To Serve and Conserve: strengthening germplasm evaluation to focus on users' needs

Theo van Hintum
Centre for Genetic Resources, The Netherlands (CGN)

WAGENINGEN UR
For quality of life

Serve and Conserve: focus on users' needs

- genebanks are goldmines
  - we do not have effective mining techniques
- to use PGR a potential user must
  - need new germplasm
  - know about PGR and the PGR collections
  - be able to select material using relevant data
  - request and get high quality and authentic material

Serve and Conserve: focus on users' needs

- ‘need new germplasm’
  - often new traits are desired
    - no data available yet
  - research can show the potential of new germplasm
    - e.g. results of the advanced backcross work of Tanksley et al.

Serve and Conserve: focus on users' needs

- ‘know about PGR and the PGR collections’
  - interaction with potential users
- ‘select material using relevant data’
  - a proper web based information system
    - e.g. EURISCO
    - e.g. the *Musa* germplasm information system
- ‘request and get high quality and authentic material’
  - confirmed identity
  - procedural, legal and phytosanitary issues

Serve and Conserve: focus on users' needs

- most frequent bottleneck:
  - no proper evaluation data for selection
    - new traits are desired but have not been evaluated yet
    - traits are hidden in an exotic genetic background and can not be evaluated

Serve and Conserve: focus on users' needs

- @CGN: project ‘stimulating use’
  - meet with user community with shared interest
    - breeders of a certain crop
  - identify important traits
    - disease resistances
  - organise pre-competitive screening
    - select with participants material to screen
    - distribute the material (in duplo) to participants
    - collect and diffuse results amongst participants
  - publish evaluation data after embargo
    - 5 year

Serve and Conserve: focus on users' needs

- @CGN: project ‘stimulating use’
  - example lettuce
    - 2000-2006: 1223 accessions (cultivated and wild) were screened in duplo by 7 companies for 28 *Bremia* fysiotypes
    - 2007-2010: 575 accessions were screened for aphid tolerance pathotype Nr:0 and 550 accessions to Nr:1 (Nr:0 was broken in 2008)
  - other crops
    - cucumber – virus resistance (CGMMV)
    - sweet pepper – virus resistance (TSWV)
    - union – *Fusarium* resistance
    - leek – 1 insect tolerance and 3 fungal disease resistances
    - spinach – *Peronospora* resistance
    - potato – *Phytophthora* resistance

Serve and Conserve: focus on users' needs

- @CGN: project ‘stimulating use’
  - results
    - breeders using CGN material
    - evaluation data available to the world
    - excellent contact between CGN and (part of) its user community