

WP 5



Potential impact of enhanced
pulse availability on local
human nutrition

About myself

- Agricultural geographer, MSc Univ. of Copenhagen (farming systems, human ecology); PhD Roskilde University Centre (Remote Sensing, Zimbabwe)
- Since 1997: Nepal, since 1999: micronutrients
- Organiser: Micronutrient workshop, Kathmandu 1994

Participants WP 5 – roles?

- CAZS-NR 3 months
- UB + UMB + TU 24 months
- GVT 6 months
- CSKH PAU 6 months
- AAU 6 months
- NARC 8 months
- LI-BIRD 8 months

Justification of nutritional study

- South Asia: from 70 to 30 g pulses available per capita per day 1960-present
- From PEM to Hidden Hunger
- Depletion of soil micronutrients
- Relative price increase of pulses over grain crops: '*dal is expensive food*'
- Demand elasticity

Role of ricebean in Nepalese culture

- Part of *quantee*
- *Dal*
- No taboo, can be eaten by anyone
- Poor mans' food
- 'not the best of beans' – a little hard, no specifically good taste
- Makes you warm in winter



Existing knowledge on nutritional value of ricebean

- **FAO Food and Nutrition paper 20 1982:** Legumes in human nutrition: Ricebean contains 18.5 % protein (!?).
- **Kaur, M. & Kawatra, B.L. (2000):** Effect of domestic processing on flatus producing factors in ricebean (*Vigna umbellata*). *Nahrung/Food* 44, 6: 447-450.
- **Kaur, M. & Kawatra, B.L. (2002):** Effect of domestic processing on zinc bioavailability from ricebean (*Vigna umbellata*) diets. *Plant Foods for Human Nutrition* 57: 307-318.
- **Mohan, V.R. & Janardhanan, K. 1994:** Chemical composition and nutritional evaluation of raw seeds of six ricebean varieties. *Journal of Indian Botanical Society* 73: 259-263.

Existing knowledge ctd.

- **Saharan, K., Khetarpaul, N. & Bishnoi, S. (2001):** Processing of newly released ricebean and fabebean cultivars: changes in total and available calcium, iron and phosphorus. *International Journal of Food Sciences and Nutrition* 52: 413-418
- **Saharan, K., Khetarpaul, N. & Bishnoi, S. (2004):** Content and digestibility of carbohydrates of ricebean and fabebean as affected by simple inexpensive processing methods. *Nutrition and Food Science* 34, 1: 13-16.
- **Nwokolo, E & Smartt, J 1996:** Food and feed from legumes and oilseeds. Chapman & Hall.

Soaking and sprouting decreases phytate and increases availability of Fe, Zn



Expected findings

- Ricebean can potentially add more protein, Fe, folate in diet
- Primarily in marginal population groups
- Household food security – duration of *anikal*
- Substantial secondary benefits – nitrogen fixation, erosion control, animal fodder – more important than primary effects?

Intercropping with maize



Nutrition assessment – present knowledge

- Poor knowledge on adequacy of Asian diets
- Food balance sheets: crude statistics, only calories and protein
- Poor breakdown on social groups
- Case studies on selected groups, limited range of parameters

Suggested strategy

- Dietary recall studies, intra-family - typologies
- Re-analysis of (some) ricebean nutritional factors – different varieties?
- WorldFood2: calculating risk of inadequacy of diet
- Problem: instruction and labour demanding; determination of target groups
- DALY – try to avoid

Use existing statistical data – plan B

Consumer Expenditure, Employment & Unemployment and Non-agricultural Enterprises in the Informal Sector in India NSS 55th round 1999-2000

NSSO, India

120000 households, 30 days consumption,

140 different foodstuffs, socially and geographically stratified

+ WorldFood2 = statistically well founded adequacy analysis

Problem: Representative for Nepal?, Data processing demanding

Possible toxicity, an ethical issue

- Aflatoxin: ricebean vulnerable?
- Allergens: notably soybean, groundnuts
- Cyanogens: notably Lima bean, some in cowpea, field pea
- Favism: fava bean
- Lathyrism: lathyrus pea
- Lectins: has been tested in ricebean, no effect found