

# Joint production of scientific and local knowledge: From local observation to scientific product of rainfall

By Hestu Prahara\* and Kristiyanto\*\*

Academy Professorship Indonesia (API) research team

\* Center for Anthropological studies, University of Indonesia (email: now4tomorrow@gmail.com)

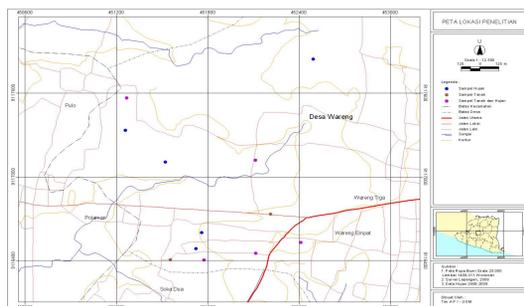
\*\* Indraprasta University (email: kris\_rasahati@yahoo.com)

## Introduction

- A group of farmers in Wareng IV, Wonosari, Gunungkidul, Yogyakarta were trained in a Climate Field School in the dry season of 2007 at the time when the API research team was carrying out their observation there.
- A full-cycle of CFS was introduced though there were no rains in the last two months of the training.
- However, no follow-up activities facilitated by the state in the post- CFS planting season.
- Farmers' learning process was continued after received rain-gauge from agro-meteorologist
- By the guidance of agro-meteorologist expert and facilitation of API research team, farmers creating their own weather information by carrying out rainfall measurement and agro-ecosystem observation and analysis.

## Farmers' rainfall measurement

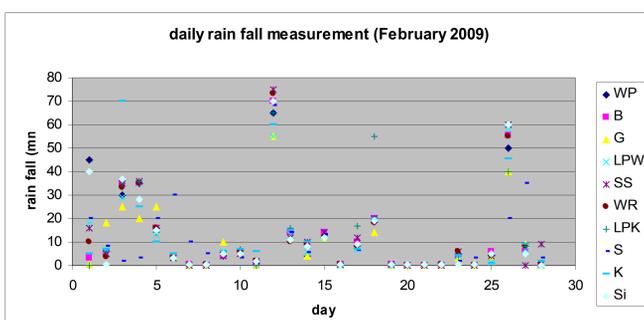
- Rainfall data collected from 10 rainfall station that were selected through farmers and scholars discussion on the basis of different types of soil and slopes.



- Members of farmers-group were divided into 10 groups (1-2 persons).
- Each group did the observation from 6—9 am daily on the rainfall data and field condition.



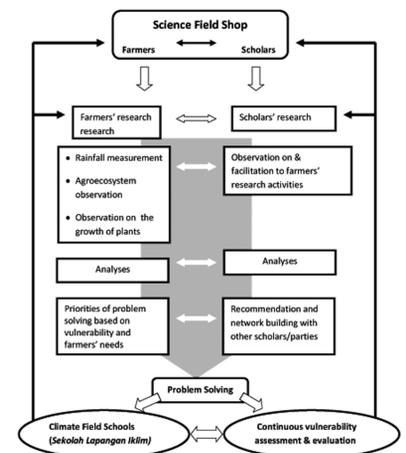
- Scholars are facilitating farmers in doing their own measurements and observations while also observing farmers' activities.
- Not only doing research, scholars also help farmers to answer their question that arise while doing observations in their field.



- Scholars help farmers in processing and interpreting the rainfall data. Rainfall graphics were produced based on farmers' data

## Science field shop as a social institution

- An intense dialogue between the two parties (farmers and scholars) is expected to be held here, with the aims of articulating and then adapt to the most vulnerable conditions the farmers face, which need to be prepared for collectively.



- This becomes the basis for developing a CFS' curriculum with the aim of solving the most urgent problems of vulnerability (e.g. Stigter 2009). A social institution: Science Field Shop will be formed as a means for scholars from various disciplines—related to the types of vulnerability problems the farmers have—and farmers to meet and have a dialogic exchange of knowledge (see Winarto 2010:38—39).

## Knowledge enrichment

- As argued by Ellen (2004:437), "In traditional societies, much knowledge... ..is encoded in language, and therefore lexical." After learning from measuring rainfall by using rain gauges, the lexical knowledge of rain was being codified in the form of numbers (in millimeters).

Categories of rain in local terms	Rain characteristics	Impacts on soil	Equivalent in numerics
<i>Udan kremun</i>	Small rain, very soft, short duration	No paths on the soil	Can't be measured ( )
<i>Udan thletik</i>	Fast-small rain, lasts only a minute	No paths on the soil	Can't be measured ( )
<i>Udan gerimis</i>	No sound of the rain, can be felt by hands, long duration	No paths on the soil in short duration of rain. Drops on the crops in long duration of rain.	0.5—5 mm (depends on rain duration).
<i>Udan klithak-klithak:</i> • <i>Udan klithak-klithak sedêlo</i> • <i>Udan klithak-klithak suwê</i>	Small rain with the sound as: "thik-thik" on the roof. Some farmers categorize this rain similar to no. 3. • Short duration • Long duration	Some paths on the soil: the soil becomes wet in both the short- and the long-duration of rain, but no standing water in the field.	• 1—3 mm. • 3—5 mm.
<i>Udan pral-priil</i>	Small rain in April which does not fall every day, only once in a while either in short- or long-duration. Sound on the roof.	Similar paths to no. 4 (soil becomes wet, but no standing water in the field)	1—5 mm or 5—10 mm.
<i>Udan ora deres nanging kerep</i> (not heavy but frequent-intense)	Not heavy, but noisy on the roof with long-duration of rain. Another term: " <i>udané awêt</i> " (persisting rain)	On top of "red-soil": the soil becomes very wet. On top of "heavy-black soil": some standing water on the soil.	<.
<i>Udan deres bres</i>	Heavy rain, very noisy on the roof, harder than no. 4, but usually does not persist in a long-duration of rain.	The soil becomes very wet, sticky, and leaves holes when people step on it.	>.
<i>Udan bar-ber</i> (very heavy rain) and <i>banjir</i> in very heavy-intense rain which flooded the field.	Heavy rain in September, October, November, December; high frequency and intensity, long duration.	If the rain lasts for one day, there will be standing water in the field, especially on heavy black soil. In the absence of drainage, the field becomes flooded.	> (in 2008/09, up to >)

## References

- Ellen, R. (2004) 'From Ethno-Science to Science, or "What the Indigenous Knowledge Debate Tells Us about How Scientists Define Their Project,' *Journal of Cognition and Culture* 4(3):409—450.
- Winarto, Y.T. 2010. Climate and Culture: Changes, Lessons, and Challenges. Unpublished Scientific Speech in the Award Ceremony and Scientific Paper Presentation of the First Academy Professor in Social Sciences and Humanities at Universitas Indonesia. Depok: Universitas Indonesia, The Royal Netherlands Academy of Arts and Sciences, and the Indonesian Academy of Sciences. 4 March 2010.
- Stigter, C.J. (2009). Agricultural meteorology over the years and new priorities and consequences for curricula. Chapter 3 in "Guidelines for curricula in agricultural meteorology". Supplement No. 2 to "Guidelines for the education and training of personnel in meteorology and operational hydrology". Volume 1. WMO 258, Geneva. [www.wmo.int/pages/prog/etr/documents/258\\_vol1\\_Supp\\_2\\_1.pdf](http://www.wmo.int/pages/prog/etr/documents/258_vol1_Supp_2_1.pdf)