

UNDERSTANDING FARMERS' NEED TO CLIMATE INFORMATION¹

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Abstract

Availability of good skill seasonal climate forecast will be very useful for farmers to assist them to tailor their cropping strategies to the forecast so that the climate risks can be minimized or avoided. This study aimed to identify type of relevant climate forecast information for potato and chili farmers of Pengalengan. The study was done through interview with 60 farmers. The study reveals that the most important climate information required by farmers is the onset of rainy season and then followed by amount of rainfall, and number of rainy days during the seasons. About 75% of farmers said that they need the information at least one month before planting to enable them to prepare better planting strategy. For potato farmers, they expect that they can get information on the onset of rainy season around August. However, the increase in farmers' capacity to use seasonal climate forecast should be followed by supporting policies or regulations or resources to maximize the benefit of using the forecast, such as price policy, and good storage facility to accommodate surplus production resulting from changing planting strategy.

Key words: seasonal climate forecast, planting time, potato, chili, Pengalengan

Abstrak

Ketersediaan prakiraan musim dengan skill tinggi sangat diperlukan bagi petani untuk menyesuaikan strategi budidaya dengan informasi prakiraan tersebut sehingga risiko iklim dapat diminimumkan atau dihindari. Kajian ini mengidentifikasi informasi prakiraan yang relevan bagi petani kentang dan cabe Pengalengan, Bandung-Jawa Barat dengan menginterview 60 petani. Hasil analisis menunjukkan bahwa informasi iklim yang dianggap paling penting bagi petani ialah awal masuk musim hujan dan kemudian diikuti oleh banyak hari hujan dalam musim. Sekitar 75% petani menyatakan bahwa mereka membutuhkan informasi tersebut minimal satu bulan sebelum tanam supaya mereka dapat mengatur strategi budidaya dengan baik. Untuk petani kentang, mereka mengharapkan dapat memperoleh informasi prakiraan awal musim hujan sekitar Agustus. Namun demikian para petani mengungkapkan bahwa peningkatan kemampuan mereka dalam memanfaatkan informasi iklim tidak akan bermanfaat banyak apabila tidak disertai dukungan kebijakan dan peraturan atau sumberdaya yang memungkinkan mereka untuk bisa memaksimalkan keuntungan dari menggunakan informasi prakiraan tersebut. Kebijakan yang dimaksud diantaranya kebijakan harga, dan ketersediaan fasilitas gudang yang dapat mengakomodasi kelebihan produksi yang diperoleh dari perubahan pola budidaya yang mereka lakukan.

Kata kunci: prakiraan musim, waktu tanam, kentang, cabe, Pengalengan

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1. INTRODUCTION

Climate fluctuates from time to time and also varies between locations. As crops in the rainfed system mostly depend on rainfall to get the water, the variability of the crops' yield is significantly correlated with variability of rainfall. Availability of good skill seasonal climate forecast will be very useful for farmers to assist them to tailor their cropping strategies to the forecast so that the climate risks can be reduced (Boer and Wahab, 2007). A number of studies showed that using the good skill climate forecast will increase the economic benefit of farmers (Mjelde, and Penson, 2000; Letson et al, 2005; Surmaini, 2006).

The adoption of climate forecast information by users in many countries, particularly developing countries is still low. Some of reasons are that (i) climate forecast information may not meet farmers needs, (ii) climate forecast information contain probability which are difficult to understand by farmers, (iii) capacity of farmers in translating climate forecast information for practical use is very limited, (iv) the information is not timely due to ineffective dissemination system, and (v) many farmers are not aware of economic value of using climate forecast information (Boer and Setyadipratikto, 2003). To enable the climate producer to produce climate information that is relevant to farmers' need, a survey is required. This study aimed (i) to identify main factors affecting variability of potato and chili yields at Pengalengan, (ii) to determine type of climate information required by potato and chili farmers, and (iii) to determined appropriate time for the climate producers to provide the information to the farmers.

2. METHODOLOGY

An interview was conducted to 60 potato and chili farmers at three villages, Marga Mulya, Pulosari and Warnasari, Kecamatan Pengalengan, Kabupaten Bandung. Among the three villages Marga Mulya is the main potato growing area of Pengalengan. Total planting area for Potato at Marga Mulya is 2,852 ha, while Pulosari and Warnasari only 179 ha, and 342 ha respectively (Dinas Pertanian Pengalengan, 2003). The questionnaire was developed to understand type of favorable and unfavorable climate for growing of the crops, type of relevant climate information for potato and chili farmers, time of delivery and medias that commonly used by farmers to get forecast information. The data was being analyzed using descriptive statistic and farmers' responses to the questions were summarized in the form of histogram.

3. RESULT OF ANALYSIS

3.1. Favorable and Unfavorable Climate for Potato and Chili Farmers

Based on interview to 60 farmers, it was found that main factors that affect farmers lost were instability of output price and then followed by pest and diseases, extreme climate events and high input price (Figure 1). However, they also said that unfavorable climate often caused significant lost to their crops in particular in the last ten years. According to farmers, unfavorable climate related to length of seasons, amount of rainfall and characteristics of the seasons. Most farmers said that the unfavorable climate was a condition when length of dry season or wet season is longer or shorter than normal (Figure 2). In addition, some other farmers said that too much rain with high intensity or occur in short period also caused a serious impact to crop yield in particular chili.

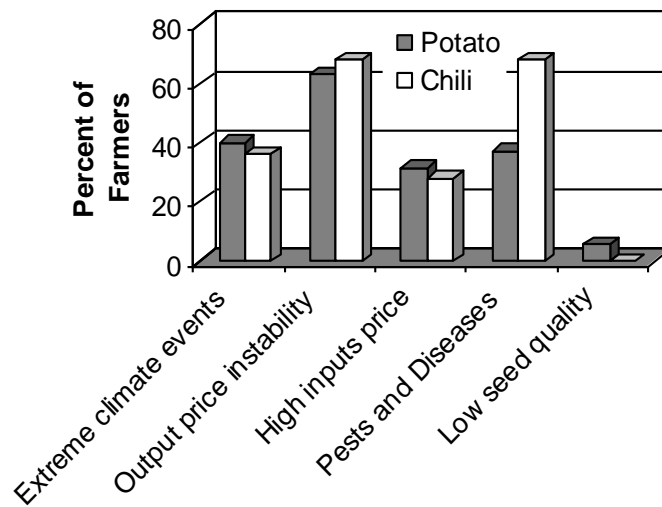


Figure 1. Farmers' perception to factors affecting their lost at Pengalengan (Note: one farmer could give more than one answer)

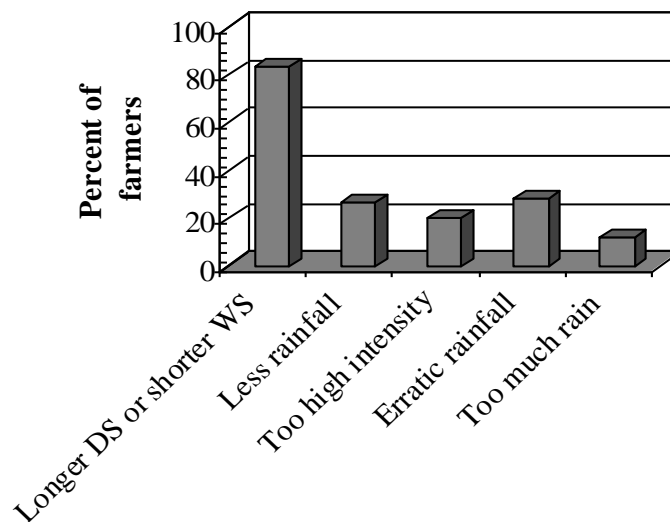


Figure 2. Farmers' perception about unfavorable climate (Note: one farmer could give more than one answer)

Farmers' perception about favorable climate also varied among farmers. The favorable climate was defined based on rainfall condition during the three stages of crop development, i.e. early stage (seedling emergence to early vegetative growth), mid stage (active vegetative growth to flowering and seed initiation) and later stage (seed or tuber development and harvesting). Most farmers said that favorable climate was a

condition when rainfall during early, mid and later stage of its development was medium (M), high (H), and low (L) respectively (Figure 3). Majority of farmers said low rainfall meant that rain occurred only once in every 3 or more days, medium if rain occurred 2-4 times in every week, and high if rain occurred almost every two days with high intensity.

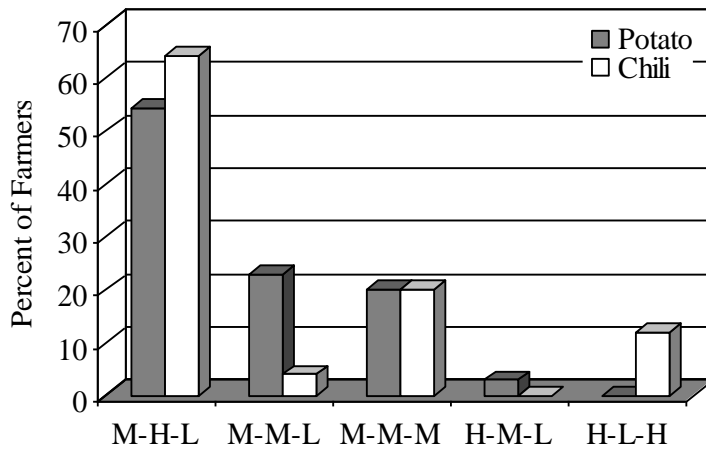


Figure 3. Farmers' perception about favorable climate for potato and chili. Note: M-H-L means rainfalls during the early, mid and later stages of crop development were medium, high and low respectively

3.2. Type of Climate Information and Time of Delivery

The most important climate information required by farmers is the onset of rainy season and then followed by amount of rainfall, and number of rainy days during the seasons (Figure 4). About 75% of farmers

said that they need the information at least one month before planting to enable them to prepare better planting strategy. For potato farmers, they expect that they can get information on the onset of rainy season around August.

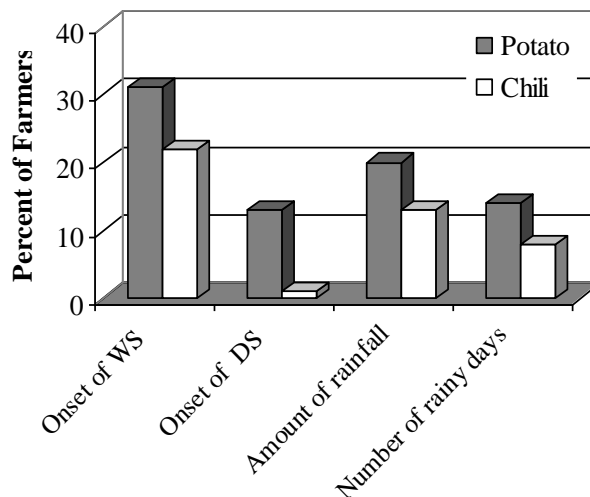


Figure 4. Type of climate information required by farmers

3.3. Source of Climate Information

Based on the survey, all farmers said that they need climate information for managing their crops. Ways to get the information varied between farmers (Figure 5). Many farmers used their own prediction based on their past year experiences. Sometime they got the information from

extension workers. Less than 40% of farmers got the information from the BMG (normally from TV news). All of farmers who used their own prediction said that their prediction were not always right. Therefore, only 6% of these farmers said that they satisfied with their own prediction.

4. DISCUSSION

The result of the survey indicates that the most important climate information needed by farmers is the onset of rainy season. False rains occur early September normally trigger farmers to start planting. Farmers who start planting early September while the onset of rainy season delays to October or November will have crop failure or get low yield due to poor seedling. On the other hand, farmers who delay their planting up to November due late onset of rainy season may also have low yields as the seeds they used will have lose their viability. According

to farmers, seeds still have good viability if they are stored not more than three months. These suggest that farmers may use the information on the onset of rainy season at least for two purposes. First is to determine suitable planting time for potato for rainy season (September-January). Second is to define suitable time for latest planting in dry season for seed production used in the rainy season (May-July). In the dry planting season, farmers normally plant the crop in rice field which are close to source of irrigation water and it is aimed only for seed production not for consumption or trading.

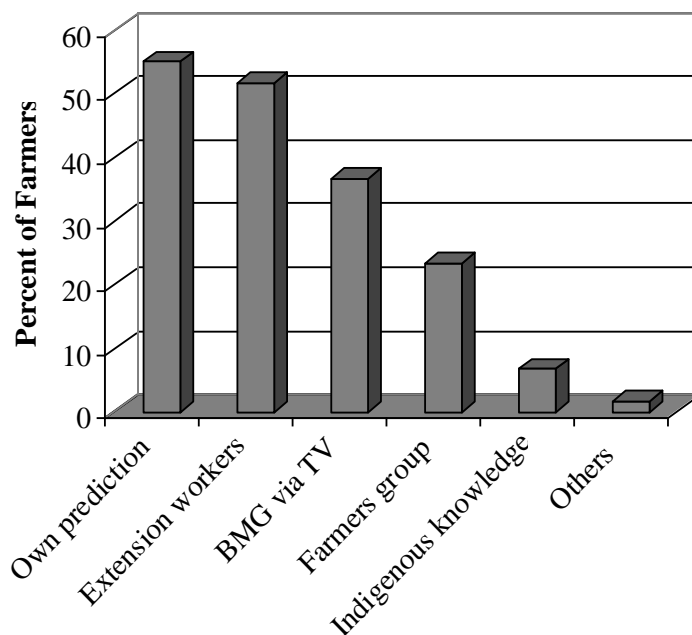


Figure 5. Source of climate information (Note: one farmer could give more than one answer)

Farmers also considered that number of rainy days also important. This may imply that length of dry spells or wet spell during the planting season also crucial for the crops. Previous studies suggests that long wet spell normally causes severe diseases problem in particular *Phytophthora* (Dwiastuti and Djoema'ijah, 2000; Duriat et al., 1994; Suhardi, 1983). Similarly, heavy rainfall that occurs during Ceboran season will make paddy fields too wet and risk to *Phytophthora* disease will increase. From the interview, farmers said that the heavy rain that occurred during Porekat season in 1998 (La-Nina years) caused serious disease problem.

At present, types of climate information produced by Bureau of

Meteorology and Geophysics (BMG) are the onset of rainy season and dry season, and characteristics of the seasonal rainfall whether they will be below normal, normal or above normal. Rain is said to be normal if the amount of rain is between 85% and 115% of the long-term mean (normal), below normal if the seasonal rainfall is less then 85% of the normal, above normal of the rain is more than 115% of the normal. The seasonal climate forecast is given twice in a year, i.e. early March and early September. Early March is to forecast onset of dry season and early September to forecast onset of rainy season. Based on this survey, current time of climate forecast delivery was too late for potato farmers at Pengalengan. It is suggested that

the local BMG should vary the time of climate forecast delivery by site and by type of farmers. The attention should be given to agriculture production centre such as Pengalengan.

High forecast skill for onset of rainy season may have significant impact for potato farmers at Pengalengan. About 50% of farmers who were interviewed during the study stated that the lost of production due to climate mostly occurred in the rainy season planting (September-January). Based on the statistical data mean total planting area in September were about 200 ha. If the forecast on the onset of rainy season would delay to October or November were given one month ahead (around August), this 200 ha area could be saved. However, if too many farmers start planting in November due to late onset of rainy season, it will create another problem. Potato price during harvesting time (around early February) normally decreases, as the potato supply in this month will increase than normal. From the interview, farmers expected that the government could provide better storage facilities, so that they can keep some of their production in order to control the price. This result suggests that the increase in farmers' capacity to use seasonal climate forecast should be followed by supporting policies or regulations or resources to maximize the benefit of using climate forecast information.

Boer and Faqih (2004) found that the characteristic of July-Oct rainfall at Pengalengan could be well predicted from May-June SOI (Southern Oscillations Index) and IOD (Indian Dipole Mode). When July-Oct rainfall is forecasted to be below normal, it may imply that the onset of rainy season will also be delayed. As the onset of rainy season may be well forecasted by SOI and IOD, it may be worthwhile in the future studies to examine direct relationship between these indicators and actual and future prices of this commodity. Chapman *et al.* (2000) said that this information might assist the decision process of those who use future markets to manage price risk (hedgers) and those who accept the risk (speculators).

5. CONCLUSIONS

1. Climate forecast information with high skill is required by farmers to manage climate risks effectively.
2. The most important climate forecast information for potato farmers of Pengalengan is onset of rainy season and number of rainy days within the season as most of crop failure at Pengalengan due to the occurrence of false rain.
3. The onset forecast is expected to be received by potato farmers on August.
4. Supporting policies such as price policy and good storage facility is required for maximizing the benefit of using good skill forecast.

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