Saving the Icon: Apple Farmer Attitude to Climate Change in Batu City

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# Apple farmer characteristic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Details</th>
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<tbody>
<tr>
<td>Level of education</td>
<td>Junior high</td>
</tr>
<tr>
<td>Land ownership</td>
<td>0.4 hectares/average</td>
</tr>
<tr>
<td>Type of farming</td>
<td>Non organic</td>
</tr>
<tr>
<td>Number of labor</td>
<td>2-3 person/ha</td>
</tr>
<tr>
<td>Productivity</td>
<td>15 tons/ha</td>
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Changing in climate

Source: KRAPI, 2012

How farmer witness changes in environment

- Temperature increased: 77%
- Rainfall decreased: 88%
- Extreme weather events increased: 85%
- Pests increased: 35%

Base: 171
Apple farmer feeling impacts of changes in climate now

FEELING HIGH IMPACT NOW  |  FEELING HIGH IMPACT IN THE FUTURE

Base: 171

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How are Apple farmer being impacted now

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Increasing temperature</td>
<td>Increasing number of pest outbreak</td>
</tr>
<tr>
<td></td>
<td>Apple seeds failed to germinate properly</td>
</tr>
<tr>
<td>Changing wind and precipitation patterns</td>
<td>Increasing evapotranspiration</td>
</tr>
<tr>
<td></td>
<td>Decrease in crop production</td>
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<tr>
<td>Changing in season</td>
<td>Shifting crop calendar</td>
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“The rainy season is supposed to occur within a month ending with “ber” (September–December), nowadays it has flipped over. Water pours down in January to February and this month almost no water available. This is unusual.”

Source: FGD Batu, 2014
How well informed the farmer feel

**NUMBER OF FARMER HEARD INFORMATION OF (%)**

- Precipitation: 97%
- Temperature: 93%
- Moisture: 69%
- Wind Pattern: 65%

Base: 171
Current action to boost productivity

- Construct irrigation system
- Change planting season
- Shifting cultivation
- Change crop variety
- Change / add more pesticide

Base: 171
Communicating Mitigation & Adaptation

PSA, adlibs, talk show, magazine show, off air road show, live discussion in Batu, Malang (Yogaswara et al, 2013)
Other challenges
Local actors in adaptation

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Roles, Task and Responsibility</th>
<th>Potential Contribution to Climate Change Adaptation</th>
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</thead>
</table>
| BAPPEDA (Regional Development Planning Agency) | • Develop and implement local government policy, especially in relation to local government planning.  
• Engage in policy formulation, coordination of development planning | Incorporate programs from local government agencies into integrated local government development programs |
| BMKG | - To provide climate variables data | Observer  
• Data collection  
• Climate modelling |
| Local agriculture agency | Implementing local government action in the agriculture sector through technical formulation | • to promote livelihood adaptation and reduce vulnerability to climate change.  
• Seek out support environmentally friendly technology.  
• Developed, and is constantly updating, of diversified good practice  
• To endorse locally prioritized adaptation practices |
| Farmer organization | • To build capacity among farming communities in terms of conservation management. | • To continue Public Awareness on Climate Change campaign by ICTTF and local government  
• Training and workshops can then take place to raise awareness of the farmers regarding techniques to save and store seeds.  
• To participate and supporting in farmer field school  
• Farmers are taught about climate change and ways in which they can adapt their farming i.e.; integrated pest management, production of healthy crops |
| Local Disaster Management Agency (BPBD) | Develop and implement local government policies and programs related to DRR  
Formulating technical function, providing public services, technical engineering | Formulate and implement disaster management programs to increase community awareness |
| Local NGOs | Aims to protect and support environmentally sustainable development and conducts programs aimed at fostering CSR in term of social and environmental protection | Work either independently or in cooperation with the government to improve the environment and strengthen community understanding of climate change hazards |
Current limitations and potentials

Limitations

• Poor understanding of local government to take up climate change as an issue
• Number of agriculture policy related to adaptation and mitigation in changing climate is limited
• Disconnection between local and national policy on climate change issue
• High dependency on outsource funding

Potentials

• Climate field school is one of pioneering activity
• Starting in 2013 local agriculture department introduce organic farming
• Apple farm as domestic tourism destination
• Adequate climate variables data from BMKG
What are the farmer current needs

• Safeguarding Apple agriculture by changing traditional practices.
• Need of information presenting the cost / benefit in putting climate resilience agriculture practices
• Model of adaptation or actions to improve business resilience to climate change.
What are the local government current needs

• An applicable climate projections in local level
• Research on farmer adaptive capacity
• More research to understand production system (climate ready crops)
• Models to enhance adaptive capacity at field
• Supporting tools in soil and water conservation
• Recommendation on soft adaptation
• Documenting good practice
Thank you