Sub-project D2: “Efficiency of smallholder animal production”

Activities in the 2nd phase

A. Valle Zarate[1], B. Kaufmann[1], U.Lemke[1],
L. T. Thuy[2], L. V. Ly[2], N. D. Vang[2]

1 Institute of Animal Production in the Tropics and Subtropics, Hohenheim;
2 National Institute of Animal Husbandry Hanoi

Outcome of the 1st project phase, planning of the 2nd phase

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1st project phase:

- Analysis of smallholder livestock production systems
- Focus: Smallholder pig production systems “demand driven” vs. “resource driven”
- Production intensity levels described, resource limitations identified, production/breeding objectives identified

Conclusion and hypothesis:

Resource driven pig production can be improved through breeding programs utilising genotypes with high productive adaptability making most efficient use of available resources, by integrating breeding between different intensity levels in a stratified approach.

At present, no breeding programmes exist for resource poor smallholder systems.

Focal points in the 2nd phase:

- Determine productive adaptability of livestock genotypes and their resource use efficiency.
- Valuate farmer breed/trait preferences (support definition of breeding goals).
- Assess importance of policy/market factors for utilisation of indigenous breeds.
- Develop village breeding programs on the basis of technical, socio-cultural and economic findings.

Livestock species: Pigs (focus of research), ruminants (add. in resource driven systems), poultry/chicken (add. in demand driven systems).

Outlook on the 2nd project phase

1st focus is on the implementation of a regular on-farm testing scheme as basis for a community driven breeding and management program integrating resource driven and demand driven production systems

Research questions:

- Which pig genotypes make most efficient use of the scarce resources available for livestock/ pig production?
- Which pig genotype is the most prospective for the farms near to town and far from town, respectively?
- Is the development in pig production systems near to town a model for regions far from town or should alternative strategies for regions far from town be approached?

Answers to these questions form the basis for developing appropriate and sustainable village breeding, management and marketing programs based on available genotypes.

- Breeding programs can only be successfully maintained if farmers actively participate in the performance testing.
- To achieve farmers participation, farmers must experience immediate benefits apart from expected long term profits of the program.
- Therefore, results on comparative performance combined with individual advice will be fed back to farmers immediately, thus serving as a management support.
- Near to town, conflicts and complementarity in resource use and marketing opportunities with poultry must deserve special attention. Far from town, special attention has to be given to ruminants.

Outlook on the 2nd project phase

2nd focus is on the extension of system analysis, considering all livestock species, to more remote mountainous villages, at the same time paving the way for an extension of the breeding program.

Research questions:

- Complementarities of resource use between ruminants and pigs
- Comparison between different ruminant species/breeds regarding the environmental compatibility of their keeping
- Establish profitable and sustainable production alternatives in the research area
- Establish grazing trials jointly with SFB sub-project C2.2 (Communal grazing lands) to determine carrying capacity of natural and improved pastures with different species and breed combinations.

Working plan;
1st focus: Pig production systems

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1. On-farm performance testing of pigs

A. Methodological backstopping for OPTS

- methods for data recording, management and analysis,
- policy/market analysis for breed valuation, assessment of marketing strategies
- set-up of alternative breeding strategies
- modeling (PRY, LPDS2), optimisation of breeding strategies (ZPLAN)
- compilation of methodological guidelines for OPTS

B. Organization and implementation of OPTS

- Formation of farmer groups
- Group animal recordings
- Farmer field days
- Monitoring of OPTS
- Feedback: joint interpretation of results
- Foundation of a pig breeders' association
- Compilation of a manual of adoptable technologies

C. Implementation of a village based breeding programme

D. Scaling up of research results

- Data analysis, data interpretation, publication

Working plan for the 2nd project phase

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Year	2003		2004				2005				2006	
Quarter	3	4	1	2	3	4	1	2	3	4	1	2
On farm performance testing of pigs (OPTS)												
Formation of farmer groups	x	x		x								
Farmers' recordings/computerised	x	x		x	x			x	x			
Monitoring of OPTS	x	x	x	x	x	x	x	x	x	x	x	
Feedback: joint result interpretation				x				x			x	
Foundation of a pig breeders' association										x	x	x
Compilation of a manual of adoptable technologies										x	x	x
Implementation of a village based breeding program											x	x
Valuation of farmers' breed/trait preferences				x	x			x	x			
Assessment of policy / market factors for utilisation of local breeds												
Comparative efficiency of resource utilisation of pigs and poultry												

Working plan
for the 2nd project phase (cont.)

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Year	2003		2004				2005				2006	
Quarter	3	4	1	2	3	4	1	2	3	4	1	2
Planning workshop in remote villages		x										
System analysis in remote villages (communication tools, households interviews, key person interviews)			x	x								
Organisation and implementation of OPTS for pigs (details above)					x	x	x	x	x	x	x	x
Analysis for environmental compatibility of ruminants (two levels, cafeteria grazing trials)								x	x	x		
Data analysis, data interpretation, publication											x	x

Number of farms and pigs in the OPTS

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Production concept	Demand driven		System in transition		Resource driven	
Location	Near town		Intermediate		Far from town	
Village	Ban Buon	Ban Bo	Na Huong	Bo Duoi	Pa Dong	Tong Tai A + B
Number of farms	30	30	30	30	30	30
Number of sows/genotype						
- Mong Cai	30	30	20	20	20	20
- Ban	20	20	30	30	30	30
N litters in 3 years from						
- Mong Cai	162	162	108	108	108	108
- Ban	72	72	108	108	108	108

Mating scheme, expected offspring from 1st litter of sows under study

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Production concept	Demand driven				System in transition				Resource driven			
Breed of dam	MC		Ban		MC		Ban		MC		Ban	
Number of gilts	60		40		40		60		40		60	
Sire breed of 1st litter												
- Mong Cai	30		20		20		30		20		30	
- Ban		30		20		20		30		20		30
Genotype of offspring	MC x MC	Ban x MC	MC x Ban	Ban x Ban	MC x MC	Ban x MC	MC x Ban	Ban x Ban	MC x MC	Ban x MC	MC x Ban	Ban x Ban
No. piglets expected from 1st litter	245	245	133	133	138	138	164	164	115	115	132	132
No. piglets tested from 1st litter	100	100	100	100	100	100	100	100	100	100	100	100

Mating scheme, expected offspring from 2nd litter of sows under study

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Production concept	Demand driven		System in transition		Resource driven	
Breed of dam	MC	Ban	MC	Ban	MC	Ban
Number of dams	50	30	30	50	30	50
Sire breed of 2nd litter						
- Yorkshire	50	30	30	50	-	-
- Ban	-	-	-	-	15	25
- MC	-	-	-	-	15	25
Genotype of offspring	Y x MC	Y x Ban	Y x MC	Y x Ban	Ban x MC MC x MC	Ban x Ban MC x Ban
No. piglets expected from 2nd litter	448	223	230	311	195	275
No. piglets tested from 2nd litter	150	150	150	150	150	150

Overview: Components of the OPTS for pigs

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