Research innovations transform Mungbeans into ‘Moneybean$’

Dr Rex Williams
Director, Crop Improvement, DAF
‘Looking Forward, Looking Back’
‘Moneybean$’

Dr Rex Williams
Director, Crop Improvement, DAF
Mungbean R&D:

Innovations to meet Industry needs

Genetics

Environment

Management
Primary Industries. Berken is susceptible to the bacterial diseases: common blight, halo blight, and tan spot; and also to the fungal diseases: cercospora leaf spot, and powdery mildew. Berken is short statured, particularly on heavy clay soils and under dry conditions, and is likely to lodge. More importantly, Berken is susceptible to weather damage which reduces seed quality.

Berken has been the mainstay of the mungbean industry. Berken was bred in USA and released to Australian farmers in 1978. Australian Bureau of 

TWO NEW MUNGBEAN VARIETIES BRED BY C.S.I.R.O. OFFER CROPPING OPTIONS

Australian Mungbean Association

Shantung also has resistance to cercospora leaf spot enabling the crop to be grown in more tropical regions where this disease can limit production.

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R&D on the ‘G’

– Describe, expand & use genetic diversity
– Create world-class breeding platform
– Embrace genetic tools & technologies
– Conduct widespread regional trials
– Support skilled staff & great partnerships

Innovations for improved mungbean yields & resilience
$18 benefit for every $1 invested in mungbean breeding
Developing a mungbean NAM population
(Joining the ‘Gene Revolution’ for improved stress tolerance)

• Describe & expand genetic diversity
• Create a unique platform
• Discover key markers & genes
  – Genetic knowledge
  – Genetic tools
  – Germplasm
Building our NAM

24 Diverse Donor Lines
Industry recognising the value of our NAM
R&D on the ‘E’

- Pests
- Disease
- Drought

Innovations to better exploit genetic potential by industry
The Beatsheet
Insect Pest Management for Australia’s Northern Region
Halo Blight

Powdery Mildew

Tan Spot

Charcoal rot
Characterising the ‘E’?
APSIM successfully models yield in mungbean
Patterns of drought stress in mungbean

Different drought classes and their relative frequency across mungbean growing regions
Agro-ecological regions for mungbean

Different drought classes and their relative frequency across mungbean regions
R&D on the ‘M’

• Variety Management Packages (VMP’s)
• Biotic threats (pests, diseases, weeds)
• Soil nutrition, VAM & N fix
• Row spacings
• Irrigation management
• Desiccation, harvest & storage

Innovations to support industry confidence
Mungbeans

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planning and paddock preparation • pre-planting • planting • plant growth and physiology • nutrition and fertiliser • weed control • insect management • nematode control • diseases • plant growth regulators and canopy management • desiccation • harvest • storage • environmental issues • marketing • current research

GRDC
Grains Research & Development Corporation

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Department of Agriculture and Fisheries
ATW1124: a novel chemical seed pre-treatment

Preliminary Results
• Stronger & deeper primary root
• Increased branching
• Increased root volume with depth

X-Ray Tomography of mungbean roots
Mungbean GEM ‘landscapes’
Notnuts
Safe, tasty alternatives to nut spreads

FREE FROM Nuts, Gluten, Soy
Great for school lunches!

Australian grown mungbeans have quality written all over them!

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