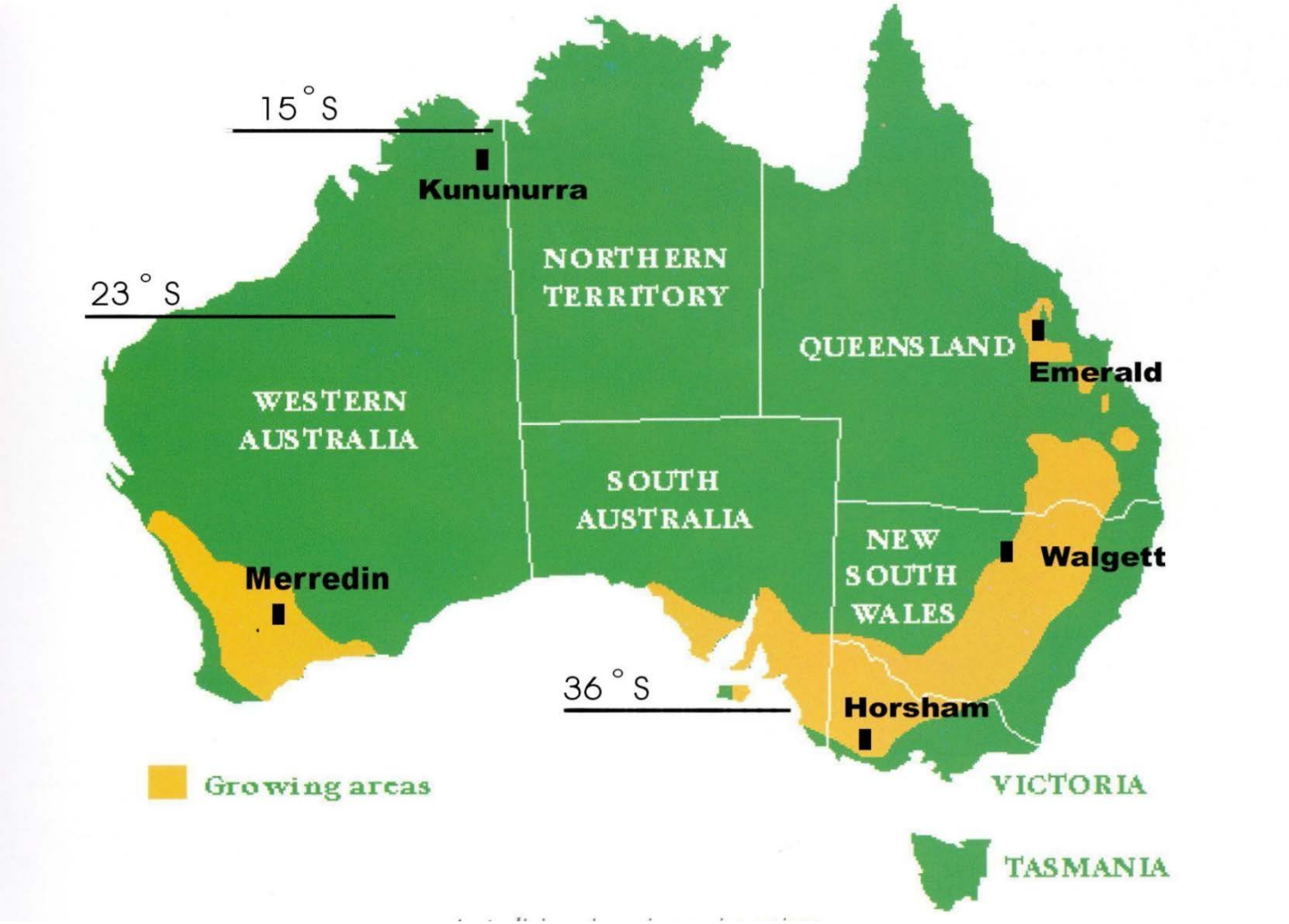
Yield of all pulses in different countries, 2011-13



- 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**

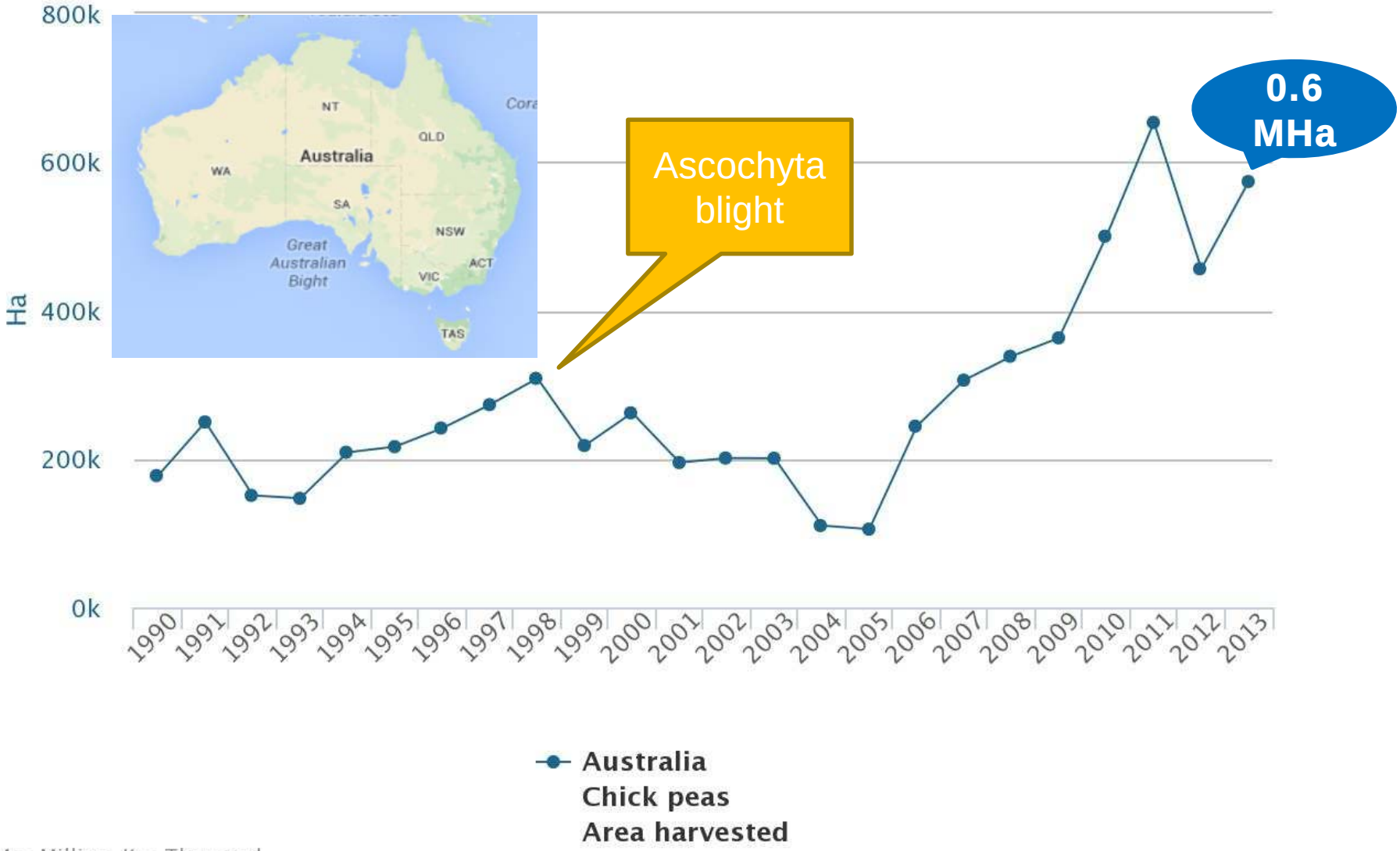
Source: P.K. Joshi, IFPRI

Climatic regions suitable for pulses in Australia

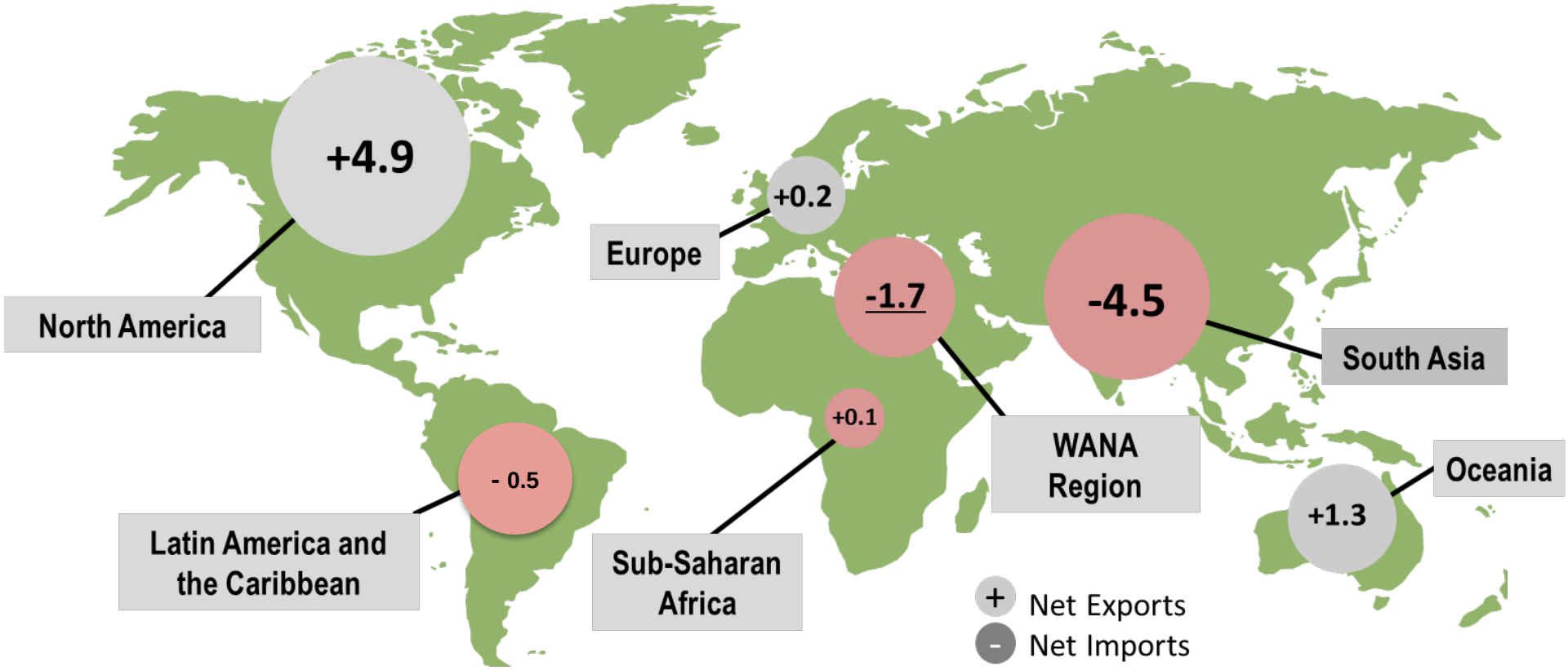


Knights and Siddique, 2003

Chickpea– the No. 1 Pulse in Australia



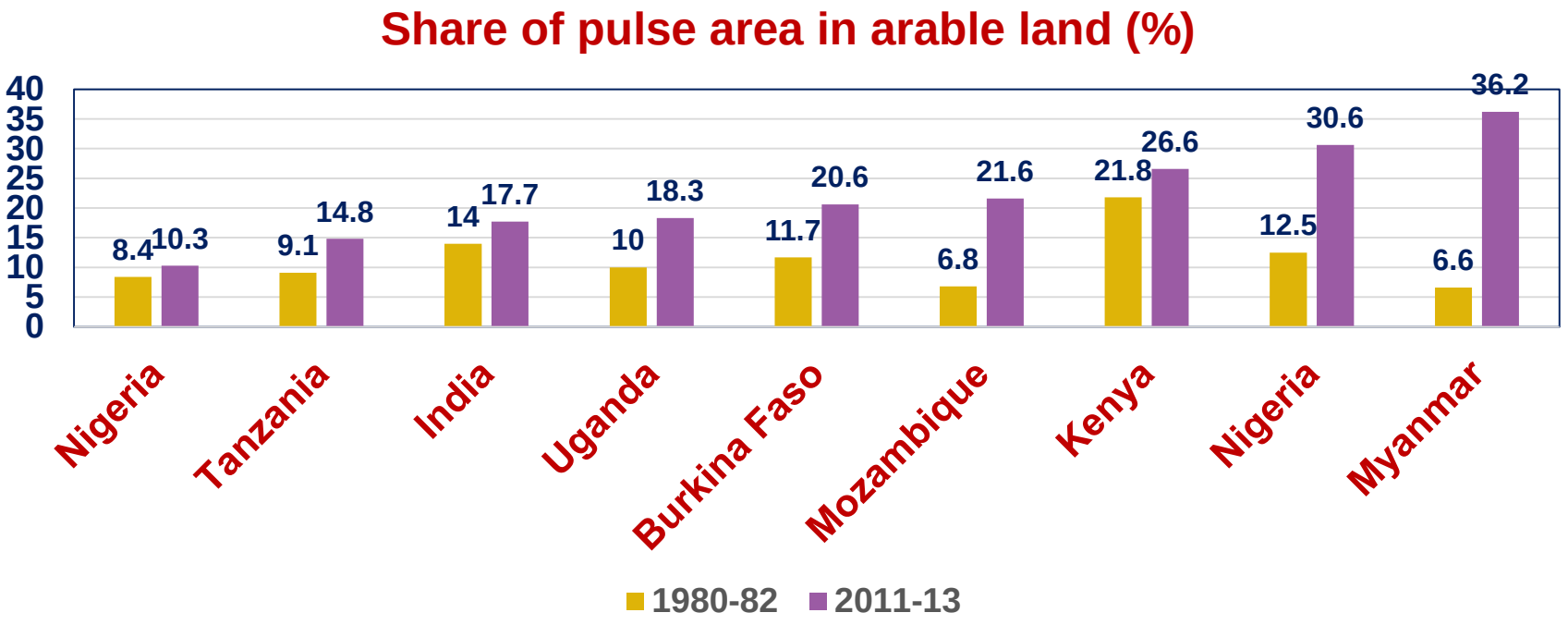
Global pulse trade : about 12 million tons



Sources: FAOSTAT (2011)

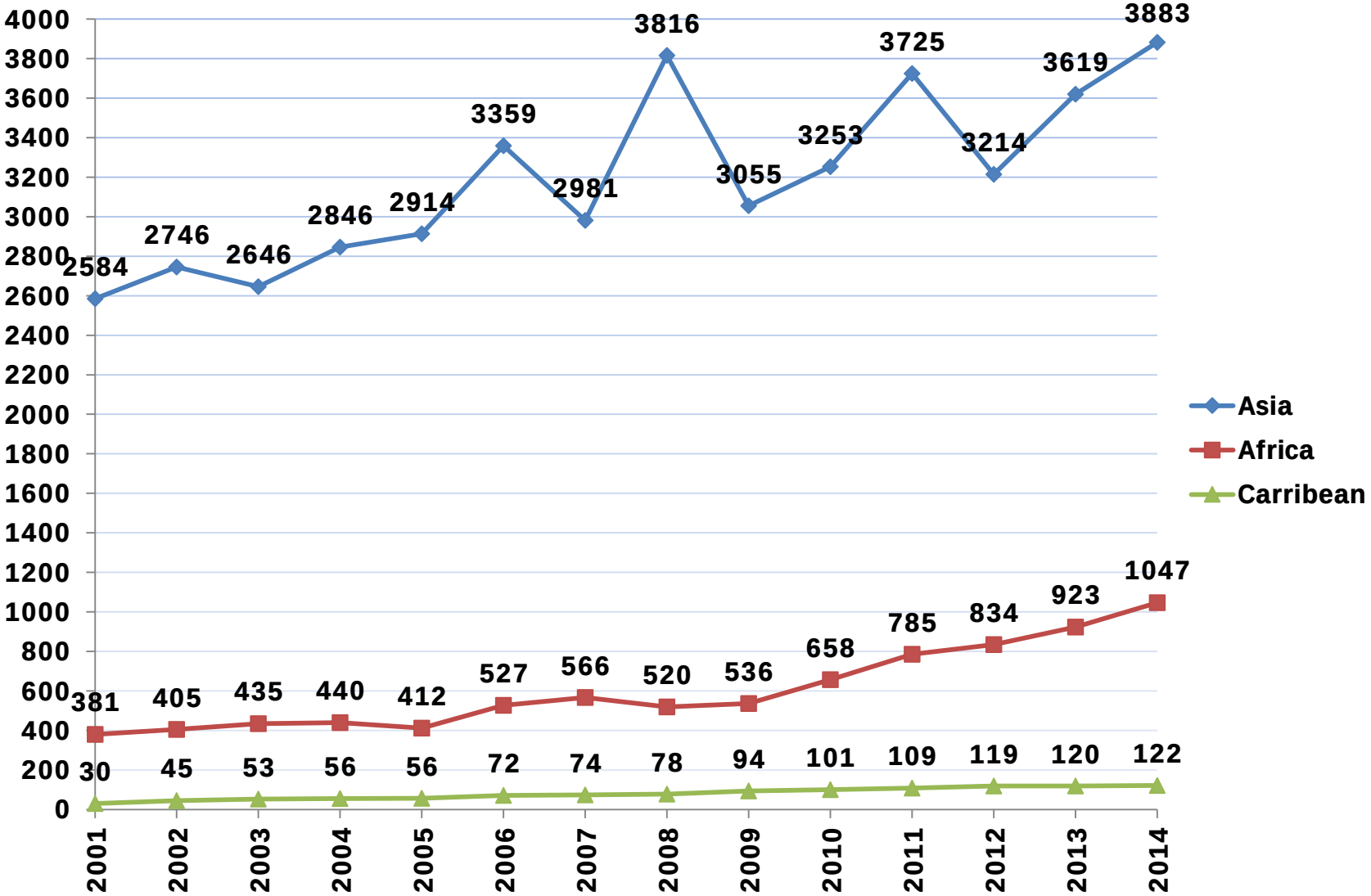
in million MT by region (2011)

Growing importance of pulses in many countries - especially more vulnerable population



Pigeon pea success story in Eastern and Southern Africa

Pigeon pea Production ('000 t) trends



Pigeon pea growth trends in Africa

Country	In '000 t		% increase		
	2001	2014	Production	Area	Yield
Tanzania	87.1	249.3	186	106	39
Mozambique	31.6	120.9	282	261	6
Malawi	105.8	301.0	184	69	68
Kenya	73.46	274.5	274	68	122
Uganda	80.0	93.6	17	28	-8
Africa	380.6	1047.3	175	96	40

Pigeon pea Exports from Africa (000’ t)

India imports about 570, 000 t annually

50% from Myanmar and 50% from Africa

Country	5 year range	2016 (expected)
Tanzania	75-90	70
Mozambique	55-75	75
Malawi	60-90	70
Kenya	15-20	18
Uganda	8-14	12
Sudan	40-50	45
Africa	253-339	290

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)

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nature plants

PERSPECTIVE

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Neglecting legumes has compromised human health and sustainable food production

Christine H. Foyer[1,2*], Hon-Ming Lam[3], Henry T. Nguyen[4], Kadambot H. M. Siddique[5], Rajeev Varshney[6], Timothy D. Colmer[2,5], Wallace Cowling[5], Helen Bramley[7], Trevor A. Mori[8], Jonathan M. Hodgson[8], James W. Cooper[1], Anthony J. Miller[9], Karl Kunert[10], Juan Vorster[10], Christopher Cullis[11], Jocelyn A. Ozga[12], Mark L. Wahlqvist[13,14], Yan Liang[15], Huixia Shou[16], Kai Shi[17], Jingquan Yu[17], Nandor Fodor[1], Brent N. Kaiser[18], Fuk-Ling Wong[3], Babu Valliyodan[5] and Michael J. Considine[2,5,19]

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 in 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