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APPENDIX

## APPENDIX A

## Statistical Formulas

1. Mean (M)

$$M = \frac{\sum_{i=1}^n X_i}{n}$$

$X_i$  = income of the  $i$ -th farmer

$n$  = number of farmers.

2. Standard deviation (S)

$$S = \sqrt{\frac{\sum X_i^2 - \frac{(\sum X_i)^2}{n}}{n}}$$

3. Standard error of the mean (
- $SE_M$
- )

$$SE_M = \frac{S}{\sqrt{n}}$$

4. Coefficient of variance (CV)

$$CV = \frac{S}{M}$$

5. Coefficient of variance of the mean (
- $CV_M$
- )

$$CV_M = \frac{SE_M}{M}$$

## APPENDIX B

## Farmer Questionnaire

To study the role of feeder roads on Agricultural development (please ask politely !)

(All questions need the past year answers)

1. Name.....Address.....

Number of people in your family.....

Sequence No.	1	2	3	4	5	6	7	8	9	10
Age (years)										
Those who usually work on farm										

2. Farmer mobility

House to nearest road

Distance (km)	Transport mode	Transport problem <sup>1</sup>
		A B C D E F (other).....

House to farm

	Distance (km)	Transport mode	Transport problem <sup>1</sup>
1			A B C D E F (other).....
2			A B C D E F (other).....
3			A B C D E F (other).....
4			A B C D E F (other).....

## Farm to nearest road

	Distance (km)	Transport mode	Transport problem <sup>1</sup>
1			A B C D E F (other) .....
2			A B C D E F (other) .....
3			A B C D E F (other) .....
4			A B C D E F (other) .....

Do you have any problems in travelling on the nearest road ?

If yes, what are they? ...<sup>1</sup>

- A. Lack of buses
- B. Lack of trucks
- C. Road in bad condition
- D. Damaged bridges
- E. Inaccessibility
- F. Other (state) .....

## 3. Mobility of all people in your family

	Average trips per month (past year)	Uniform or not * uniform	Destination	Journey reason	Transport mode
Farmer himself					
No.					
No.					
No.					
No.					

	Day	Night
Emergency trips		

\*

Were trips made regularly throughout the year ?

## 4. Cultivated area rai

	Crop	Cultivated area (rai)	Quantity (kg)	Numbers of crops	Production sold (kg)	Price (baht/kg)	Total sale (baht)
1							
2							
3							
4							
5							

	Market place	Reason for selling there <sup>2</sup>	Transport mode		Reason for using that mode <sup>3</sup>	Transport cost (baht/kg)
			Farm to road	Road to market		
1		a b c d e....			i ii iii iv v....	
2		a b c d e....			i ii iii iv v...	
3		a b c d e....			i ii iii iv v...	
4		a b c d e....			i ii iii iv v...	
5		a b c d e....			i ii iii iv v...	

2

a = Good price

b = Near and convenience

c = Borrowed customer's money

d = No other customer

e = Other (state)

3

i = Customer's vehicle

ii = Low transportation cost

iii = No other mode

iv = Convenience

v = Other (state)

6. Did you buy seed? If yes.....

	Seed cost (baht)	Quantity (kg)	Market place	Reason for buying there <sup>4</sup>	Transport mode
1				k l m n.....	
2				k l m n.....	
3				k l m n.....	
4				k l m n.....	
5				k l m n.....	

7. Did you use  $\left\{ \begin{array}{l} \text{insecticide} \\ \text{pesticide} \\ \text{herbicide} \end{array} \right\}$ ? If yes....

	Cost (baht)	Quantity (kg)	Market place	Reason for buying there <sup>4</sup>	Transport mode	First used (year)	Reason for using in that year
1				k l m n....			
2				k l m n.....			
3				k l m n.....			
4				k l m n.....			
5				k l m n.....			

8. Did you use  $\left\{ \begin{array}{l} \text{natural fertilizer} \\ \text{chemical fertilizer} \end{array} \right\}$ ? If yes....

	Cost (baht)	Quantity (kg)	Market place	Reason for buying there <sup>4</sup>	Transport mode	First used (year)	Reason for using in that year
1				k l m n.....			
2				k l m n.....			
3				k l m n.....			
4				k l m n.....			
5				k l m n.....			

<sup>4</sup>k = Cheap  
 l = Near and convenience  
 m = No other market  
 n = Other (state)



9. Did you hire farm labour? If yes...

	Crop	Cost (baht)	Did you think there's enough man-power?
1			
2			
3			
4			
5			

Did you hire farming equipment? If yes...

	Cost (baht)
1	
2	
3	
4	
5	

Did you own any farming equipment? If yes...

(Mention).....Price.....(baht) Operating cost...(baht/year)

10. Do you  rent your farm? If yes....  
 own

How much money you have to spend for rent.....(baht/year)  
tax.....(baht/year)

What was the approximate land price.....(baht/rai)

11. Have you had an agricultural advisor visit you? If yes....

How many times per year? .....

What did he advise you? .....

.....

.....

12. a. Non-farm income (average baht/month)

	Salary	Hired	Other....	Other.....	Total
Farmer himself					
No.					
No.					
No.					
No.					

b. Average non-farm expenditure (baht/month)

	All members
Food	
Clothing	
Medicine	
Ceremonies	
Entertainment	
Other	
Total	

## c. Debt (baht)

To whom owed	Principal borrowed	Outstanding amount	Interest (%)	Duration of debt to present (months)

## d. Credit (baht)

Owed by whom	Principal credit	Outstanding amount	Interest (%)	Duration of credit to present (months)

e. Shares in cooperative.....(baht)

f. Deposits in cooperative and bank.....(baht)

13. Did you live here before the road was constructed? If yes....

- increase much  
 Did your income  increase slightly  
 remain constant  
 decrease

14. Did you think that the soil in your

- farm is
- good
  - moderate
  - bad

15. Did you think that there's adequate water on your farm ?

- lack of water
- slight lack
- enough
- too much

16. What were the factors that caused production and marketing problems for you ?

	Production	Marketing
Lack of equipment		
Lack of man-power		
Low prices		
Pests		
Lack of water		
Inadequate land clearing		
Natural disaster		
Lack of vehicle		
Inaccessibility		
Lack of funds for investment		
Other .....		

VITA

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