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Developing tropical forage technologies with farmers in China

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Key words: tropical forage, smallhold, farmer, participatory approach, rural development

Introduction The tropical and south subtropical areas in China covers 480,000km2 where is populated and mountainous upland. Over 5 million people are still under poverty. Ruminants is the very important farm labour and main income source for smallhold farmers in the area. There is a big potential for farmers to use marginal land planting forages to improve their animal production system against poverty. Thus the Forages for Smallholders Project (FSP) and Livestock and later Livlihood Systems Project(LLSP) funded by AusAID and ADB has been co-conducted by CATAS and CIAT from 1995 to 2005 in Hainan province, China and other five countries in SEA on participatory forage technology development.

Materials and methods The projects focused on participatory forage technology development including varieties evaluation and selection, multiplication, dissemination, scaling-up, capacity building and networking. Total 176 smallhold farmers were selected to be involved in the projects. Key activities included participatory diagnosis, participatory on-farm trial, farmer-to-farmer extension, nursery establishments, seed and planting material production, training, cross-visits and field days, monitoring and evaluation. Tools such as Structured interview, Semi-structured interview, Open-ended discussion, Individual visit, Ranking, scoring and weighting, Village walks, Village resource maps, Wealth analysis, Historical calendars, Seasonal calendars, Problem-cause diagram, Preference analysis were used in this research.

Results and discussions

1. A participatory approach that has worked in the project as followed: selecting villages, secondary data collection, agreeing on issues-Participatory Diagnosis, participatory planning, searching for technology options with the focus-group, testing and evaluating options-starting from small plot, reporting back to the village, integrating promising solutions on farms, reaching other farmers in the village, sharing successful technologies with other villages.

2. More than 100 improved forage accessions were evaluated by farmers in the project in last ten years. Some of them have been released as new cultivar such as Stylosanthes guianensis cv. Reyan No.5 and No.10, *Macroptilium atropurpureum* cv. Siratro. 50 tones seeds of tropical forages is produced by smallhold farmers in Hainan. This made one farmer income increasing at least 1000 yuan(about 130 US$) per year.

3. Integrating forages in existing farming systems to improve productivity and income successfully. Several case studies were carried out for this purpose by using forage legumes such as stylo, Macroptilium intercropping in many tropical fruits and crops plantation. Multibenefits were goten from forages for feed supply, green manure, soil fertility improvement and seed production.

4. Integrated feeding systems for livestock that optimize use of improved and indigenous fodders and crop residues, and farm labour for small ruminants and poultry fattening.

Conclusions Some important impacts were made from the research on different stakeholders. 1. increased farmers' capacity and confidence against poverty by improving their livlihood from forage and animal production, specially for women. 2. increased farmers' awareness and capacity of self-organization facing to development and market. 3. created a new way and more attraction to government for more effective agricultral technology extention and poverty elimination. 4. enhanced interactions and linkages among different stakeholders, teamworking between the researchers and farmers made new technolgies more practising and easier and quickly adopted by farmers.