

17 Field area measurement

Background

Farmers often use local units for area and weight, that have no fixed conversion to standard units. Internationally accepted standard units for area are square meter (m^2) and hectare ($= 10,000 \text{ m}^2$), and for weight gram, kilogram ($= 1,000$ grams) and ton ($= 1,000$ kg). The *kesok*, a local area unit common in some parts of Indonesia and actually meaning the piece of land that can be ploughed by one couple of buffaloes in half a day, was found to range from 700 m^2 to $1,500 \text{ m}^2$. To know the exact area of a piece of land, we have to measure it in m^2 .

But why should we have to know the area of our fields in a standard unit? The most important reason is that it helps when we have to calculate the exact amount of inputs needed, such as seed and fertilizer. The second reason is that it helps when doing experiments. We need the conversion to standard units to make a sensible comparison of treatments and yields among fields. During this activity we will come to understand when and why it is useful to use standard units, and learn to measure a field and calculate the area in square meters.



Objective

After completing this activity, the participants:

- Understand the importance of area measurement in standard units.
- Possess skills to estimate, measure and count the area of a field in square meters.

Materials

- Newsprint paper.
- Felt-tip markers.
- Measuring tape (50 m).

Activity steps

A *Local or standard?*

- A.1 The facilitator explains the objective of this activity as stated above.
- A.2 The facilitator asks the participants to mention all the local area and weight units commonly used in the village, and lists them on a newsprint. In a second column, an attempt is made to give the conversion rates for each local unit to standard units (m^2 and kg). Are these conversion rates always the same everywhere? Do the participants know how to calculate the amount of seed they would need on their field if an extension officer gives them a recommendation in kg/ha?
- A.3 Three participants are asked to separately draw a box of $1 m^2$ on the ground. Are their boxes of the same size? How large is a box of $1 m^2$? One of the participants is invited to draw a box of 1 by 1 meter on the ground using a measuring tape. The others can try how large a step it would take to cover one meter.
- A.4 Four participants are asked to make a square of 100 by 100 meters in the field by standing on its corners. The facilitator explains that the area covered between the four farmers is $100 \times 100 = 10,000 m^2$ or 1 hectare. What other shapes can a field of 1 hectare have? Does 1 hectare cover the same size everywhere?

A.5 The differences between local and standard units are discussed and an agreement is reached on the importance of knowing the areas of their fields in a standard unit.

B *Length times width*

B.1 The ways to measure and calculate the area of fields that have square, rectangular or irregular shapes are discussed or, if needed, explained by the facilitator.

B.2 The participants are divided into four small groups. Four different fields are selected in the area that are considered of the same size when expressed in a local area unit. Each subgroup is invited to measure and calculate the area of two fields. Two subgroups measure the plots using steps of one meter. The other subgroups use a measuring tape. Each of the four fields should be measured twice by using steps and twice by using a measuring tape.

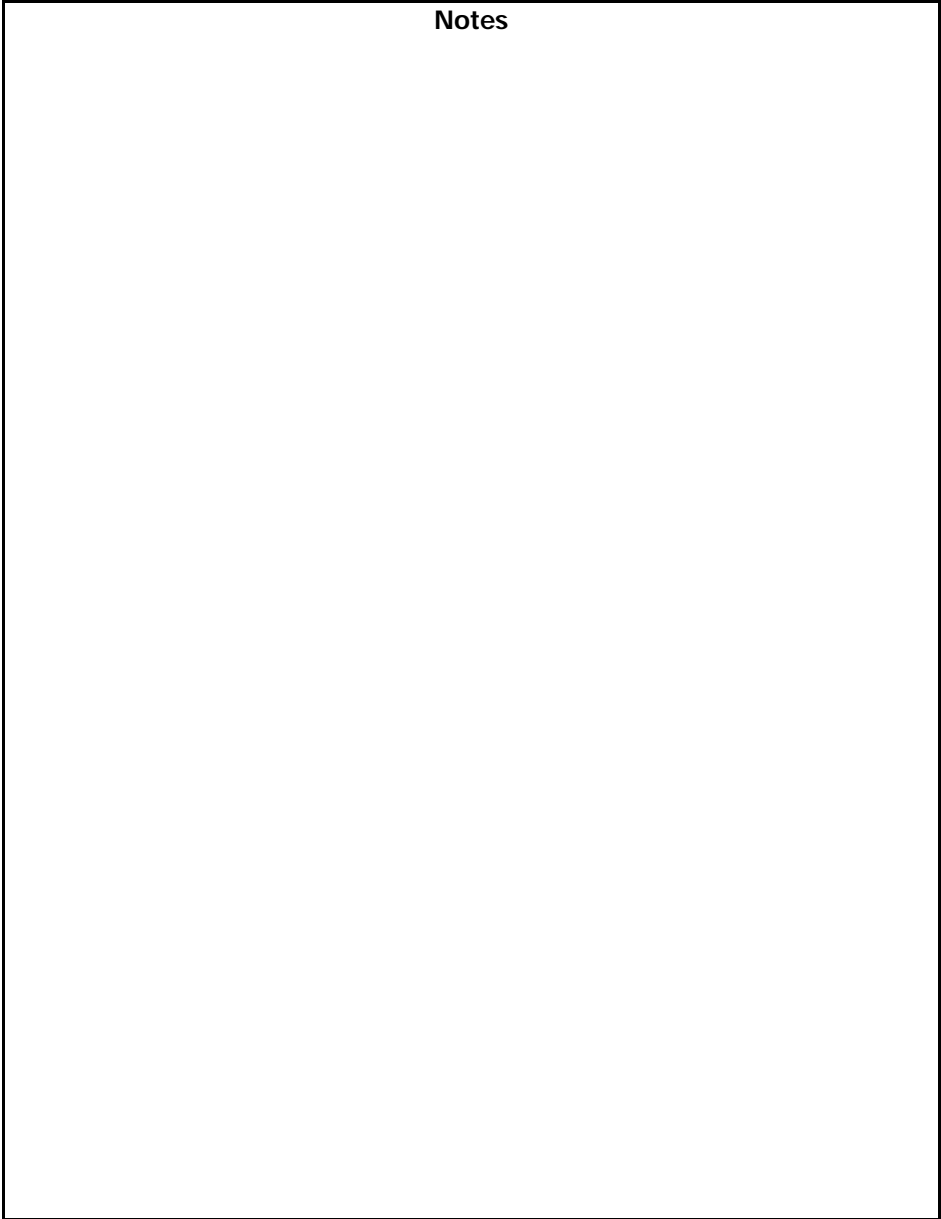
B.3 The results of the measurements of the different groups and different fields are listed on a newsprint and discussed. The following questions could guide the discussion:

- How does the method of measurement (using steps or a measuring tape) affect the results?
- How does the area measured compare to the local area unit used in the village? Was there a difference between the square meter area of fields considered to be of the same size when expressed in local units?
- Why should we know the area of the field in a standard unit?

For more information see:

- Field area measurement (Part III, Section 6.3)

Notes

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