

## **Experience of Crop Cutting Experiments in Thailand.**

In Thailand, the main methods that use for yield data survey are List Frame and Crop Cutting.

1. List Frame survey is selecting sample villages from the list of planted paddy villages as a primary sampling unit after that an enumerator interviews the leader of village and lists name of farmers who have paddy field in that period. Select sample farm households from the list as a secondary sampling unit then interview them about planted area, harvested area and production. Therefore, yield data is obtained from the result of the dividing of the total production by the total planted area.

### **2. Crop Cutting survey**

The crop cutting survey is a survey to estimate the yield per rai of a crop in an area, for example a provincial level, a regional level, etc, accurately based on the statistics theory. The real purpose of the crop cutting survey is to make “statistics” which show the crop production in Thailand. Although, conducting the crop cutting survey, we try to cut and weigh the crop at a small part (spot) in the sample farmer’s fields which is selected at random. The purpose is not to estimate the yield of the sample farmer’s field. We want only to obtain exact data on the sample part (spot) of sample farmer’s field.

Crop cutting in the real sense is a statistical survey method to estimate yield of crop in a population through cutting or digging a crop at small parts of fields. It consists of 3 points, namely, random sampling method, weighing method and estimate method. These three points are the most important elements in understanding the crop cutting method. And, the real sense of crop cutting as a statistical survey is not to estimate yield per rai in a field, but in a population.

Crop cutting survey consists of 3 parts.

1. Crop cutting survey
2. Dyke survey
3. Gleaning survey

### 1. Crop cutting survey use for yield survey.

Step of crop cutting survey as follow.

1. Select three household samples that get from list frame procedure by randomization and interview them about a number of sample fields, area of sample field, variety, planting or harvesting period, technology application, yield of production in this year and last year, etc.

2. Sketch all of paddy fields that belongs to the household samples

and places around their field.

3. Select one sample field by randomization that use sample field random table in table 1

Table 1 sample field random

total fields	No. of sample field						
1	1	6	4	11	1	16	4
2	2	7	4	12	11	17	7
3	2	8	1	13	5	18	10
4	3	9	5	14	11	19	13
5	1	10	10	15	10	20	13

If the household samples have three fields, we will get field number 2 in figure 1.

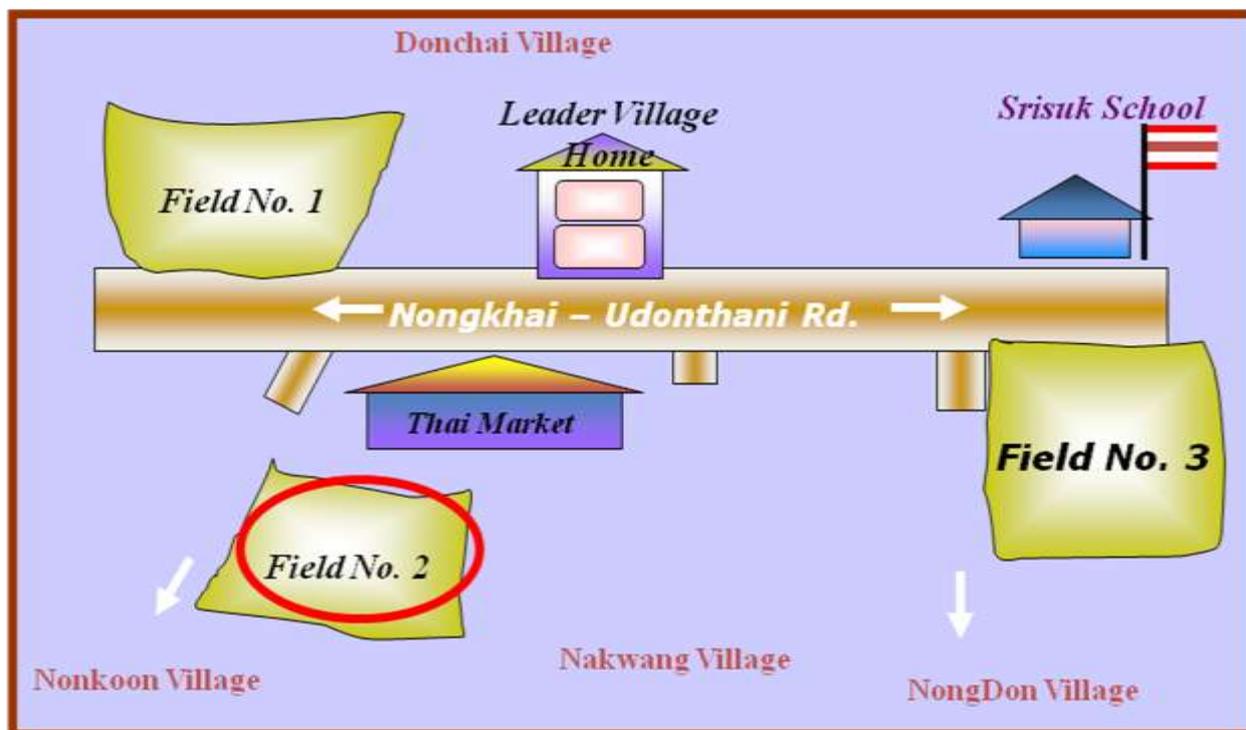


Figure 1 select sample field

4. Select block field, in case of sample field has no block field, using that sample field. But if sample field has more block field, using block field random table in table 2.

Table 2 block field random

total block fields	sample block field		total block fields	sample block field		total block fields	sample block field	
	No.1	No.2		No.1	No.2		No.1	No.2
1	1	1	6	2	5	11	5	10
2	1	2	7	2	6	12	1	7
3	1	3	8	4	8	13	3	10
4	1	3	9	2	7	14	4	11
5	2	5	10	5	10	15	6	14

5. Specify 2 sample spots in the sample field by using 30 paces method. We choose spot 1 by taking 30 paces across the row from the left corner at the bottom of the field then turn right and walk 30 paces into the field and choose spot 2 by taking 30 paces the row from the right corner at the top of the field then turn right and walk 30 paces into the field.

In case of sample field has more block fields, we will random 2 block fields by choosing 1 spot in each block field. These spots must be opposite corner. Spot 1 starts at lower left corner, lay down  $1\text{m}^2$  frame then cut the paddy plant and spot 2 starts at upper right corner, lay down  $1\text{m}^2$  frame then cut the paddy plant that show in figure 2.

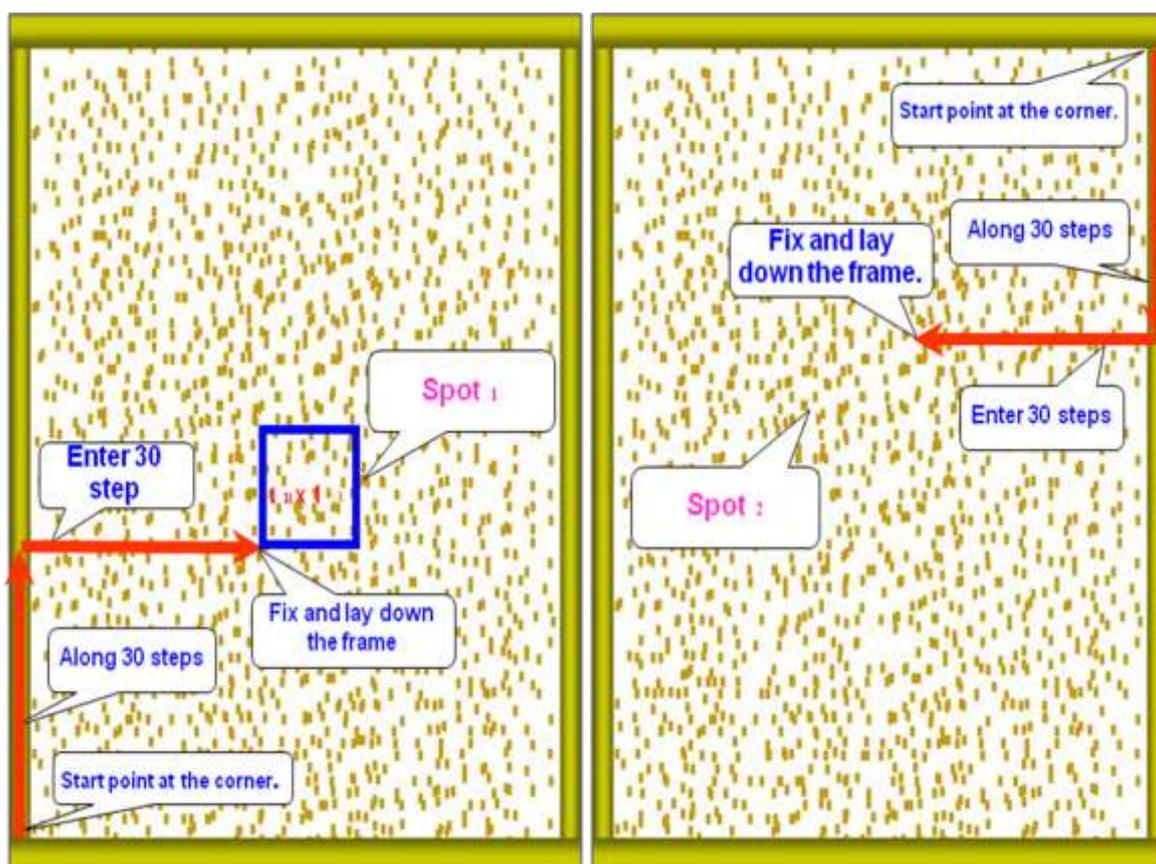


Figure 2 select spot in case of sample field has more block field

In case of sample field has no block field, we choose 2 spots, spot 1 starts at lower left corner and then use 30 paces techniques to indicate crop cutting frame, lay down  $1\text{m}^2$  frame then cut the paddy

plant and spot 2 must be start at the opposite corner by using the same techniques, lay down  $1\text{m}^2$  frame then cut the paddy plant, as follow in figure 3.

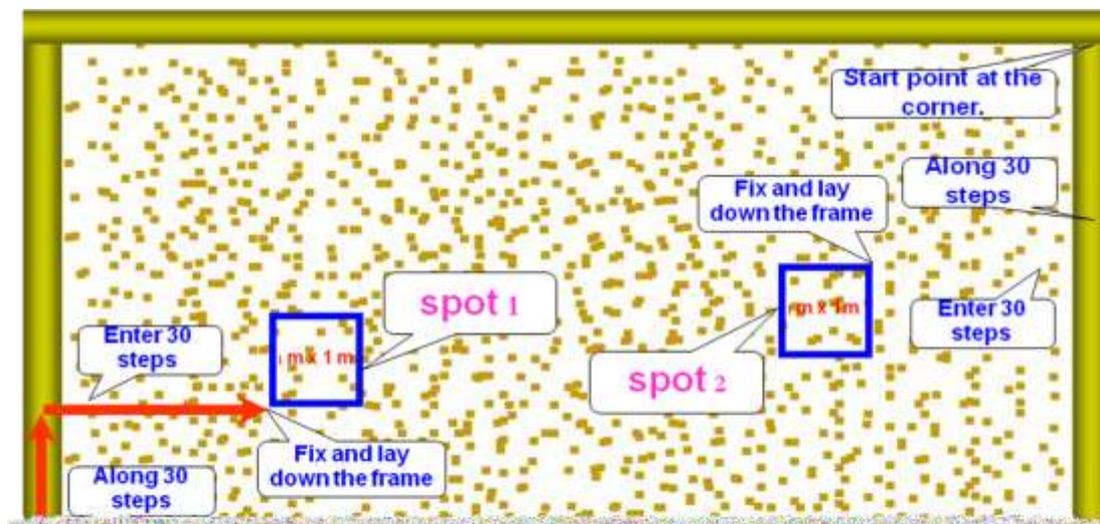


Figure 3 select spot in case of sample field has no block field

6. Threshing, cleaning, shining before weighting and moisture measuring, as follow in figure 4.



Figure 4 threshing, weighting and moisture measure

7. Calculate the primary yield data in order to transform the weight of paddy in 1-sq meter to be the weight in 1-rai by multiplying with 1,600

8. Adjust the primary yield data by calculating based on the other concerning conducts which directly effect to the overview of yield data.

**2. Dyke survey** is the survey for measure the area of non-planted area special area if non-planted area which located within those cultivation area such as ponds, tree, molehill, barn etc. The data of the real planted area must be directly included the rate of non-planted area in order to adjust the data of crop cutting conducted.

We conduct crop cutting within sample field which is excluded dyke area. In case of paddy crop cutting, we set up the  $1\text{m}^2$  frame on the rice field where rice is cultivated. Then, we cut them, weigh and estimate the yield. Therefore, the estimated yield is not included dyke area.

The dyke survey consists of 2 parts. First is measure the planted area with dyke. In this case, we use tape measuring method. Because, the tape method is very easy to measure paddy field. The tape measuring method consists of a combination of 2 techniques. One is to use Heron's method. Another one is to use offset (plus minus) method. Second is to measure the dyke area. The method is very simple. We measure the length of dyke and width of dyke. And then we multiply the both.

### **3. Gleaning survey**

Currently, the harvesting process is mostly use machine that some amount of product was lost during harvesting in rather high percentage. Therefore, the net yield data of paddy must be directly adjusted or discounted by the average rate of the lost one.

The method of harvesting loss survey is the same as crop cutting survey basically. We select same paddy fields which have harvested at random in the crop cutting sample villages, and select survey spots, then set up  $1\text{m}^2$  frame there, after that we glean the rice grains remained within the frame in the sample fields. When we conduct the harvesting loss survey, we do it before ducks, mice, geese, buffalos, etc come in the sample field. Those bring us non- sampling errors.

