



F1 hybrids update

Artemisinin Conference
Nairobi, January 2013



Dr Wendy Lawley

The CNAP Artemisia Research Project
University of York



Selected high yielding F1 hybrids

- First generation hybrids



Selected high yielding F1 hybrids

- First generation hybrids
 - *Hyb 1077* – replaced by second generation hybrid
 - *Hyb 1260* – replaced by second generation hybrid



Selected high yielding F1 hybrids

- First generation hybrids
 - *Hyb 1077 – replaced by second generation hybrid*
 - *Hyb 1260 – replaced by second generation hybrid*
 - *Hyb 5013 – no ongoing seed production as replaced by second generation hybrid*



Selected high yielding F1 hybrids

- First generation hybrids
 - *Hyb1077* – replaced by second generation hybrid
 - *Hyb1260* – replaced by second generation hybrid
 - *Hyb5013* – no ongoing seed production as replaced by second generation hybrid
 - **Hyb1209r** – available; ongoing seed production



Selected high yielding F1 hybrids

- First generation hybrids
 - *Hyb1077* – replaced by second generation hybrid
 - *Hyb1260* – replaced by second generation hybrid
 - *Hyb5013* – no ongoing seed production as replaced by second generation hybrid
 - *Hyb1209r* – available; ongoing seed production
- Second generation hybrids



Selected high yielding F1 hybrids

- First generation hybrids

- *Hyb1077 – replaced by second generation hybrid*
- *Hyb1260 – replaced by second generation hybrid*
- *Hyb5013 – no ongoing seed production as replaced by second generation hybrid*
- Hyb1209r – available; ongoing seed production

- Second generation hybrids

- Hyb1252r
- Hyb8001r
- Hyb8003r



Selected high yielding F1 hybrids

- First generation hybrids

- *Hyb1077 – replaced by second generation hybrid*
- *Hyb1260 – replaced by second generation hybrid*
- *Hyb5013 – no ongoing seed production as replaced by second generation hybrid*
- Hyb1209r – available; ongoing seed production

- Second generation hybrids

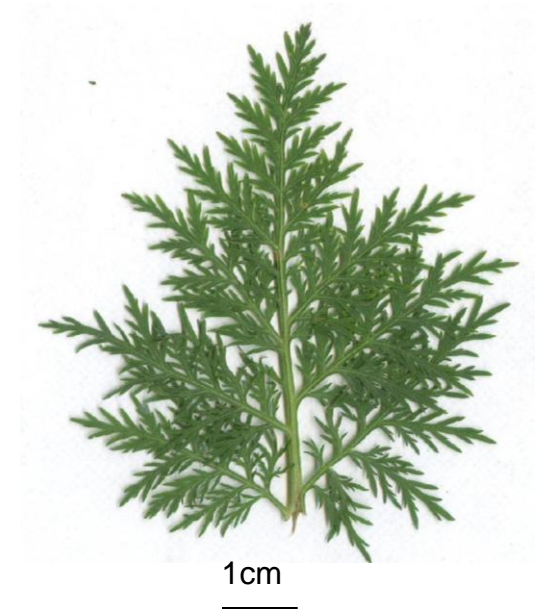
- Hyb1252r
- Hyb8001r
- Hyb8003r

- Maximising concentration, dry leaf weight and yield
- Range of yields achieved across trial sites



Hyb1209r “Shennong”

- A compact hybrid which is suitable for China, Kenya and Uganda





Hyb1209r “Shennong”

- A compact hybrid which is suitable for China, Kenya and Uganda
 - Trialled at 7 independent sites in China, Kenya, Madagascar and Uganda; harvested between July 2010 – Feb 2011
- Maximum concentration
1.52% (Kenya)
- Maximum leaf dry weight
2908 kg/ha (China)
- Maximum yield
36.3 kg/ha (China)

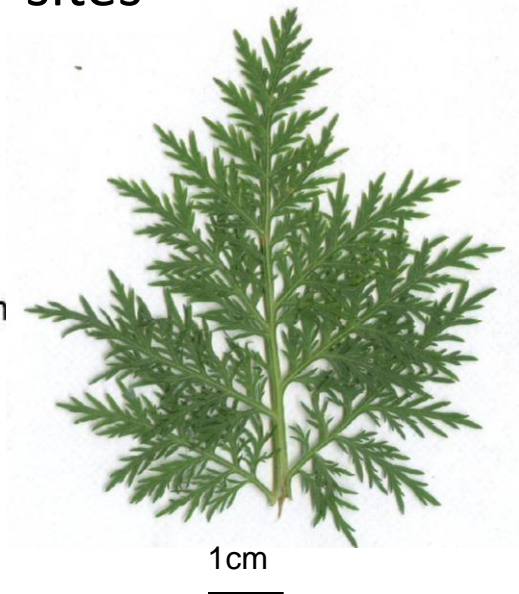
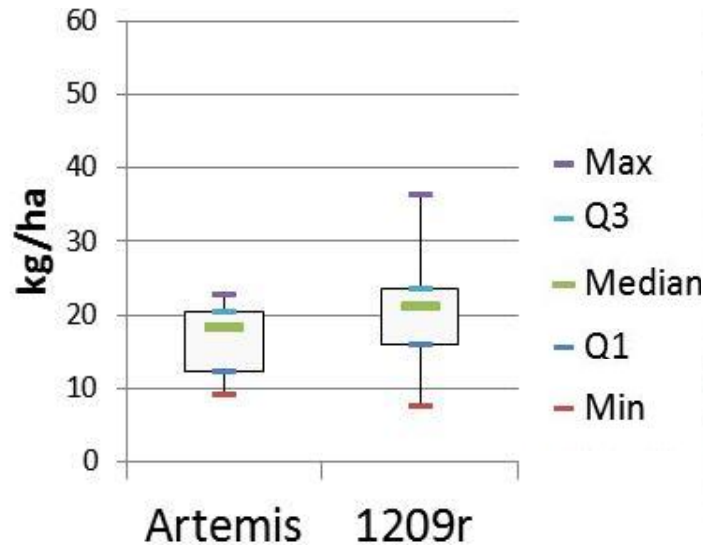




Hyb1209r “Shennong”

- A compact hybrid which is suitable for China, Kenya and Uganda
 - Trialled at 7 independent sites in China, Kenya, Madagascar and Uganda; harvested between July 2010 – Feb 2011

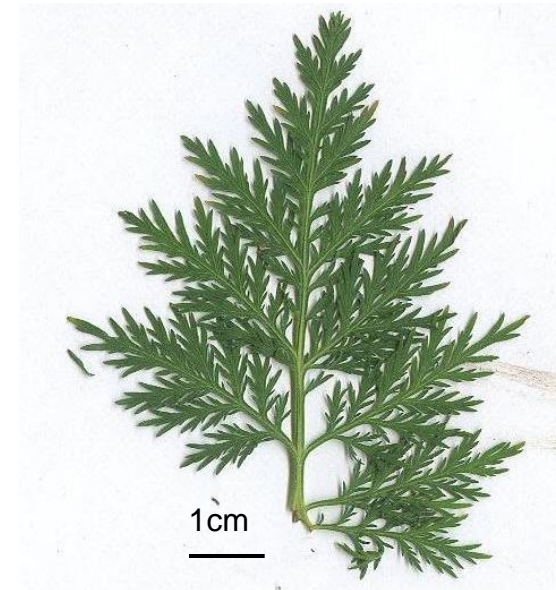
- Maximum Artemisinin yield (kg/ha) from 7 sites
 - Maximum concentration 1.52% (Kenya)
 - Maximum leaf dry weight 2908 kg/ha (China)
 - Maximum yield 36.3 kg/ha (China)





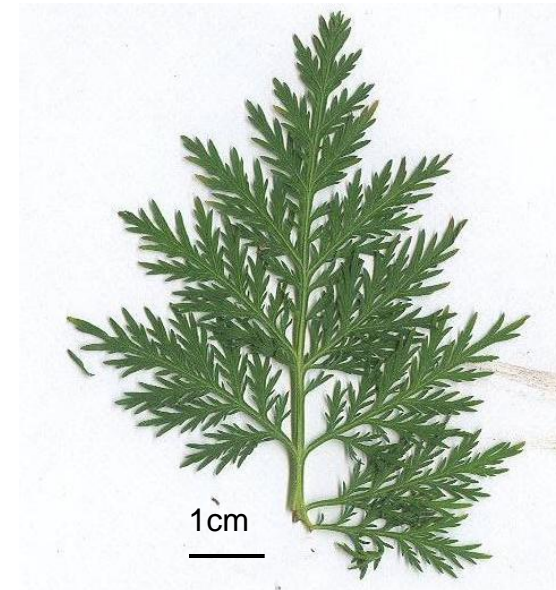
Hyb1252r “Jewel”

- A compact hybrid with consistent high concentration suitable for China, Madagascar, Kenya and Uganda



Hyb1252r “Jewel”

- A compact hybrid with consistent high concentration suitable for China, Madagascar, Kenya and Uganda
 - Trialled at 9 independent sites in China, Madagascar, Kenya and Uganda; harvested between February – September 2011
- Maximum concentration
1.43% (Madagascar)
- Maximum leaf dry weight
4148 kg/ha (China)
- Maximum yield
48.8 kg/ha (China)





Hyb1252r “Jewel”

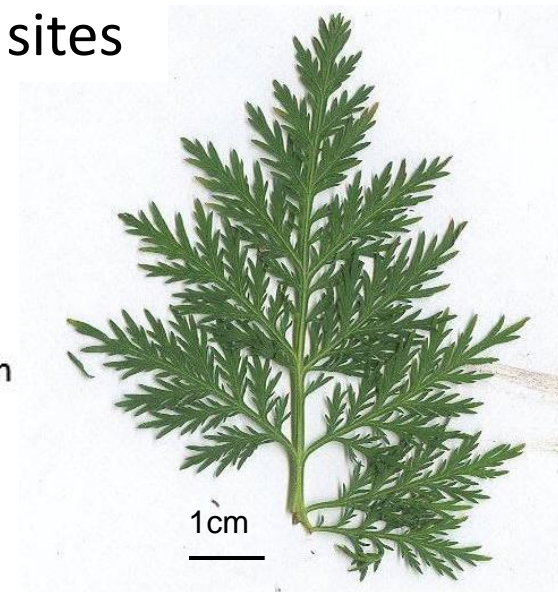
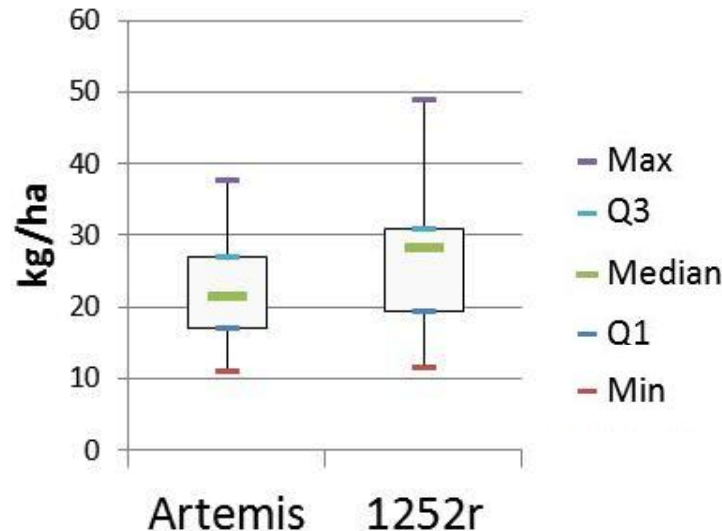
- A compact hybrid with consistent high concentration suitable for China, Madagascar, Kenya and Uganda
 - Trialled at 9 independent sites in China, Madagascar, Kenya and Uganda; harvested between February – September 2011

- Maximum concentration
1.43% (Madagascar)

- Maximum leaf dry weight
4148 kg/ha (China)

- Maximum yield
48.8 kg/ha (China)

Artemisinin yield (kg/ha) from 9 sites



Hyb8001r “Zenith”

- A fast growing, high biomass hybrid suited to China, Uganda and Madagascar



Hyb8001r “Zenith”

- A fast growing, high biomass hybrid suited to China, Uganda and Madagascar
 - Trialled at 13 independent sites in China, India, Madagascar and Uganda; harvested between July – October 2011
- Maximum concentration
1.44% (Madagascar)
- Maximum leaf dry weight
4488 kg/ha (China)
- Maximum yield
54.5 kg/ha
(Madagascar)





Hyb8001r “Zenith”

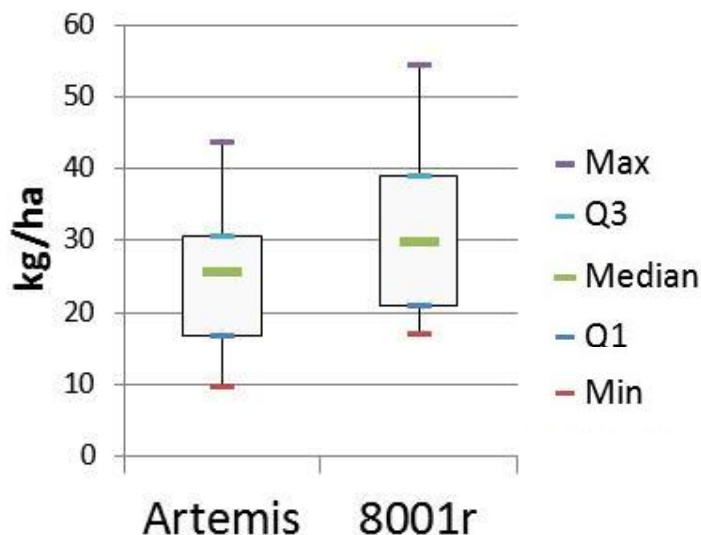
- A fast growing, high biomass hybrid suited to China, Uganda and Madagascar
 - Trialled at 13 independent sites in China, India, Madagascar and Uganda; harvested between July – October 2011

- Maximum concentration
1.44% (Madagascar)

- Maximum leaf dry weight
4488 kg/ha (China)

- Maximum yield
54.5 kg/ha (Madagascar)

Artemisinin yield (kg/ha) from 13 sites



Hyb8003r “Verdant”

- A large-leaf hybrid particularly suited to India



Hyb8003r “Verdant”

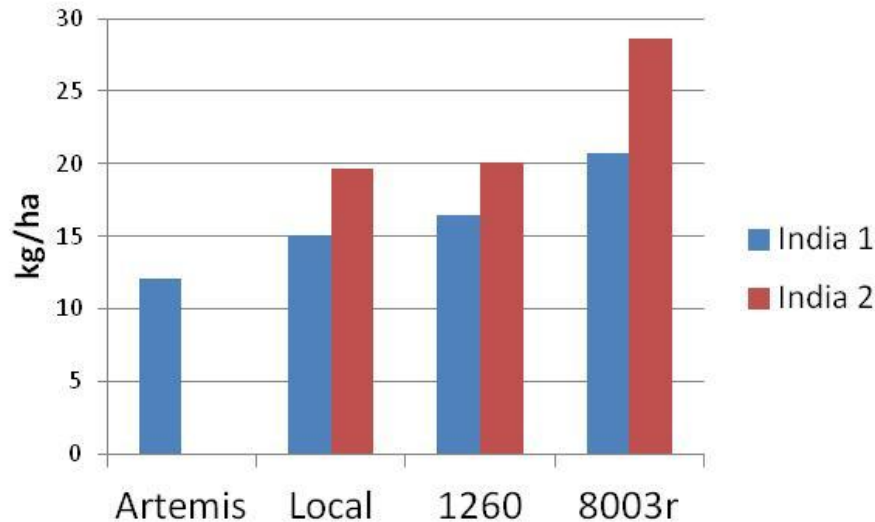
- A large-leaf hybrid particularly suited to India
 - Trialled at 2 independent sites in India; harvested April 2011
 - Selected from 96 hybrids tested across 6 sites in India 2009-2011
 - Maximum concentration 1.08%
 - Maximum leaf dry weight 3215 kg/ha
 - Maximum yield 28.6 kg/ha



Hyb8003r “Verdant”

- A large-leaf hybrid particularly suited to India
 - Trialled at 2 independent sites in India; harvested April 2011
 - Selected from 96 hybrids tested across 6 sites in India 2009-2011
 - Maximum concentration 1.08%
 - Maximum leaf dry weight 3215 kg/ha
 - Maximum yield 28.6 kg/ha

Artemisinin yield (kg/ha) from 2 sites





Recommendations by country

- India:
 - 1st choice – hyb8003r
- China, Kenya, & Uganda:
 - 1st choice for high concentration – hyb1252r
 - 1st choice for high biomass – hyb8001r
 - Also suitable – hyb1209r
- Madagascar:
 - 1st choice for high concentration – hyb1252r
 - 1st choice for high biomass – hyb8001r



Variety Registration - China

- Testing hyb1209r, hyb1252r & hyb8001r
- Introduction into China is being undertaken by Chongqing Academy of Materia Medica



重庆市中药研究院

Chongqing Academy of Chinese Materia Medica

- Variety comparison tests with Yuqing 1 and Holley No.1
- Regional trials with four replications per hybrid at each of four locations



Dr Li Longyun
Deputy Director



Variety Registration - Europe

- Testing hyb1209r, hyb8001r, hyb1252r & hyb8003r
- Detailed evaluation of phenotypic characteristics of front runner hybrids in the UK to support PVP applications.
- Submission to Community Plant Variety Office, France for EU Plant Breeders Rights





2012 – a year of consolidation for the CNAP-East West Seed Partnership

Seed samples available now for second generation hybrids – please ask for details

THE UNIVERSITY *of* York



Dr Wendy Lawley
wendy.lawley@york.ac.uk

Dr Yi Li
yi.li@york.ac.uk



Michael McDaniel
Michael.McDaniel@eastwestseed.com

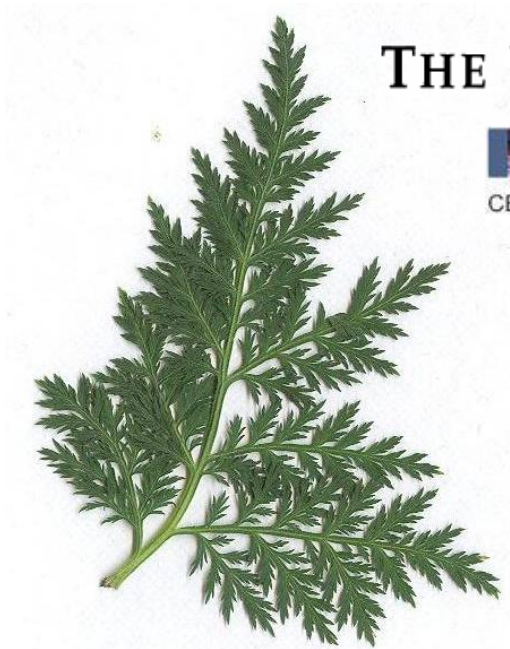


Acknowledgements

- Principle Investigator Professor Ian Graham
- Co-principle Investigator Professor Dianna Bowles (retired May 2012)
- The CNAP Artemisia Research Project team
- The East-West Seed Group team
- Funded by the Bill and Melinda Gates Foundation



Thank you for listening



THE UNIVERSITY *of* York

CNAP

CENTRE FOR NOVEL AGRICULTURAL PRODUCTS



EAST-WEST SEED