

### Using natural variation for rice improvement

Urgent need for crop improvement:

World population expected to grow to 9,000,000,000 by 2050

Climate change and increasing unpredictability will reduce yield

Increasing demand for meat and biofuels put further strains on agriculture



• One path forward is to use the natural genetic diversity ("natural variation") already present in

• 120,000 different rice strains have been deposited in seed banks

# These harbor different genetic variants

Many are just random

some provide adaptation to specific environments/stresses

drought, flooding, heat, pathogens, etc

some determine specific grain characteristics of consumer interest



# grain length

• aromatic (basmati, jasmine)



• Identify genes or genomic locations of variants



#### Science Daily and IRRI http://www.sciencedaily.com/releases/2009/07/090723113512.htm

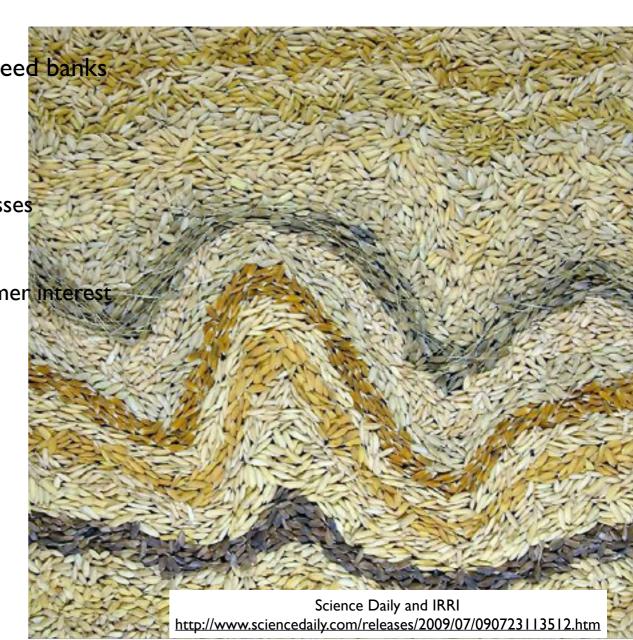
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  - Many are just random
  - some provide adaptation to specific environments/stresses
    - drought, flooding, heat, pathogens, etc
  - some determine specific grain characteristics of consumer interest
    - stickiness
    - grain length
    - aromatic (basmati, jasmine)
    - color
- Identify genes or genomic locations of variants
  - Why?



## We will focus on root traits

• Why Roots?

