Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Use of grain legume genetic resources for cropping system diversification

Georg Carlsson

Swedish University of Agricultural Sciences, dep. Biosystems and Technology

Legumes for sustainable agriculture

Legumes provide:

- protein-rich foods and feeds and N-rich green-manures
- biologically fixed nitrogen to the legume host and the entire agro-ecosystem
- building of soil fertility via C and N sequestration,
- biofuels, fuelwood, pharmaceuticals, industrial chemicals,
- diversification of crop rotations and reduction in the requirement for pesticides,
- potential to reduce fossil energy requirement and emissions of greenhouse gases in production systems,
- prevention of soil erosion by strip intercropping

Legumes for sustainable agriculture

Obstacles against increased cultivation and use of legumes:

- insufficient market demand
- unpredictable variations in yield
- political decisions (?)
- tradition (?)

Questions for collaboration between genetic resource managers and agricultural scientists?

1. How to explore genebank collections for important traits in cropping systems?
    - efficient nitrogen fixation, genotype-specific interactions with rhizobia
    - stress tolerance (drought, nutrient deficiency, etc)
    - disease resistance

2. Which organizations would take responsibility for such evaluations?

3. How to achieve cropping system diversification, based on genebank collections, in order to promote preventive strategies?

4. Would question 3 be a strategy towards *in-situ* conservation and use of genetic resources?

Potential research questions about GL-PGR and CS sustainability

•Are high-diveristy (species and varietal) legume-dominated cropping systems more resource efficient (land, nutrients, water) and sustainable (yield stability, food security, environmental impact, economy) than low-diversity cereal-dominated cropping systems?

•Would easily accesible information about trait diversity in grain legume genetic resources attract growers and consumers and increase the market demand for grain legumes?

Bioversity Technical Bulletin no. 15. 2009

14. 'Swedes Revisited': a Landrace Inventory in Sweden

Jens Weibull, Eva Jansson and Katarina Wedelsbäck Bladh[1]

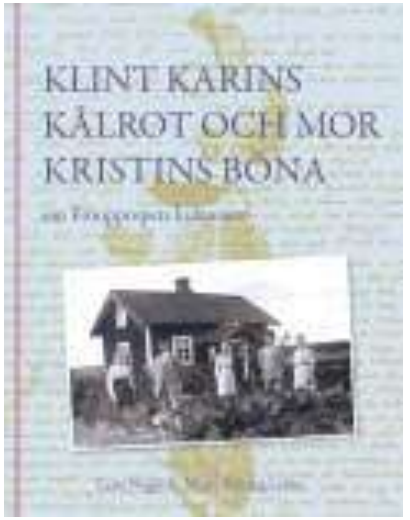
[1] Centrum för biologisk mångfald (Swedish Biodiversity Centre), Sveriges lantbruksuniversitet (Swedish University of Agriculture Science), Box 57, SE-230 53 Alnarp, Sweden. E-mail jens.weibull@cbm.slu.se

”Seed call” 2002-2004:

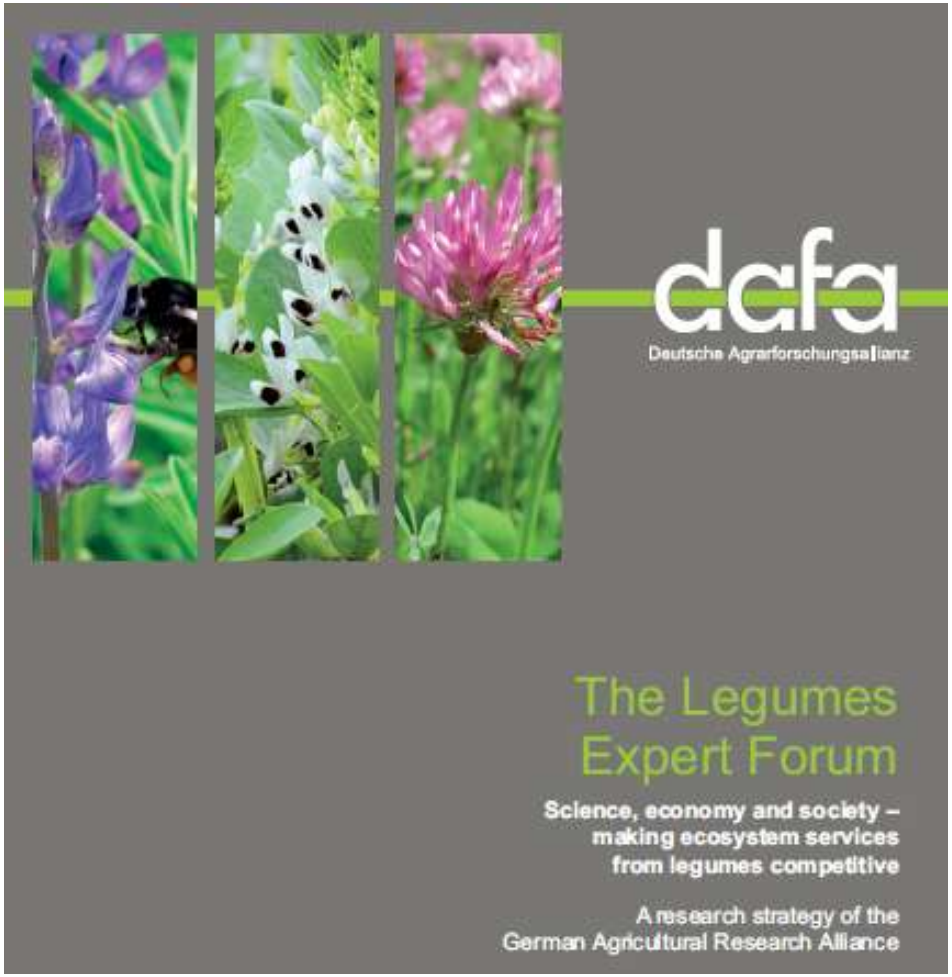
227 seed samples sent to the Nordic Gene bank
59 new accessions of *Pisum sativa*
25 new accessions of *Phaseolus vulgaris*
12 new accessions of *Vicia faba*

Many of the pea genotypes represented new and previously unknown diversity.

Seed stories, green cultural heritage:
Knowledge, memories, personal reflections, experiences, recipes



Inspiration for an action plan, the German example:



http://www.dafa.de/fileadmin/dam_uploads/images/Fachforen/ff_leguminosen-en_2012.pdf

www.slu.se/legumes