From farmer field schools to climate field labs

Farmer researcher networks as instrument to develop smallholders´ adaptive capacity

Silke Stöber[1], M. Khais Prayoga[2], Nedim Sulejmanović[1], Kustiwa Adinata[3], Neni Rostini[2], Mieke Setiawati[2], Tandu Ramba[4], Hari Iswoyo[5], Kaimuddin Mole[5], Rahmansyah Dermawan[5], Amir Yassi[5], Tualar Simarmata[2]

[1] Humboldt-Universität zu Berlin, Centre for Rural Development (SLE), Germany
[2] Universitas Padjadjaran (UNPAD), Bandung, Indonesia
[3] Ikatan Petani Pengendalian Hama Terpadu Indonesia (IPPHTI), Indonesia
[4] Gereja Toraja, Motivator Kondoran, South Sulawesi, Indonesia
[5] Universitas Hasanuddin (UNHAS), Makassar, Indonesia

Climate Change in Indonesia

Economic growth and industrialization are the top priorities in Indonesia
→ Land use change and forestry plays a key role in CC mitigation as the sector accounts for around 60% of Indonesia's GHG emissions.

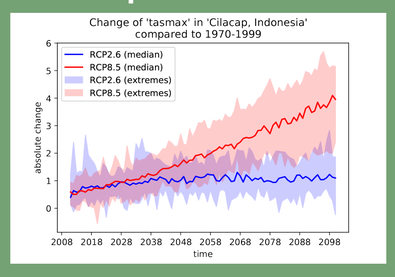
Leverage points for climate change mitigation are reducing methane emissions from rice cultivation, contributing most to GHG emissions (37%), followed by nitrous oxide emissions from cultivation of organic soils (24%) and use of fertilizers (10%).
→ calls for integrated soil fertility and water management in rice cultivation through system of rice intensification (SRI) and organic fertilization.

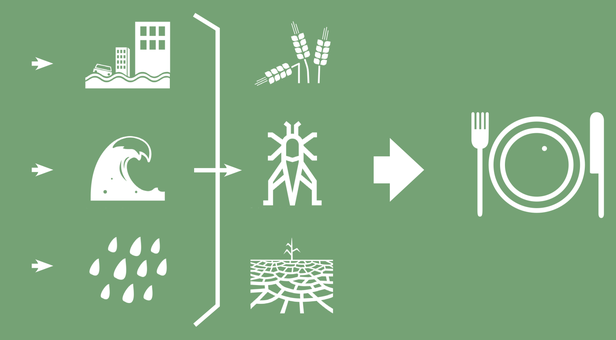
90% of Indonesia's rice is produced by 37 million smallholders, need to link farmers and scientists to guide policies for climate change-ready rice and ecological intensification practices

Partner regions:

Impacts on Agriculture

projected temperature rise





soil degradation through erosion & salinisation

increased crop failure & drop in nutrition content

more floods

CRAIIP APPROACH

Farmer Interest
learning
stable yields
marketable products

Academic Interest
reducing greenhouse gas emissions
robust data
gender equality

Climate Field School

Tools
Farmer Field Schools
On-Farm Trials
Agroecological Learning

Approach
Science for Impact
Role Pluralism of Academics

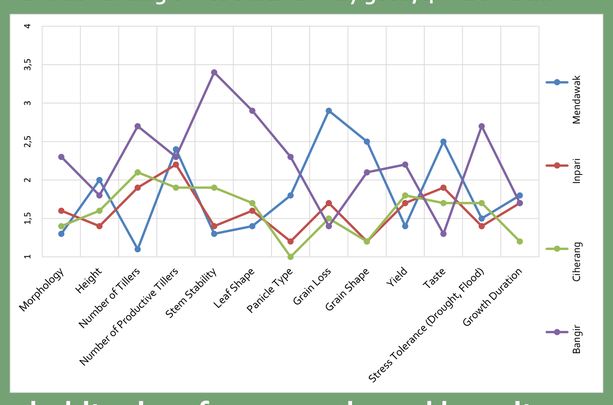
Adaptive Technologies

Ecological Intensification

Climate Field Lab (CFL)

Preliminary Results

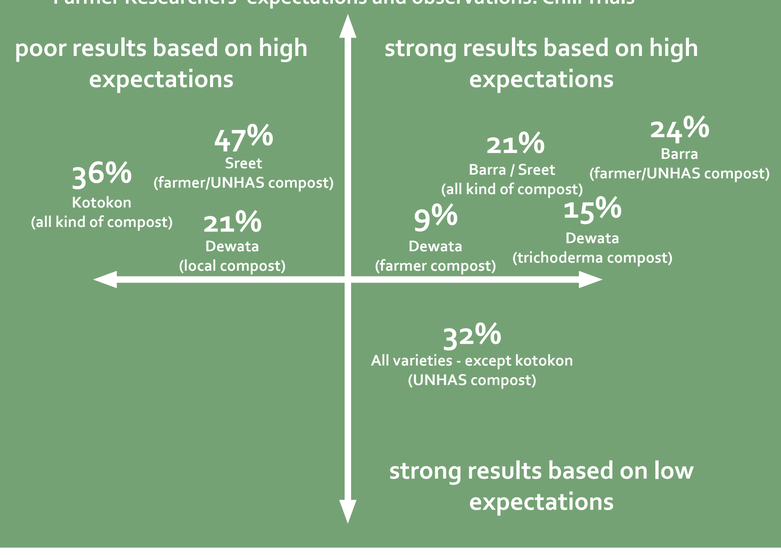
Farmers' ranking of rice traits: 1= very good, 4= insufficient



- **habitual preferences, shaped by culture and tradition:** the variety promoted by the local government (Ciherang) is most preferred by farmers even though its attributes are only ranked average
- the traditional local variety (Bangir) has poor plant physiological features, yet its taste is ranked best
- **there is no win/win situation as there are trade-offs with each variety:** the flood-tolerant variety (Mendawak) has good plant morphological features, but underperforms related to taste and marketability

→ farmers know exactly which traits they want (particularly taste and stress tolerance)
→ grain shape highly influences market price

Farmer Researchers' expectations and observations: Chili Trials

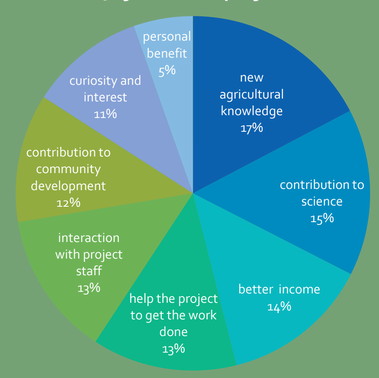


- Unexpected low performance of the local variety Kotokon, surprisingly good results by lowland varieties
- The benefits of Trichoderma are not yet visible, though the benefits of improved compost are recognised.
- Results are distorted by occurrence of many pests and dieases although these were controlled for

Lessons Learned

- Climate variability and change awareness and knowledge shall be integral part for everyday's farming decisions **(agro-meteorological learning)**
- Climate field labs shall combine simple OFT with training farmers on ecological practices **(agro-ecological learning)**
- Multiplier effect by regular and informed dialogue between farmers, villages, regions, NGOs, GOs, academia: huge multiplier effect **(cross-learning)**

As a farmer, I joined the project because...



Sources:
Sang Gyu Lee, Hee Ju Lee, Sung Kyeom Kim, Bo heum Mun, Jin Hyoung Lee, Hee Su Lee and Kyung Ran Do, Influence of Drought and High Temperature on the Physiological Response and Yield in Hot Pepper, Journal of Environmental Science International, 10.5322/JESI.2018.27.4.251, 27, 4, (251-259), (2018).
Data: FAO STAT

funded by: Brot für die Welt, Diakonie Katastrophenhilfe, Member of actalliance