

# Challenging the conventional wisdom on underutilised species

Michael Hermann

Promotion of underutilised indigenous food resources for food  
security and nutrition in Asia and the Pacific

Regional Symposium, Khon Kaen

31 May – 2 June 2012



# Outline of presentation

- What is Crops for the Future (CFF)?
- Reflections on “neglected and underutilised species” (NUS)
  - What is neglect and under-use?
  - Is neglect always a bad thing?
  - Promotion or constraints analysis?
  - Nutrition, nutrition, nutrition.. anything else?
  - Don’t preach to the converted!
  - Don’t fall into the commodity trap!
  - Collaborative action through Internet tools



# Crops for the Future - What is it?

- Global Partnership Organization to foster enhanced collaboration amongst R&D stakeholders of under-utilized crops
- Established in 2009 through the merger of ICUC and GFU
- Operating out of Malaysia
- Core funding from DFID/UK

# Our mission

- To add value to the work of the NUS community in terms of facilitating collective action
- To become a global champion and voice for NUS R&D





# CFF' s Goals

1. Facilitate **access to knowledge on NUS**, through web portal, monographs, synthesis papers, and databases, especially in the areas of production, sustained market access, nutritional security and health.
2. Provide **information services** to NUS stakeholders (grant and training opportunities, library resources, Internet opportunities)
3. Engage in **policy** to promote the use of NUS (market access barriers, IAR, GFAR)
4. Increase **awareness** on the potential and contributions of NUS for livelihoods and well-being (conferences, review papers, popular press articles).
5. Strengthen **capacity** amongst NUS researchers



# AIRCA – Association of International Research and Development Centers for Agriculture



FOR MOUNTAINS AND PEOPLE





# AIRCA Core competencies

- ▶ Focus on livelihood impact, poverty reduction, social inclusion
- ▶ Products of high value:
  - economic
  - nutritional
  - scarcity
  - cultural/culinary
  - resilience
- ▶ Improving health – people, plants and animals
- ▶ Integrated and sustainable approaches
- ▶ Environmental and climate challenges – soils, water, ecosystems, landscapes
- ▶ Knowledge generation, exchange, access and transfer
- ▶ Systems approaches to the agriculture/environment interface



# DOCNet

- = Diversity for Development Alliance
- Convened by GFAR
- Alliance of diverse stakeholders
- Promote development through agricultural diversification at the global level





# CFF's working definition of “neglected and underutilised species” (NUS)

- Farmed or gathered on a small scale
- Unrealized potential for contributing to food security and nutrition
- Often linked to the cultural and culinary heritage of their place of origin, and maintained by poor, often indigenous farmers
- Distribution, biology, cultivation and uses are poorly known and documented
- Receive little attention from research, policy makers, donors and technology providers
- Informal seed systems
- Several hundred species!





# Factors constraining the use of crops



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## Supply constraints

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- Narrow ecological adaptation
- Crop duration too long for tight rotations
- Low productivity
- Pest and disease susceptibility
- Low multiplication rates
- Restricted access to seeds of varieties with desirable characteristics
- Under-developed production and post-harvest technologies

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## Demand constraints

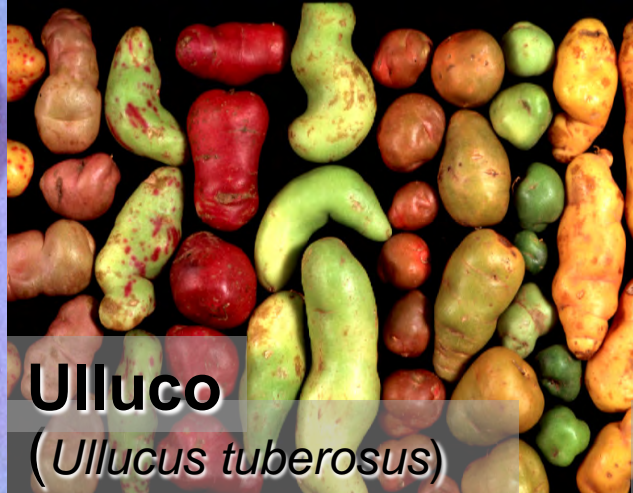
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- High consumer price due to lack of economies of scale
  - Inconvenience of use
  - Low palatability or acceptance as food
  - Presence of anti-nutritional factors
  - Consumer unawareness, eroding food cultures
  - Highly competitive substitutes
  - Market access barriers
-





**Oca**  
(*Oxalis tuberosa*)



**Ulluco**  
(*Ullucus tuberosus*)



**Mashua**  
(*Tropaeolum tuberosum*)



**Yacon**  
(*Smallanthus sonchifolius*)



**Arracacha**  
(*Arracacia xanthorrhiza*)



**Edible canna**  
(*Canna edulis*)



**Mauka**  
(*Mirabilis expansa*)

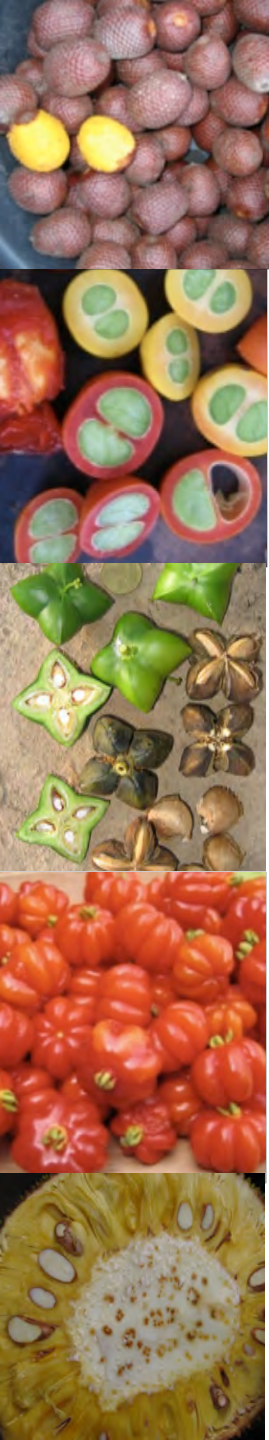


**Maca**  
(*Lepidium meyenii*)



**Ahipa**  
(*Pachyrhizus ahipa*)





# Comparing potato/sweet potato with Andean roots (attributes of competitiveness)



Crop constraint	Potato ( <i>Solanum tuberosum</i> )	Sweetpotato ( <i>Ipomoea batatas</i> )	Oca ( <i>Oxalis tuberosa</i> )	Ulluco ( <i>Ullucus tuberosus</i> )	Mashua ( <i>Tropaeolum tuberosum</i> )	Yacon ( <i>Smallanthus sonchifolius</i> )	Arracacha ( <i>Arracacia xanthorrhiza</i> )	Edible canna ( <i>Canna edulis</i> )	Maca ( <i>Lepidium meyenii</i> )	Mauka ( <i>Mirabilis expansa</i> )	Ahipa ( <i>Pachyrhizus ahipa</i> )
Ecological adaptability	2	2	1	1	1	2	2	2	0	1	1
Genetic diversity for adaptation/breeding	3	2	2	1	2	0	2	2	1	1	3
Sexual fertility	3	3	3	0	3	0	1	2	3	3	3
Ease/speed of vegetative propagation	3	3	2	2	2	3	2	2	0	3	1
Crop duration	3	3	2	2	2	1	1	1	1	2	2
Productivity	3	3	2	2	3	2	2	3	2	2	2
Palatability/versatility of use	3	3	2	2	1	2	2	1	0	1	2
Anti-nutritional compounds	2	3	1	3	1	3	3	3	2	1	3
Total score	22	22	15	13	15	13	15	16	9	14	17



# Are nutrients enough?

- Food is much more than the sum of nutrients
- Do we enquire enough about anti-nutritional factors?
- Is nutrient-dense food always palatable?
- Nutrient awareness alone unlikely to lead to behavioral change
- Need to team up with social/behavioral scientists
- Are we losing the young generation?



Are we losing the young generation?







**Oh My Gulay!**  
**Be on Top with Kamote Tops!**

Kung gusto mo maging on top  
Try mo, kamote tops  
Mayaman sa iron and vitamin A  
Para maging matalino at alerto everyday  
I reach for the top, with kamote tops!

**Sarah Geronimo**  
Singer/Actress



Oh My Gulay!



**Oh My Gulay!**  
**Dugong Malunggay**

Kung malusog na dugo ang gusto mo  
Malunggay na maraming iron ang kainin mo  
Tinaguriang "nature's most nutritious food"  
Sabi ni mommy, ito ay very good.

That's why I'm proud to say,  
Dugong Malunggay ako all the way!

**Giselle Sanchez**  
Actress



Oh My Gulay!

# Don't preach to the converted!

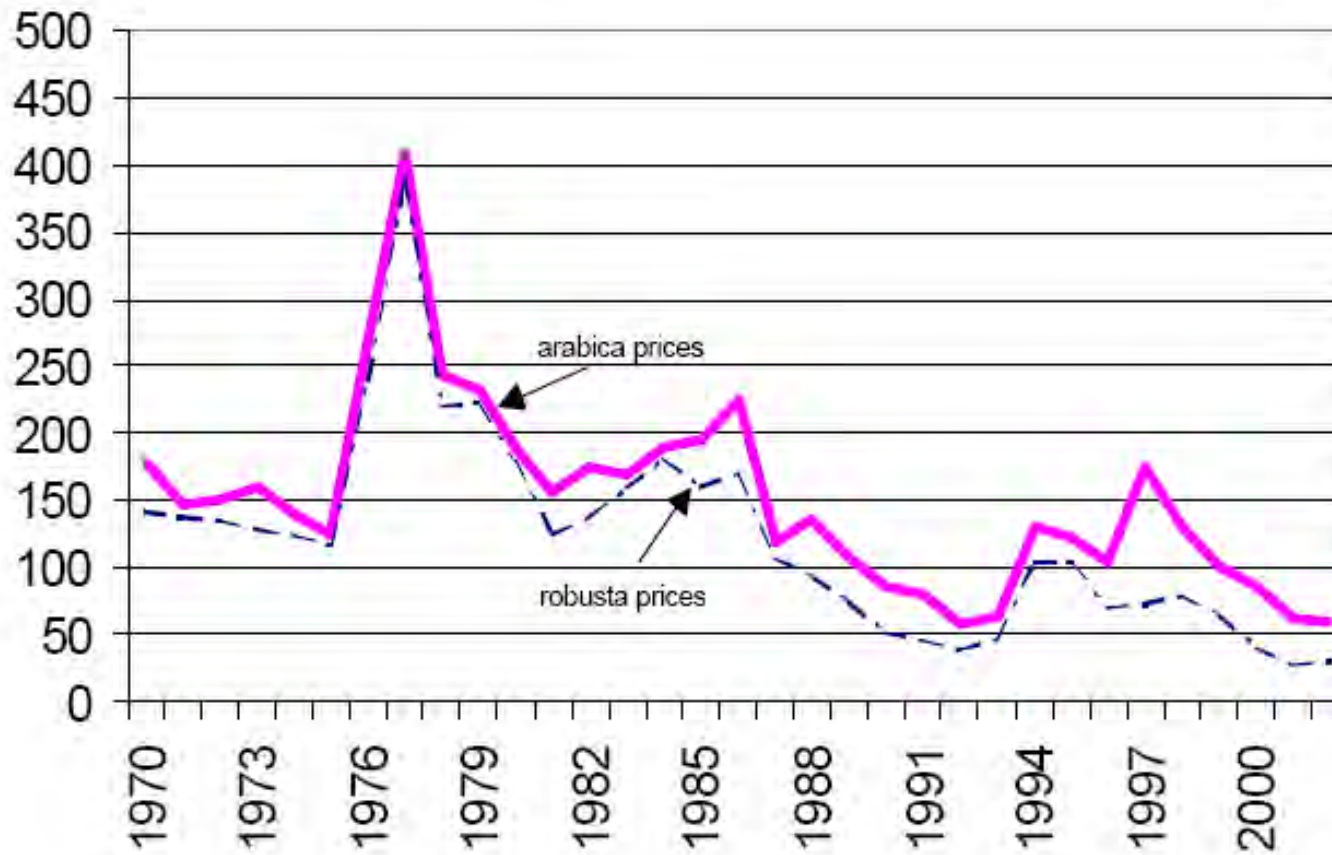
- Link with educators and influence curriculum development at schools and universities
- Link with the health and nutrition communities
- Engage with main stream agriculture/biotechnology
- Link to the media (and provide stories)
- Get opinion makers behind our cause





# Avoid the commodity trap

Figure 1.1 Arabica and robusta prices, 1970-2002



# High-value differentiation through Geographical Indications?

- GI encourage diversity of production
- GI allow producers to market differentiated and clearly identified products
- GI promote quality and added-value production
- GI protect farmers against disloyal competition





# Collective action: why?

- We are a dispersed community, fragmented by our crop and institutional mandates, yet have common goals
- We are perceived as peripheral to the agricultural agenda
- We don't speak with a global voice such as the CGIAR
- We are not heard by funders, policy makers and in global debates about food, sustainable agriculture, climate change
- We need more national champions and senior mentors for young NUS scientists
- We need synergies for generating evidence to support our global agenda

# Let's make better use of the Internet for visibility and sharing knowledge!

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# Durian

From Wikipedia, the free encyclopedia

*For other uses, see [Durian \(disambiguation\)](#).*

The **durian** (pronounced /djʊˈriːən/<sup>[2]</sup>)<sup>[2]</sup> is the **fruit** of several **tree species** belonging to the **genus** *Durio* and the **Malvaceae family**<sup>[1][3]</sup> (although some taxonomists place *Durio* in a distinct family, Durionaceae<sup>[1]</sup>). Widely known and revered in **southeast Asia** as the "king of fruits", the durian is distinctive for its large size, unique **odour**, and formidable **thorn**-covered **husk**. The fruit can grow as large as 30 centimetres (12 in) long and 15 centimetres (6 in) in diameter, and it typically weighs one to three kilograms (2 to 7 lb). Its shape ranges from

## Durian



*Durio kutejensis* fruits,  
known as *durian me*

## Scientific classifica

Kingdom: [Plantae](#)



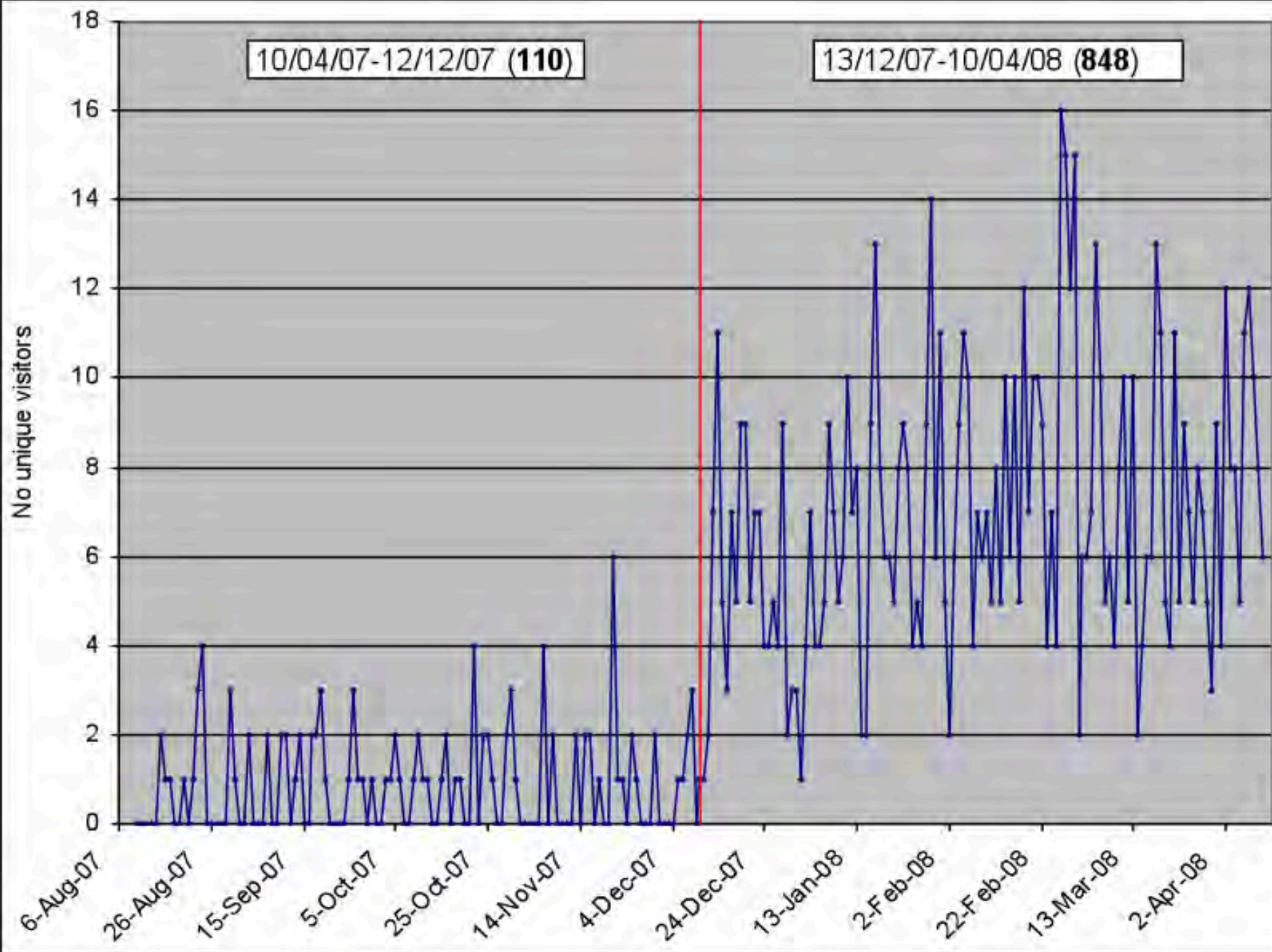
b. <sup>^</sup> The traveller Wallace cites is Linschott (Wallace's spelling for [Jan Huyghen van Linschoten](#)), whose name appears repeatedly in internet searches on durian, with such citations themselves tracing back to Wallace. In translations of Linschoten's writings, the fruit is spelled as *duryoen*.<sup>[67]</sup>



## References

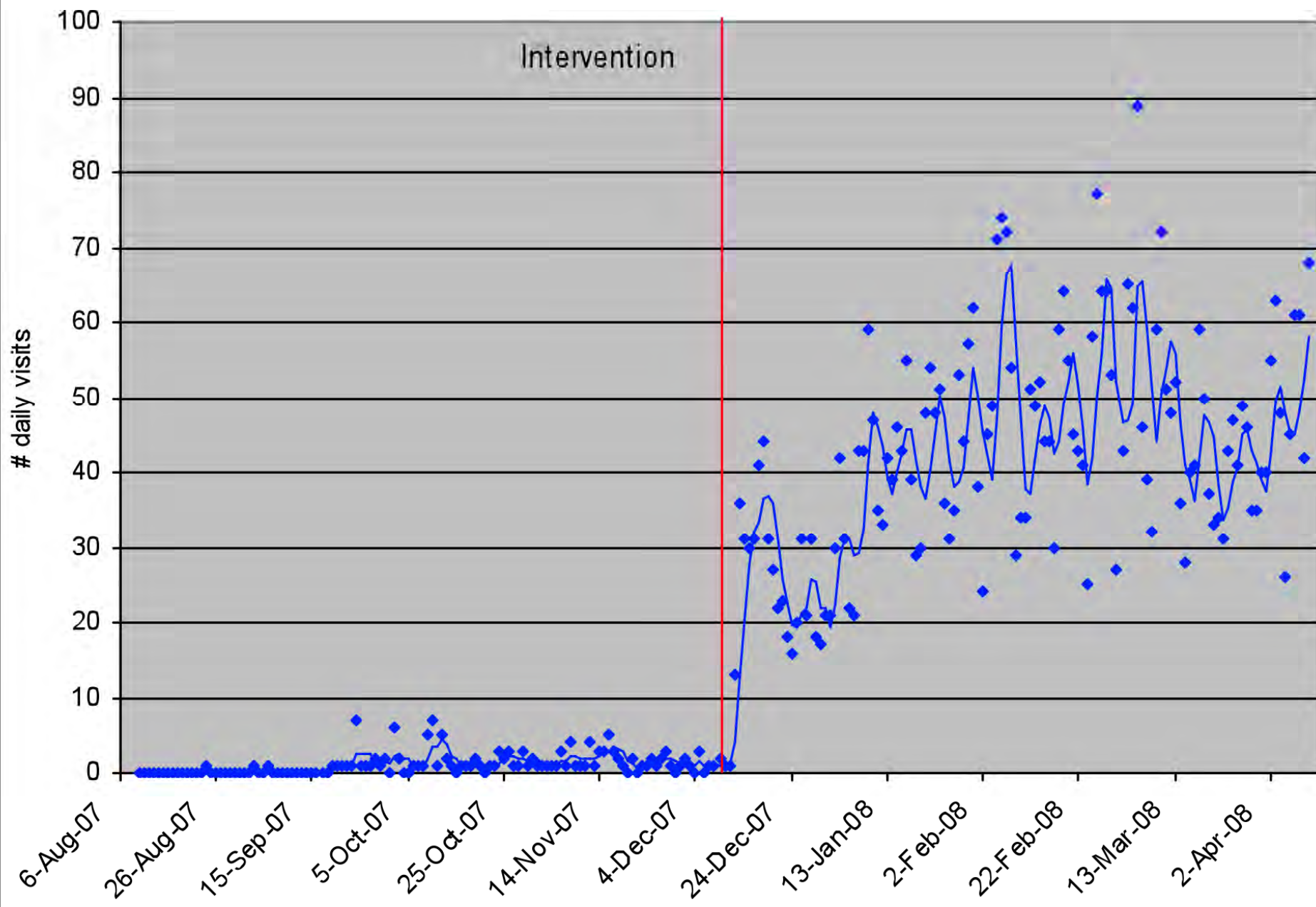
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1. <sup>^</sup> [a b c](#) "[Durio L.](#)". [Germplasm Resources Information Network](#). United States Department of Agriculture. 2007-03-12. Retrieved 2010-02-16.
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6. <sup>^</sup> *Oxford English Dictionary*. Oxford University Press. 1897. "Via *durion*, the Malay name for the plant."





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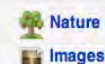
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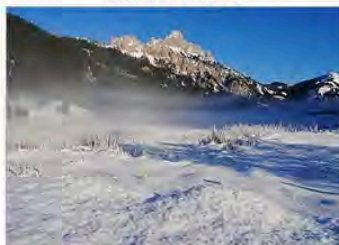
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jointless



Tomates Bastavales  
Galicia

Tomatera con frutos/  
Tomato grass  
backdrop

Table with tomatoes

Tomates en el  
supermercado /  
Tomatoes in the  
supermarket shelf /  
Tomaten im  
Supermarktregal.

Racimo / Tomatoes on  
the bush

Tomatentyp Cuor  
Bue in Körben  
Piemonte, Italien  
Tomatoe type Ox  
in baskets Piemo  
Italy



Cherry Tomato

Cherry Tomato

Cherrytomate Frucht  
gelb birnenförmig /  
tomato fruit yellow  
pearshaped

Cherrytomate Frucht  
gelb birnenförmig /  
tomato fruit yellow  
pearshaped

Little tomatoes on the  
bush

Cherry-Tomate /  
cherry type

San Marzano



Romana-, Green  
Zebra- und hellgelber  
Typ gemischt /  
Tomatoe mix

Romana

neue Tomatensorte  
extra rot mit viel  
Lycopen / new  
Tomatoe variety 2006

Gimpressionist

Black tomatoes

Yellow tomatoes

Rosa tomatoes



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Author	Crops for the Future
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tree (Moringa oleifera)

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flowering

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Gujarat

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Cyclanthera pedata

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Seed of Cyclanthera  
pedata

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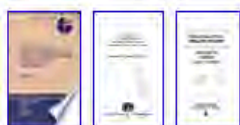
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Paintings of a genre of eating establishments which has all but disappeared from

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Background to the interdisciplinary applied



- Internet knowledge repositories much under-used by the R&D community
- They allow putting content very effectively in the public domain, replacing fact sheets etc.
- Donors and project managers should make use of WikiCommons, GoogleBooks as source of verification for the achievement of project outputs



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## Crop of the Week

**African cabbage (*Cleome gynandra*)**



Because of its nutritional excellence and ease of cultivation, this leaf vegetable deserves greater use and research attention. Its high content of proteins, vitamins and minerals needs to be communicated to consumers in order to stimulate the demand for its production. This crop has C4-type photosynthesis and is therefore productive under hot and

## The Latest



**First International Symposium on Jackfruit and other Moraceae announced to take place in Bangladesh (August 31-September 2, 2012)**



**FIRST INTERNATIONAL  
SYMPOSIUM ON  
JACKFRUIT AND  
OTHER MORACEAE**

ISHS has just announced the First International Symposium on Jackfruit and other Moraceae to take place in Mymensingh, Bangladesh, from [...]

**Applications requested from sub-Saharan African students for LEAP grants**





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## Upcoming Events and Opportunities

**30 April 2012**

Postgraduate courses in Sustainable Agriculture at Charles Sturt University, Australia

**14 May 2012**

The "2012/2013 Africa-wide Women in Science Competition" is calling for abstracts

**12 June 2012**

Applications requested from sub-Saharan African students for LEAP grants

**31 August 2012**

# Become a CFF associate!

- Members of the CFF network, not organisations, but natural persons
- With unique NUS expertise in R & D
- Our first call for project development and participation in events and training
- Expected to take ownership of the CFF brand, represent it locally, and contribute to CFF information platform
- CFF to target individuals, but responsive to statements of interest or recommendations





**Terima kasih!**