A RANDOMIZED FIELD EXPERIMENT IN INDONESIA

IndORGANIC

BASELINE REPORT

Evaluating the effect of training on knowledge about and adoption of organic farming practices.

UNIVERSITÄT PASSAU

AOI Indonesia Organic Alliance

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A Randomized Field Experiment in Indonesia

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- Baseline Report -

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This baseline report is part of the interdisciplinary research project IndORGANIC, which is funded by the German Ministry for Education and Research. IndORGANIC aims to investigate the potential of organic farming in Indonesia, specifically Java. This report presents the baseline survey results of a sub-project that explores the effectiveness of interventions on knowledge about and adoption of organic farming practices using a randomized control trial. In addition, and in the longer term the socio-economic impacts of adoption will be assessed. The purpose of this experiment is to provide non-government institutions and policy makers with evidence on the effectiveness of training on organic farming. The first follow up survey is planned for March 2019.

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1. INTRODUCTION

The agricultural sector in Indonesia faces several challenges, including food security and sustainability for a growing population, environmental degradation and climate change, improving income and living standards for smallholders and an aging workforce in the agricultural sector. Similar to many other countries, many young people perceive the agricultural sector as unattractive and prefer to migrate to more urban areas in search for employment.

Organic farming has the potential to address some of these challenges. It is more environmental friendly than conventional farming and potentially it could increase the attractiveness of farming for the younger population if it is perceived as a new modern technology. However, the adoption of organic farming is still at a very low level in Indonesia. Although various governmental and non-governmental initiatives exist, many farmers are not yet aware of organic farming practices, their potential benefits, how exactly to use them and where to market the products. Enhancing organic farming in an efficient way requires understanding the exact causes of the low take-up and how to address them.

IndORGANIC is a German Indonesian interdisciplinary research project that aims to investigate the potential of organic farming in Indonesia in general and in Java more specifically. The project is funded by the German Federal Ministry of Education and Research and based at the University of Passau, Germany. IndORGANIC cooperates with three institutions in Indonesia, the Universitas Atma Jaya in Yogyakarta (UAJY), the Institut Pertania Bogor (IPB) and Alliance Organic Indonesia (AOI). AOI is an umbrella organization for organic agriculture in Indonesia.

This report presents the baseline survey results of the economic sub-project of IndORGANIC. The sub-project explores the effectiveness of interventions to enhance the knowledge about and adoption of organic farming practices and in the longer term the socio-economic impacts.

To allow for a causal interpretation of the results, we use a randomized field experiment and expose farmers to alternative treatments that either offer (1) only training on organic farming practices and the marketing of organic products, (2) the same training but augmented by an intervention that raises awareness for the related health and environmental benefits of organic farming or (3) again the training but this time augmented by an intervention that strengthens mutual support within farmer groups with respect to a conversion towards organic farming.

These interventions were randomized across farmer groups at the village level and not the individual level to limit the occurrence of unwanted treatment spillovers, i.e. untreated participants benefit from the intervention. Some farmer groups in different villages receive no intervention and form the control group.

AOI implemented the trainings together with two of its partner organisations. There are two research regions, the province Yogyakarta and the district Tasikmalaya, which is part of the province West Java. Before the data collection for the baseline started, AOI provided a short information session in every village that is included in our sample. These information sessions served two purposes (1) allow for self-selection based on a basic interest in organic farming and the willingness to participate in farmer group events (2) collect contact details on prospective respondents. On the one hand, allowing for this kind of self-selection can be considered as more relevant in practical terms. Any organisation attempting to increase the uptake of organic farming will likely focus on the more motivated members of a farmer group that can play the role of early adopters and spread the information to potential

late adopters. On the other hand, it increases the probability of high attendance rates during the training, essential to generate any effect with the intervention.

Baseline data was collected in March and April 2018 in 30 villages in the province Yogyakarta and 30 villages in the district Tasikmalaya. In total, 1200[1] individuals were interviewed, i.e. 20 from each village. The training sessions and complementary treatments took place subsequent to the survey and were completed end of May 2018.

It is expected that the intervention results in a higher level of knowledge about organic farming methods, a higher uptake of organic farming practices, more awareness regarding the harm of some conventional farming practices and possibly also a more positive attitude towards the potential of organic farming. To assess the impact of the intervention we will compare farmers in treated farmer groups and farmers in control farmer groups at the follow up stage. Given the randomization of the intervention, this should yield unbiased treatment effects. The main purpose, however, of the baseline survey is to provide a detailed picture of the before situation and to test the balancing property, i.e. to verify whether the treatment and control groups indeed share the same characteristics. Finally, the baseline survey will help to fine tune the survey questionnaire at follow up.

The objective of this report is to present the main results from the baseline data, the balancing tests and to provide some information regarding the implementation of the intervention.

The report is structured as follows. Section 2 describes the data sampling and the data collection. Section 3 presents the main results from the baseline data. Section 4 presents the balance test over the treatment and control groups. Section 5 describes the intervention and reports on its implementation.

[1] In fact, 1201 respondents were interviewed as there were two people by the same name in on the information sessions.

2. DATA SAMPLING AND COLLECTION

2.1 SAMPLE SELECTION

To select 1200 respondents, we applied a three stage random sampling design. In the first stage we sampled villages and in the second stage we sampled farmer groups from the selected villages. In the third stage, respondents were sampled from the respective farmer groups.

In the first stage, we randomly selected 30 villages in both Tasikmalaya and the three selected districts in Yogyakarta. One district in Yogyakarta was dropped beforehand due to its unsuitability for organic crop farming. The selection of villages was based on two databases, which we obtained from the agricultural ministry of Yogyakarta and the agricultural ministry of Tasikmalaya. These databases contain all listed farmer groups in the region including their size, the respective sub village (only for Yogyakarta), the village and the sub district. For Yogyakarta, we further obtained information on the cultivation focus of the farmer groups, i.e. livestock, coffee, tea, coconut, coffee, vegetables and paddy. The database for Yogyakarta contained 3833 farmer groups and the database for Tasikmalaya contained 1616 farmer groups.

We dropped farmer groups for which we had the information that they are already organic farming groups, groups that focused on livestock, fishery or plantation crops (e.g. coffee) as well as groups that were active on the land where the new Yogyakarta airport is currently build (in Yogyakarta 805 farmer groups, in Tasikmalaya 12 farmer groups). Further, small and very large farmer groups were dropped as it would have been difficult to implement the intervention for very small or very large farmer groups. In advance to the survey, we visited each village (control and treatment) for an information session. Considering that not every farmer in the selected farmer group is interested in such an event necessitated a minimum number of farmers invited. On the other side, logistical reasons limited the possible size of these information sessions. Moreover, we expected that a higher share of trained farmers within one farmer group might be beneficial for the uptake of organic farming practices. Based on the initial farmer group lists we therefore dropped farmer groups that reported less than 20 members or more than 200 members (in Yogyakarta 150 farmer groups, in Tasikmalaya 165 farmer groups). We further dropped all sub villages (Yogyakarta) /villages (Tasikmalaya) that reported less than 60 farmer group members in total (in Yogyakarta 1486 farmer groups, in Tasikmalaya 27 farmer groups). We then obtained a sample of 1392 farmer groups in 205 villages for Yogyakarta and of 1412 farmer groups in 291 villages for Tasikmalaya. In total, we had to drop around 64 percent of the farmer groups in Yogyakarta and around 13 percent of the groups in Tasikmalaya. The more detailed initial level of information in Yogyakarta, i.e. Dusun level and agricultural focus, led to significantly higher share of dropped farmer groups in Yogyakarta.

Subsequently, 30 villages were randomly selected among the remaining 205 villages in Yogyakarta and accordingly among the 291 remaining villages in Tasikmalaya.
Given that villages are, on average, larger in Yogyakarta than in Tasikmalaya and encompass more farmers we then further randomized at the village level in Yogyakarta. One sub-village was randomly selected in each village.

In the second stage, we randomly selected a minimum of one and a maximum of three farmer groups in each sub village (Yogyakarta)/village (Tasikmalaya). In each location we randomly drew villages until the total number of farmers in the selected farmer groups was equal to or larger than 60. When the first selected farmer group reported 60 or more members we only drew one group. When the first farmer group had less than 60 members

we drew a second group. If first and second together did not have 60 members, we drew a third group (maximum of 3 groups as minimum of 20 members per group).

After identifying the farmer groups, the members in each of the selected farmer groups were invited to an information session on organic farming. In sub villages/villages where there was more than one selected farmer group, all selected farmer groups were invited together to one information session. At this stage, the implementation of our sampling strategy faced some problems and as a result not all villages from the original sample could be included in the final sample. For each village that dropped out, we resampled a new village and a new farmer group based on the process described above. There were three reasons that prevented us from keeping a farmer group in our sample: (1) some farmer groups from the list had dissolved and were thus not active anymore, (2) farmer groups did not focus on cultivating crops but for instance on processing agricultural products, and (3) farmer groups did not accept our invitation to the information session, even after repeated efforts from our side.

The information sessions were implemented by AOI. Enumerators and a field team from Germany accompanied the majority of sessions to assist with the collection of attendants' contact data. The number of attendants varied from 17 to over 50, however, on average around 25 farmers attended each session.

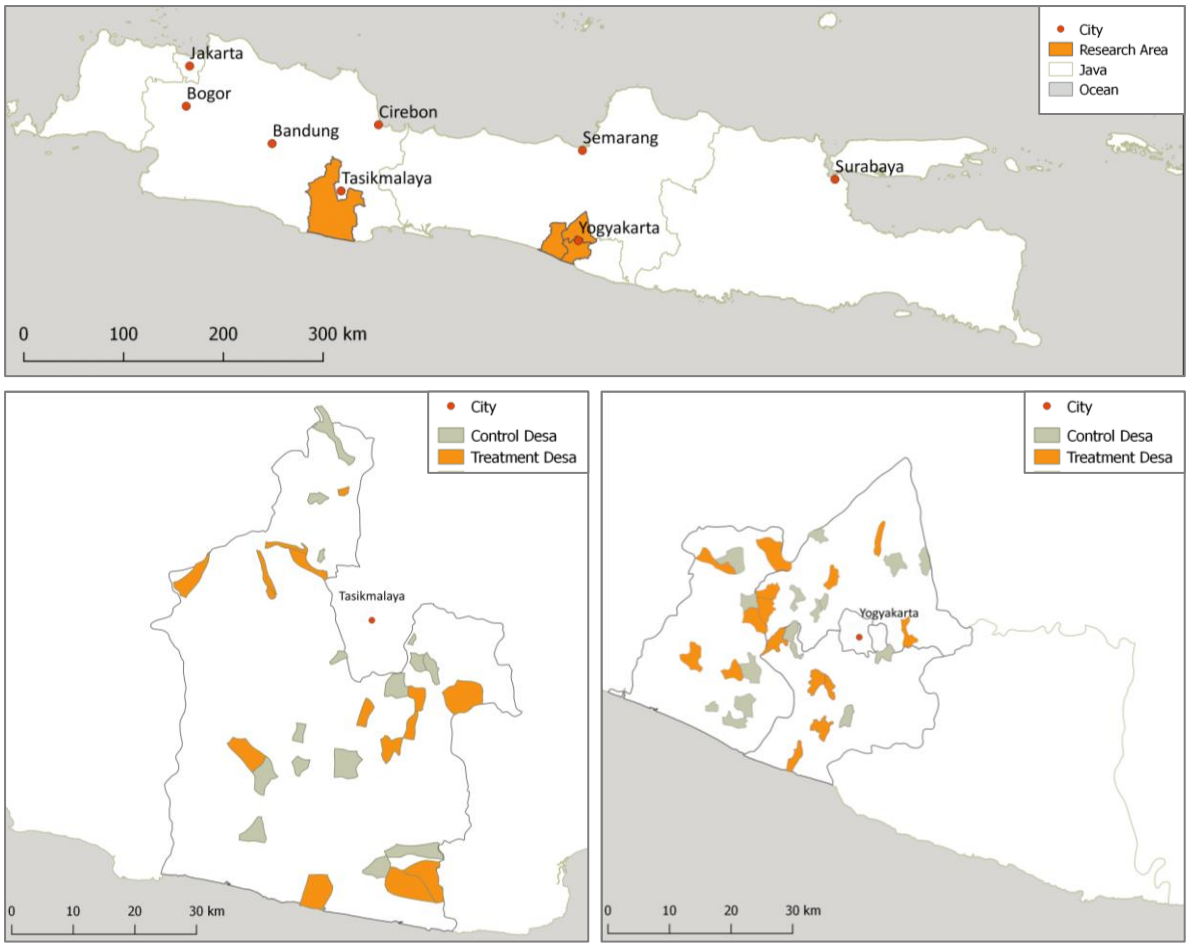
In the third sampling stage, respondents were randomly sampled among the attendants. However, in some cases there were less than 20 active farmers among the information session attendants. First, we asked whether sampled non-active members had a household member who was an active farmer. If there were still too few respondents we asked the farmer group head to provide us with contact details of further farmer group members who did not attend the information session. Thus, the randomization at the third stage could not be implemented in villages where attendance of active farmers during the information session was too low. Due to this and to avoid any bias during the interviews, none of the treatment groups was informed about the upcoming training before the survey was completed in that village.

2.2 DATA COLLECTION

Interviews took place between March and April 2018. The implementation of the survey was jointly administrated by a team from Passau, IPB and UAJY. In Tasikmalaya, the enumerators were supervised by a team member from Passau and a team member from IPB. In Yogyakarta, the enumerators were supervised by a team member from Passau and a team member from UAJY. These team members stayed with the enumerators during the whole survey period to ensure quality of the data collection.

We employed five enumerators in each location to interview the respondents. The minimum requirement for the position as enumerator was a Bachelor degree. Before the survey started, we organised a four-day enumerator training in each location. This training included a pilot survey during which the questionnaire was pre-tested. The enumerators used the software 'Surveybe' to collect the survey information on tablets. The enumerators were instructed to interview only household members with decision power regarding agricultural decisions.

Figure 1 Treatment and Control Villages on Map



3. BASELINE RESULTS

3.1 Respondent Characteristics

We collected information from each respondent and, if applicable, also from their spouse on gender, age, household position, marital status, religion and ethnicity. The majority of the respondents in our sample is male in both research regions. However, there are significantly more men among the respondents in Yogyakarta (94%) compared to Tasikmalaya (72 %). Table 42 (in the Appendix) shows that in Yogyakarta spouses, on average, were less commonly engaged in agriculture. This suggests that it is more common in Tasikmalaya than in Yogyakarta that both husband and wife work on the household farm. Given that the enumerators were instructed to only interview household members who are active farmers, this may thus explain the higher share of male respondents in the Yogyakarta sample.

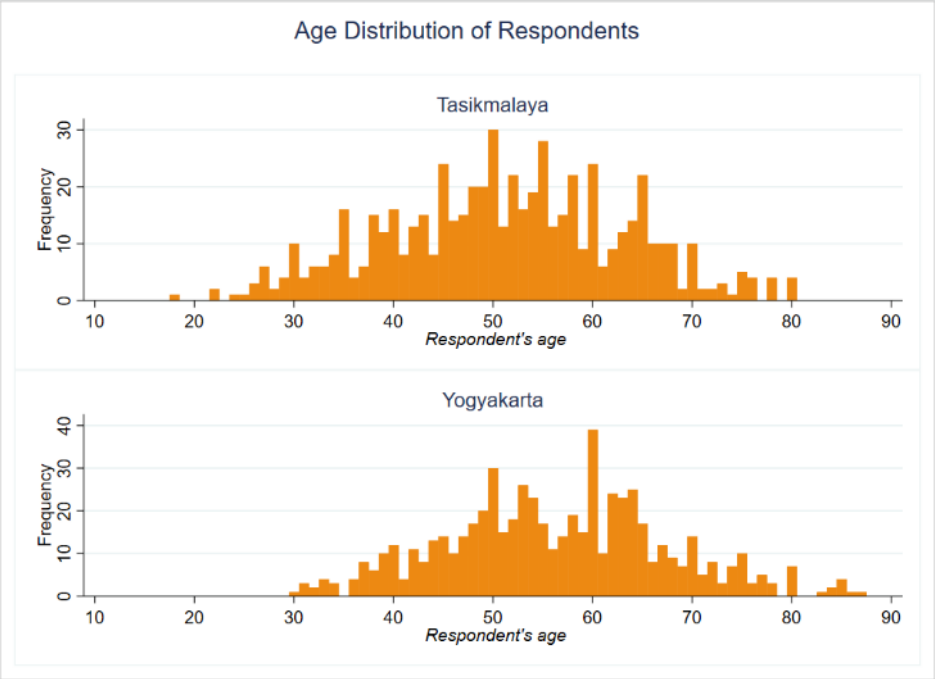
The average respondent in Tasikmalaya is around 51 years old while the average respondent in Yogyakarta is around 56 years old. Figure 2 illustrates the age distribution in Tasikmalaya and in Yogyakarta. In Yogyakarta, a sizeable share of the respondents is already over 70 years old. Given that the research region in Yogyakarta is generally more urban than in Tasikmalaya, there are potentially more non-agricultural employment opportunities close by that attract younger people. Overall, our respondents are relatively old and age will be an important factor to consider. Potentially, older respondents are less willing to adopt new technologies, including organic farming.

Household heads in Indonesia are mostly male. Consistently, most of the respondents (83%) report to be the household head. In Tasikmalaya, less respondents (73%) are household heads, which is linked to the higher share of women among respondents in Tasikmalaya. Further, the majority of the respondents is married, Muslim and either Sundanese or Javanese.

Table 1 Respondent Characteristics

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent is …				
… male	%	71.8%	94.0%	82.8%
… years old	mean	51.2	56.3	53.7
Respondent is …				
… household head	%	73.3%	93.5%	83.3%
… spouse of household head	%	25.2%	4.8%	15.1%
… child of household head	%	1.5%	1.7%	1.6%
Respondent is …				
… married	%	93.9%	89.8%	91.8%
… widowed	%	0.2%	1.0%	0.6%
… never married	%	4.2%	6.5%	5.3%
Respondent is …				
… Muslim	%	100.0%	93.0%	96.5%
… Christian	%	0%	4.5%	2.2%
… other	%	0%	2.5%	1.2%
Respondent is …				
… Sundanese	%	99.7%	0.0%	50.0%
… Javanese	%	0.2%	100.0%	50.0%
… other	%	0.2%	0.0%	0.1%
N		601	600	1201

Figure 2 Age Distribution Respondents



3.2 Household Demographic Characteristic, Housing, Asset Ownership

The following tables present descriptive statistics on socio-economic characteristics of the surveyed households. The average household has around four members. Household size is slightly lower in Tasikmalaya with 3.7 household members on average compared to 4.1 household members on average in Yogyakarta. Consistent with the age structure of the respondents, households in Yogyakarta count more elderly members than in Tasikmalaya.

Table 2 Household Demographic Characteristics

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH size	mean	3.7	4.1	3.9
# of … in HH				
… elderly (>60)	%	38.2%	73.1%	55.6%
… older kids (17-11)	%	54.7%	42.2%	48.5%
… younger kids (0-10)	%	51.8%	49.7%	50.8%
… primary school attendants	%	36.9%	29.3%	33.1%
… secondary school attendants	%	43.9%	32.3%	38.1%
N		601	600	1201

The vast majority of households in both regions owns the house they live in. Most houses have roofs made out of roof tiles and walls made out of concrete. There is slightly more heterogeneity in wall material in Tasikmalaya than in Yogyakarta. However, overall the data suggests that houses are similar in the materials used. Further, nearly all households report to have grid electricity for light. There is more heterogeneity with regard to water sources in both Tasikmalaya and Yogyakarta. Only around 30% of the households report that they mostly purchase their drinking water. Surprisingly, the share is higher in Tasikmalaya than in the more urban Yogyakarta.

Table 3 Housing

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Building HH lives in is …				
… owned by household	%	93.0%	84.1%	88.6%
… rented	%	0.0%	0.2%	0.1%
… owned by parents/family	%	7.0%	14.9%	10.9%
… other	%	0%	0.8%	0.4%
The roof of the main building is made out of …				
… concrete	%	0.8%	0.5%	0.7%
… roof tile	%	97.3%	99.5%	98.4%
… other	%	1.8%	0.0%	0.9%
The outer wall of the main building is made out of …				
… concrete	%	81.7%	98.5%	90.1%
… wood	%	10.1%	0.5%	5.3%
… bamboo	%	7.5%	0.8%	4.2%
… other	%	0.7%	0.2%	0.4%
Number of rooms is	mean	2.60	2.90	2.75
Building has grid electricity for light	%	99.5%	99.7%	99.6%
Main source of drinking water …				
… branded bottled water	%	6.8%	0.7%	3.7%
… pipe (retail payment or with meter)	%	8.8%	16.0%	12.4%
… terrestrial well/pump	%	50.7%	64.4%	57.5%
… unprotected/covered well	%	3.8%	39.4%	21.6%
… protected spring	%	19.3%	2.8%	11.1%
… unprotected spring	%	11.5%	1.5%	6.5%
… other	%	4.8%	0.2%	2.5%
Drinking water is mostly purchased	%	30.6%	25.2%	27.9%
N		601	600	1201

Most of the respondents (70% to 80%) did not access the internet in the past month. Enumerators were instructed to point out that using WhatsApp also counts as accessing the internet. A considerable share of households in Tasikmalaya, 23%, owns neither a bicycle, motorcycle, car nor a refrigerator. Comparing this with 1.5% in Yogyakarta suggests that households in Tasikmalaya are, at least in asset terms, on average less wealthy than in Yogyakarta. Most households own a motorcycle but again the share is higher for Yogyakarta.

Table 4 Asset Ownership

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent accessed internet in the past month	%	*20.1%*	*28.5%*	*24.3%*
Household owns …				
… none of the assets listed	%	23.1%	1.5%	12.3%
… bicycle	%	7.1%	87.3%	47.1%
… motorcycle	%	72.4%	93.8%	83.1%
… car	%	3.0%	8.0%	5.5%
… refrigerator	%	36.7%	37.6%	37.1%
N		601	600	1201

3.3 Respondent's Health and Education

Frequent handling of chemical inputs might affect the health of individuals engaged in agriculture. To analyse the impact of changing to a more organic way of farming on health, we asked respondents whether they suffered from fever, coughing, a cold, asthma/breathing difficulties, diarrhea, headache/migraine, skin irritation or dizziness in the last month.

Nearly half of the respondents did not suffer from any of the listed health complaints during the month proceeding the interview. The most frequent health complaint was coughing (18%) followed by dizziness (16%). The least frequent reported health complaint was diarrhea (2%) followed by asthma/breathing difficulties (3%) and skin irritation (6%). We would expect that handling of chemicals affects the occurrence of dizziness, skin irritation and breathing difficulties. However, the data from the baseline does not suggest that skin irritation or breathing difficulties are a frequent problem for our respondents.

Table 5 Respondent's Health

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent suffered from …. last month				
… no health complaint	%	48.2%	47.2%	47.7%
… fever	%	14.0%	9.3%	11.7%
… cough	%	16.8%	20.2%	18.5%
… cold	%	13.5%	10.0%	11.7%
… asthma/breathing difficulties	%	4.0%	2.5%	3.2%
… diarrhea	%	1.8%	1.3%	1.6%
… headache/migrain	%	8.5%	3.7%	6.1%
… skin irritation	%	2.3%	4.8%	3.6%
… diziness	%	14.8%	17.4%	16.1%
… backpain	%	9.8%	14.5%	12.2%
Respondent has health insurance card	%	42.4%	84.3%	63.3%
N		601	600	1201

For education we look at literacy, number of years spent in school as well as the highest diploma obtained. The large majority of the respondents is literate in Bahasa Indonesia. On average, the respondents in Tasikmalaya spent around 7.5 years in school, more than 1 year less than the average respondent in Yogyakarta who spent 8.9 years in school. Looking at the diplomas obtained suggests that relatively high share of secondary graduates can explain the higher average number of years of schooling in Yogyakarta. The pattern regarding health and education is similar for the spouses (see Table 41 in the Appendix).

Table 6 Respondent's Education

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent can read and write	%	96.8%	96.3%	96.6%
Respondent attended # years of school	mean	7.5	8.9	8.2
Respondent obtained …. diploma				
… no	%	4.5%	10.2%	7.3%
… primary school (and equivalent)	%	63.0%	28.4%	45.7%
… junior high school (and equivalent)	%	15.6%	18.7%	17.2%
… secondary high school (and equivalent)	%	13.8%	36.1%	24.9%
… tertiary high school (and equivalent)	%	3.2%	5.5%	4.3%
N		601	600	1201

3.4 Livelihood Activities and Employment of Respondent

As expected given our project focus and sampling strategy, agriculture is the main economic activity for the majority of respondents. Nearly all respondents report that farming was either their main activity or the economic activity they spent the second most of their time on during the last 12 months. For around 80% of the respondents farming is the main economic activity in terms of time spent. Respondents whose main economic activity was not farming most often had another temporary or permanent job. Around 30 % of respondents in Tasikmalaya and 20% of respondents in Yogyakarta report that they do not engage in any other economic activity apart from farming. Regarding the second main economic activity (apart from farming), respondents most frequently reported other agricultural activities, paid agricultural activities for others or other temporary job. Other agricultural activities refer for instance to fruit tree cultivation or livestock activities.

In our sample, spouses in Tasikmalaya engaged more frequently in farming as main economic activity than spouses in Yogyakarta. This relates on the one hand to the higher share of men among the spouses in Tasikmalaya. On the other hand, our data seems to suggest that it is more common in Tasikmalaya for both partners to work in agriculture compared to Yogyakarta.

Table 7 Livelihood Activities and Employment of Respondent

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent's main economic activity during the last 12 months was …				
… farming on own or rented land	%	80.2%	78.5%	79.4%
… other agricultural activities	%	4.7%	1.2%	2.9%
… paid agr. activities for others	%	1.3%	0.3%	0.8%
… public/government job	%	0.7%	3.7%	2.2%
… other permanent job	%	7.0%	5.3%	6.2%
… other temporary job	%	3.2%	9.0%	6.1%
… own non-agr. business	%	2.7%	1.2%	1.9%
… other economic activity	%	0.3%	0.8%	0.6%
Respondent's second main economic activity during the last 12 months was …				
… farming on own or rented land	%	18.4%	21.5%	20.0%
… other agricultural activities	%	17.4%	14.9%	16.2%
… paid agr. activities for others	%	9.5%	15.0%	12.2%
… public/government job	%	0.0%	0.5%	0.2%
… other permanent job	%	5.1%	3.2%	4.2%
… other temporary job	%	10.1%	16.7%	13.4%
… own non-agr. business	%	5.8%	3.3%	4.6%
… other economic activity	%	2.2%	3.7%	2.9%
… no economic activity	%	31.4%	21.2%	26.3%
N		601	600	1201

3.5 Income Sources and Transfers

Farming is the main income source for the majority of households in both regions. In Yogyakarta the share is at around 65% and in Tasikmalaya at 58%. Despite the fact that less respondents in Tasikmalaya report that farming is the main household income, households in Tasikmalaya receive on average income and transfers from fewer other sources apart from farming. Around 20% of the households in the sample receive remittances. Several households further receive transfers from government programs, in particular from Raskin. Raskin is a social transfer targeted to households below the poverty line that involves rice deliveries at subsidized prices. While the targeting of Raskin is not faultless in practice, Raskin might be used as an additional variable to proxy for household welfare.

Table 8 Income Sources and Transfers

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Farming generated highest income for HH in past 12 months	%	*58.1%*	*64.6%*	*61.3%*
Number of income and transfer sources past 12 months	mean	*1.6*	*2.3*	*2.0*
Apart from farming, HH received income and transfers from … in past 12 months				
… no other sources	%	16.5%	4.5%	10.5%
… fishery	%	3.5%	5.3%	4.4%
… temporary agricultural work	%	19.8%	26.5%	23.1%
… other agricultural products	%	22.5%	21.3%	21.9%
… non agricultural business	%	12.8%	21.7%	17.2%
… temporary non-agricultural work	%	11.0%	29.7%	20.3%
… permanent wage work	%	4.5%	16.5%	10.5%
… public/government work	%	6.0%	9.3%	7.7%
… rental income	%	0.7%	0.5%	0.6%
… pension	%	1.0%	7.5%	4.2%
… remittances	%	20.3%	20.8%	20.6%
… other economic activity	%	30.6%	13.0%	21.8%
… Raskin	%	18.8%	22.8%	20.8%
… Jamkesmas	%	2.3%	14.7%	8.5%
… BMS	%	2.0%	3.5%	2.7%
… Keluarga Harapan	%	0.2%	14.0%	7.1%
… PNPM Mandiri	%	0.8%	0%	0.4%
… Posdays	%	0.3%	0.5%	0.4%
… other gov. or NGO transfer	%	3.8%	3.0%	3.4%
N		601	600	1201

3.6 Food Security and Financial Distress

Food security is not a challenge for the vast majority of households in our sample. However, nearly 8% of households in Tasikmalaya and around 3.5% of households in Yogyakarta reported that, during the last twelve months, their household faced a situation when there was not enough food to feed the household.

Considerably more households in our sample have experienced financial distress during the past twelve months. In Yogyakarta, close to 50% of the households faced financial distress. In Tasikmalaya, the share is even higher with around 63%.

Coping strategies among the households that experienced financial distress included borrowing from family, friends, neighbours or the bank. Only few households used savings, sold assets or borrowed from a creditor or cooperative.

Table 9 Food Security and Financial Distress

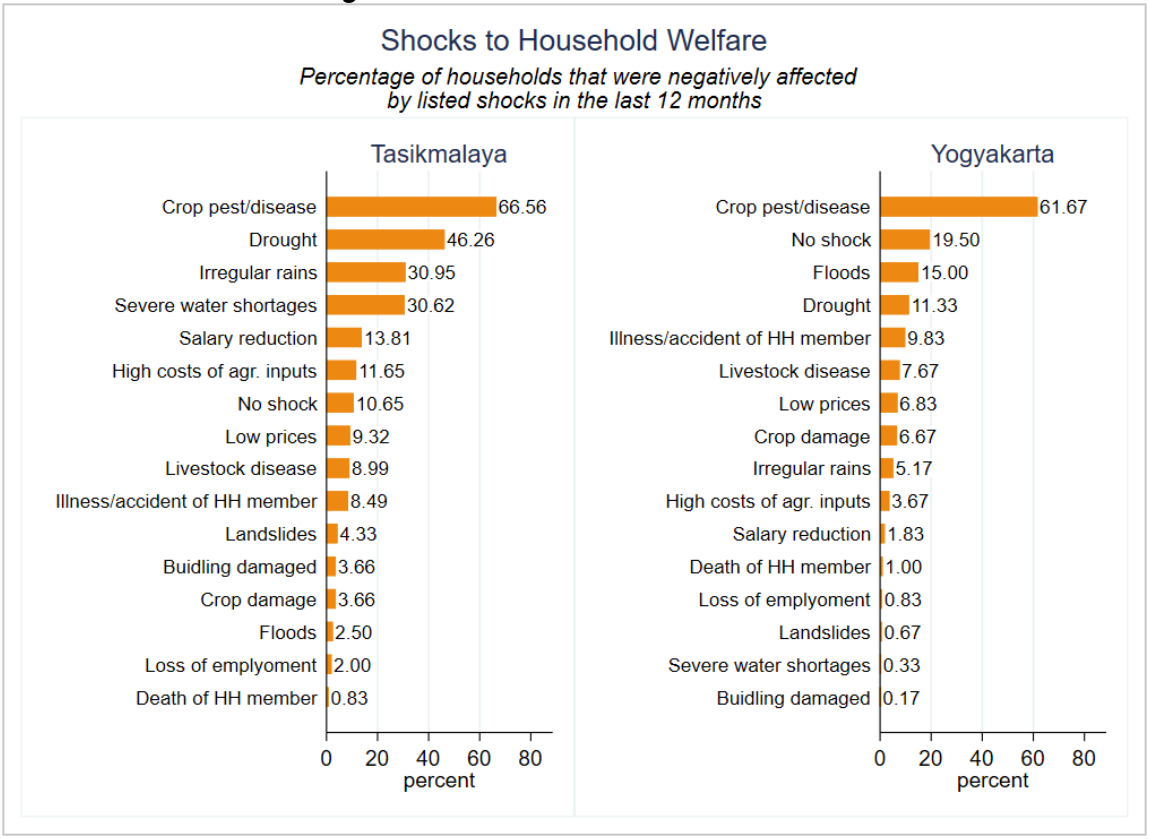
Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH faced situation when there was not enough food in past 12 months	%	7.6%	3.5%	5.6%
HH was in financial distress in past 12 months	%	63.0%	47.6%	55.3%
HH that experienced financial distress … during past 3 months				
… used savings (in bank/house)	%	3.2%	13.7%	7.7%
… sold assets	%	5.0%	8.4%	6.5%
… borrowed from family	%	49.1%	20.7%	36.9%
… borrowed from friend/neighbour	%	28.0%	20.4%	24.7%
… borrowed from creditor	%	5.0%	0.4%	3.0%
… borrowed from bank	%	15.8%	15.1%	15.5%
… borrowed from cooperative	%	4.2%	33.0%	16.6%
N		601	600	1201

3.7 Shocks to Household Welfare

Given that a negative shock might affect households' general willingness to adopt new technologies, respondents were asked whether their household experienced any negative shocks during the past twelve months. Remarkably, the three most common shocks in both regions relate to agriculture. More than 60% of respondents in both regions report that their household was affected by crop pest or crop disease during the past 12 months. Being affected by crop or pest disease might impact household's willingness to adopt organic farming practices if they perceive them as less effective to battle crop pest and disease than chemical inputs.

In Tasikmalaya, the second and third most frequently stated shocks were draught and irregular rainfall. In Yogyakarta shocks due to floods and draughts place second and third. Between 10% of respondents in Tasikmalaya and 20% of respondents in Yogyakarta report that their household was not affected by any of the shocks.

Figure 3 Shocks to Household Welfare



3.8 Agriculture

3.8.1 Land Cultivation and Ownership

Households in Tasikmalaya cultivate on average about 0.5 ha, nearly twice as much as households in Yogyakarta. Given the close proximity of some villages to Yogyakarta city, some regions there face high land prices and low land availability. While it should also be noted that we dropped farmer groups in Yogyakarta that focused on plantation, these constituted only 2 % of the original database.

In Tasikmalaya households own the land they cultivate more frequently than in Yogyakarta. In Yogyakarta, the share of households that own all land, own part of the land and rent all land is about one third each.

In terms of ownership status, most land owners in Tasikmalaya possess a so-called Letter C. This is a letter provided by the village head. In Yogyakarta most households report to possess a SHM, a certificate issued by a national institution (National Land Board or the Agrarian Office).
Among households that rent all or part of their land, the decision power regarding planting lies mostly with the household. Only few respondents, less than 5% in Tasikmalaya and less than 2% in Yogyakarta, report that the decision power lies with the landowner. This in an important information for our evaluation given that we hope to see changes in the way of farming and are providing training to renting households too.

Table 10 Land Cultivation and Ownership

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Together HH membes cultivate … m2 land	mean	4993.1	2619.5	3808.2
HH owns all cultivated land	%	64.6%	35.9%	50.3%
HH owns/rents part of the culivated land	%	15.5%	30.4%	22.9%
HH rents all cultiavted land	%	20.0%	33.7%	26.8%
If HH owns all or part of cultivated land				
HH posses … for all/part of owned land				
… Letter C	%	90.9%	12.0%	55.4%
… SHM	%	11.8%	81.8%	43.4%
… TKD	%	0.4%	4.1%	2.1%
… HGU	%	0%	0%	0%
… certificate under different name	%	2.2%	5.3%	3.6%
… no certificate	%	0.8%	0.5%	0.6%
The cultivated land is owned by …				
… solely by respondent	%	63.0%	59.7%	61.5%
… solely by spouse	%	11.8%	8.6%	10.4%
… jointly with spouse	%	3.9%	3.8%	3.9%
… jointly (not with spouse)	%	12.8%	12.2%	12.5%
… other HH member	%	8.5%	15.6%	11.7%
If HH rents all or part of cultivated land				
Decision on planting is …				
… solely dependent on HH	%	85.0%	83.6%	84.1%
… solely dependent on landlord	%	4.2%	1.8%	2.7%
… a joint decision	%	10.8%	14.6%	13.2%
N		600	600	1200

Note : There are not 1200 observations for the information on HH that own all or part of the land and respectively also HH that rent part of the land. Instead there is information for the respective share (i.e. 50% plus 22,9% and 22.9% plus 27.1%). Further one outlier in Tasikmalaya was omitted (person cultivating 10h).

3.8.2 Asset and Livestock Ownership

In terms of agricultural assets owned, households in Tasikmalaya frequently reported fruit trees, manual spraying devices and fishponds. In fact, nearly 70% of households in Tasikmalaya reports to own fruit trees compared to only 35% in Yogyakarta. Given that half of the respondents in Tasikmalaya state that their household owns fishponds, it is surprising that only few report fishery as income source (see Table 8). Possibly, large parts of the fish harvest is consumed by the household itself rather than sold. Apart from fruit trees and fishponds, households in Yogyakarta report higher ownership rates in all other categories.

Ownership of livestock influences the access to input material for organic fertilizer and processed manure. Around 26% of the households did not own any livestock when surveyed. The most frequently owned livestock are chicken, followed by goats.

Table 11 Asset and Livestock Ownership

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH owns …				
… none of listed assets	%	16.4%	16.0%	16.2%
… fruit trees	%	69.3%	35.2%	52.3%
… tractor	%	1.0%	1.5%	1.2%
… hand tractor	%	2.0%	34.9%	18.4%
… tractor plough	%	0.8%	2.5%	1.7%
… manual spraying device	%	41.0%	63.3%	52.1%
… electric spraying devide	%	0.3%	2.5%	1.4%
… thresher	%	3.0%	19.7%	11.3%
… rice dryer	%	0.2%	5.7%	2.9%
… harvester	%	2.8%	18.7%	10.7%
… water pump	%	1.8%	10.7%	6.2%
… chamber for fertilizer production	%	0%	2.3%	1.2%
… fishponds	%	53.2%	22.4%	37.8%
If HH owns fishpond, size of fishpond in m2	mean	209.1	70.9	168.3
HH owns …				
… no livestock	%	29.6%	22.8%	26.2%
… water buffalos	%	1.0%	0.3%	0.7%
… chickens	%	58.7%	50.3%	54.5%
… cows	%	0%	7.2%	3.6%
… goats	%	25.5%	29.0%	27.2%
… ox	%	4.0%	24.5%	14.2%
… other livestock	%	4.5%	9.8%	7.2%
N		601	600	1201

Note: There are not 1201 observations for the information on fishpons size but only for those who own a fishpond

3.8.3 Crops and Harvest

As shown in Table 12, the most common crop is wet rice in both regions. Due to the high importance of wet rice as crop, the trainings focused largely on rice. In Tasikmalaya, the second most common crop is the cash crop coconut as well as the category other non-listed crops. Potentially these other crops refer to spices such as clove and kapolaga which are common in some regions in Tasikmalaya. When we tested the survey close to

Tasikmalaya city, these spices were not reported but we will include them into the list for the follow up survey.

In Yogyakarta, chilli, vegetables, corn and maize were stated most frequently after wet rice. However, the share for all of them remains below 10%.

Average total revenue is quite similar in both regions with around Rp 2.4m. On average, households kept around half of their harvest for their own consumption. The remaining harvest was either sold or handed to the landlord based on a sharecropping arrangement. Between 3.5 % of households in Tasikmalaya and 7% of households in Yogyakarta reported a complete harvest fail for at least one of their crops.

Table 12 Crops and Harvest

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Number of Crops planted	mean	1.7	1.2	1.5
During the last season, HH planted …				
… wet rice	%	93.6%	91.5%	92.6%
… dry rice	%	2.0%	0.0%	1.0%
… casava	%	4.5%	1.2%	2.8%
… corn	%	0.3%	3.3%	1.8%
… maize	%	1.3%	3.5%	2.4%
… soy beans	%	3.2%	0.2%	1.7%
… shallots	%	0.0%	0.8%	0.4%
… cacao	%	1.5%	0.0%	0.8%
… coffee	%	1.3%	0.0%	0.7%
… coconut	%	12.7%	0.2%	6.4%
… tea	%	3.3%	0.0%	1.7%
… peanut	%	1.3%	2.7%	2.0%
… ginger	%	0.2%	0.0%	0.1%
… chilli	%	3.2%	5.9%	4.5%
… vegetables (grean beans, tomato, pac choi, spinach, eggplant, sweet potatoe, long bean, cucumber, mung bean)	%	3.7%	4.0%	3.8%
… other	%	38.3%	4.2%	21.2%
Total revenue in (000) Rp from selling crops last period	mean	2466.9	2423.1	2445.0
Share HH kept for own consumption	mean	52.2%	48.9%	50.6%
HH could not harvest for at least one crop	%	3.5%	7.0%	5.3%
N		598	598	1196

Note: There is missing data for five respondents. Further, there are only 1164 observations for share of own consumption as 32 respondents experienced a total harvest fail.

3.8.4 Agricultural Inputs: Seeds

In Yogyakarta, households purchased on average around 80% of the seeds they used in the last planting period. Contrastingly, the share of purchased seeds among total used seeds is only around 22% in Tasikmalaya.
Households that bought seeds purchased these most frequently from commercial shops or local networks. The main sources for seeds that were not bought were remaining stocks from the previous period or own production.

Table 13 Agricultural Inputs: Seeds

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Share of seeds bought	mean	21.4%	78.3%	49.7%
HH that bought seeds, purchased seeds from …				
… commercial shop	%	81.4%	78.0%	78.9%
… local network	%	14.2%	12.1%	12.7%
… local seedbank	%	0.5%	1.9%	1.5%
… government	%	8.7%	11.1%	10.5%
HH that obtained seeds for free, obtained seeds from …				
… left from last period	%	69.6%	23.7%	58.9%
… government	%	8.8%	19.2%	11.3%
… own production	%	31.8%	44.2%	34.7%
… local network	%	5.3%	10.3%	6.5%
… other livestock	%	0.4%	5.1%	1.5%
N		592	589	1181

Note : There is incomplete data for 20 respondents. Further, there are only 669 observations for the seed source if bought (the remaining respodents did not buy seeds) and only 666 observations for seed source if nought bought (the remaining respondents did only buy seeds).

3.8.5 Agricultural Inputs: Fertilizer

Use of chemical and organic fertilizer are important factors to assess the effectiveness of the intervention. During the training, the production of own organic fertilizer was practiced and the potential negative effects of chemical fertilizer were discussed. Thus, we expect that the share of organic fertilizer users increases and potentially also that the share of chemical fertilizer users decreases. However, we expect that only few training participants will completely cut out chemical fertilizer use within one year. Rather we expect that the quantity of chemical fertilizer used decreases among the treatment group. In addition to the data presented below, we therefore further collected information on the quantity used for each of the listed chemical fertilizers.

At baseline, only few households in both region report that they did not use chemical fertilizer during the last season. The most commonly used chemical fertilizers were Urea and Pouska. On average, households spend around Rp 340,000 on chemical fertilizer. This constitutes about 14% of the average revenue (see Table 12).

In Tasikmalaya, 43% of households report that they already use organic fertilizer. Often, organic and chemical fertilizer are used together. In Yogyakarta 31% report that they already use organic fertilizer. Further, nearly half of respondents in Tasikmalaya and 60% of respondents in Yogyakarta state they already use manure. According to organic principles, manure must be processed before it is applied to the field. In Tasikmalaya, 56% of the households that already used manure also processed it. In Yogyakarta, this share is even higher at 78%.

When applying chemical fertilizer, about half the respondents decide on the quantity used based on experience. Most households use chemical fertilizer as a precautionary measure. Potentially, this could also change among the treatment group if some households begin to reduce the amount of chemical fertilizer used.

Table 14 Agricultural Inputs: Fertilizer

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
During last period, HH used …				
… no chemical fertilizer	%	3.8%	2.3%	3.1%
… Urea	%	87.5%	74.1%	80.8%
… TSP	%	58.9%	15.4%	37.1%
… KCL	%	9.4%	4.5%	6.9%
… ZA	%	2.3%	21.9%	12.1%
… SP36	%	2.5%	1.7%	2.1%
… ZK	%	0.0%	0.0%	0.0%
… Pouska	%	56.5%	76.1%	66.3%
… NPK	%	9.9%	8.0%	8.9%
… other	%	0.8%	6.2%	3.5%
HH received chemical fertilizer subsidies	%	62.8%	72.1%	67.4%
Amount in (000) Rp that HH spent on chemical fertilizer in the last period	mean	348.8	327.4	338.1
HH used organic fertilizer	%	43.3%	31.2%	37.2%
HH used manure	%	49.0%	62.8%	55.9%
… this manure was processed	%	56.5%	77.9%	68.6%
HH left residues from pevious period	%	84.9%	83.1%	84.0%
When applying chemical fertilizer, HH determines dosage by …				
… information on packaging	%	2.0%	15.8%	8.9%
… experience	%	54.7%	40.5%	47.6%
… guessing	%	24.1%	37.8%	31.0%
… information by farmer group	%	15.5%	3.7%	9.6%
HH applies chemical fertilizer as …				
… precaution	%	85.4%	72.0%	78.7%
… treatment	%	10.6%	25.3%	18.0%
N		596	599	1195

Note: There is incomplete data for six respondents. Further, there are only 668 observations for the processing of manure (only those who used manure in the last period).

3.8.6 Agricultural Inputs: Pesticide

Similar to chemical fertilizer use, use of chemical and organic pesticides are important factors to assess the intervention. Between 30% of respondents in Tasikmalaya and 40% of respondents in Yogyakarta did not use pesticides during the past planting season (for simplicity reasons 'pesticides' is used as an umbrella term). In both regions, the most frequently used pesticide was insecticide. Slightly more than half of the respondents report to have used it in the last planting season. Compared to the case of chemical fertilizer, only few respondents stated that they received subsidies for chemical pesticides. On average, households spent around Rp 97,000 on chemical pesticides during the last period, only around 4% of the average revenue. This implies, however, that cutting down on chemical pesticide will not result in large reductions of input costs.

When households apply chemical pesticide they most frequently follow instructions on the package or base the decision on experience. In contrast to chemical fertilizer, pesticides are commonly applied as a treatment and not precaution measure. This is also consistent with the lower costs, as appliance as treatment likely leads to lower use than appliance as precaution.

Meanwhile, the use of organic pesticides was also less common than the use of organic fertilizer.

Table 15 Agricultural Inputs: Pesticide

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
During last period, HH used …				
… no chemical pesticide	%	32.8%	39.4%	36.1%
… insecticide	%	56.0%	53.4%	54.7%
… herbicide	%	7.4%	14.9%	11.1%
… fungicide	%	4.7%	10.0%	7.4%
… akariside	%	5.7%	2.0%	3.8%
… nematicide	%	21.1%	4.2%	12.6%
… other	%	0.2%	0.3%	0.3%
HH received chemical pesticide subsidies	%	3.0%	2.7%	2.8%
Amount in (000) Rp that HH spent on chemical pesticide in the last period	mean	94.1	100.5	97.3
HH used organic pesticide	%	9.9%	7.3%	8.6%
When applying chemical pesticide, HH determines dosage by …				
… information on packaging	%	46.9%	57.6%	52.0%
… experience	%	28.4%	20.8%	24.8%
… guessing	%	15.7%	16.9%	16.3%
… information by farmer group	%	9.0%	4.7%	7.0%
HH applies chemical pesticide as …				
… precaution	%	30.8%	30.7%	30.8%
… treatment	%	69.2%	69.3%	69.2%
N		595	599	1194

Note: There is incomplete data for seven respondents regarding the type of of pesticide used, subsidies and organic pesticide. Further, the information on the application is only for the 63.9% who use chemical pesticide.

3.8.7 Agricultural Inputs: Household Labour

Most respondents work on their land either every day or every second day. However, respondents in Yogyakarta report to work on their fields more often than their counterparts in Tasikmalaya. Given that households in Tasikmalaya cultivate, on average, more land this appears surprising. One potential explanation could be the higher share of farming spouses in Tasikmalaya. In Tasikmalaya the share of spouses working on the household land is 74%.

On average, respondents in Tasikmalaya work four to five hours a day on the household land and respondents in Yogyakarta five to six hours. Regarding the main activities, respondents most frequently report that they engage in fertilizing, fighting pests and weeding. These activities also constitute the reoccurring activities during the planting season. It is also quite common to pay daily workers for their help with preparing the land and harvesting. (see Table 18). Among spouses, the most frequently reported activity is planting.

Table 16 Agricultural Inputs: Household Labour

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent works … on land cultivated by HH				
… never	%	0.7%	0.2%	0.4%
… every day	%	36.8%	58.3%	47.5%
… almost every day	%	25.0%	24.7%	24.8%
… every other day	%	19.6%	12.2%	15.9%
… less than two days a week	%	18.0%	4.7%	11.3%
Hours per day respondents works on field	mean	4.6	5.3	5.0
Main activties of respondent are …				
… land preparation	%	54.1%	47.7%	50.9%
… planting	%	45.8%	35.2%	40.5%
… fertilizing	%	78.0%	91.7%	84.8%
… fighting pests	%	53.1%	91.5%	72.3%
… weeding	%	67.2%	93.3%	80.3%
… harvesting	%	55.1%	43.8%	49.5%
… other	%	10.3%	2.0%	6.2%
Spouse works on cultivated land	%	74.2%	45.5%	60.1%
Hours per day spouse works on field	mean	4.28	4.13	4.22
Main activties of spouse are …				
… land preparation	%	22.7%	2.9%	15.3%
… planting	%	45.5%	57.1%	49.8%
… fertilizing	%	4.3%	6.9%	5.3%
… fighting pests	%	2.9%	1.6%	2.4%
… weeding	%	15.7%	20.4%	17.4%
… harvesting	%	6.5%	9.8%	7.7%
… other	%	2.2%	1.2%	1.8%
Other HH members also work on land	%	14.0%	16.5%	15.2%
N		601	600	1201

Note: Information on spouse farming labor only for married respondents, main activities only for spouses that work on HH farm.

3.8.8 Other Expenses

In our sample, rent payment for farming land is mostly organised in form of a sharecropping arrangement. Usually, households submit part of their harvest, in most cases 50%, to their landlord (the general practice is that landlords do not contribute to the input costs). Some households also pay a fixed annual rent which averages at around Rp 2m in Tasikmalaya and at around Rp 3m in Yogyakarta.

Table 17 Other Expenses: Land Rent

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH that rent part/all of their land pay ….				
… a fixed annual rent	%	3.8%	15.8%	11.5%
… in sharecropping	%	95.3%	82.3%	87.0%
… both a fixed rent and sharecropping	%	0.9%	1.8%	1.5%
Price that HH that pay fixed annual rent pay per year in (000) Rp	mean	2050.0	2961.2	2842.9
HH with sharecropping arrangement give … to landlord				
… fixed amount in kg	%	2.0%	0.0%	0.8%
… share of harvest	%	82.0%	87.9%	85.7%
… share of profits	%	17.5%	12.4%	14.3%
Average amount harvest sharecropping HH give to landlord in %	mean	49.7	48.3	48.8
N		213	385	598

Note: Information only for those who report to rent land. Information on rent price and sharecropping arrangement only for those who pay a fixed rent or pay in harvest shares respectively.

Table 18 Other Expenses: Workers

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH employed … during last period				
… nobody	%	6.3%	13.7%	10.0%
… only on daily basis	%	74.4%	82.7%	78.5%
… only on permanent basis	%	16.8%	2.3%	9.6%
… both permanently and daily	%	2.5%	1.3%	1.9%
Daily laborer are engaged for				
… land preparation	%	89.3%	91.1%	90.2%
… planting	%	80.6%	78.7%	79.6%
… fertilizing		7.4%	1.0%	4.1%
… fighting pest	%	8.1%	0.8%	4.3%
… weeding	%	49.7%	1.0%	24.2%
… harvesting	%	83.0%	51.5%	66.5%
… other	%	0.2%	0.6%	0.4%
Permanent laborer are engaged for				
… land preparation	%	77.6%	90.9%	79.7%
… planting	%	86.2%	63.6%	82.6%
… fertilizing	%	33.6%	45.5%	35.5%
… fighting pest	%	30.2%	50.0%	33.3%
… weeding	%	63.8%	45.5%	60.9%
… harvesting	%	88.8%	54.5%	83.3%
… other	%	1.7%	0.0%	1.4%
N		601	600	1201

Note: Information on tasks of daily laborers only for those who employ daily laborers (962 observations, 4 observations for the tasks are missing). Information for tasks of permanent laborers only for those who employ permanent laborers (138, no information missing).

We further asked households whether they employed anybody during the last planting season. Many of the respondents employed daily workers for land preparation, planting and harvesting. In Tasikmalaya, around 17% of households stated that they only employ permanent workers. In contrast to the respondents in Tasikmalaya, only very few respondents in Yogyakarta employed permanent workers.

3.8.9 Markets

Table 19 highlights the importance of the middle man in both research regions. Most of the surveyed households that sold crops, sold them to a middle man. This data further suggests that in Yogyakarta, selling products is only rarely accompanied by problems such as low demand or low prices. In Tasikmalaya the share of the households that experienced difficulties when selling their crops is higher with around 37%. The most common reason due to which households faced difficulties was high price volatility.

The fact that it is very common to sell through a middle man might be a barrier to the adoption of organic farming if the middle men is not willing to buy organic or healthy

products at a higher price. On the one hand, households might prefer the guarantee that they can sell their products to a middle men. On the other hand, no increase in the selling price could make organic farming appear less attractive.

Table 19 Markets

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
HH sold at least one Crop	%	66.7%	58.6%	62.7%
If HH sold Crops, HH usually sold Crops …				
… to middle man	%	91.7%	81.2%	86.8%
… at local market	%	3.0%	8.8%	5.7%
… direct to consumer	%	6.8%	13.1%	9.7%
… through other channels	%	1.8%	5.1%	3.3%
HH experienced no difficulties when selling Crops	%	63.2%	93.2%	78.2%
HH that experienced difficulties faced …				
… not enough demand	%	0.9%	4.9%	1.5%
… too low prices from middle man	%	31.8%	31.7%	31.8%
consumers	%	4.1%	4.9%	4.2%
… high price volatility	%	68.2%	58.5%	66.7%
… too much competition	%	0%	0%	0%
HH sold Crops as organic	%	1.2%	1.3%	1.3%
HH sold Crop as healthy	%	1.0%	23.0%	12.0%
N		597	599	1196

Note: There is missing data for five respondents. Further, information on the channel through which crops are sold is only provided for those who sold their crops (750). Information on the type of

3.8.10 Farming Practices

In terms of farming practices apart from organic fertilizer and organic herbicides, respondents in Tasikmalaya frequently reported to use organic mulching and improved drainage. In comparison, the uptake of organic mulching during the past planting period was rather low in Yogyakarta. Next to improved drainage, crop rotation was frequently reported by respondents in Yogyakarta. The uptake of other practices that are considered relevant for organic farming, like plants or animals as pesticide or vegetative buffers stripes, was low in both regions.

However, it should be noted that in some cases questions on farming practices were not asked as diligently as they should have been in terms of explaining and repeating all practices. Thus, for farming practices that are of particular interest, additional questions on use in the past year are likely added to the follow up.

Table 20 Farming Practices

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
During the past planting period HH used ….				
… crop rotation	%	9.5%	65.7%	37.6%
… intercropping	%	29.3%	21.8%	25.6%
… organic Mulching	%	45.8%	5.7%	25.7%
… plastic Mulching	%	3.7%	8.7%	6.2%
… improved crop varieties		0.04	0.19	0.12
… imporved drainage	%	55.6%	58.8%	57.2%
… water harvesting & storage	%	0.5%	0.8%	0.7%
… barriers, traps and fences		3.0%	3.2%	3.1%
… plants/animals as pesticide	%	0.3%	5.5%	2.9%
… vegetative buffer strip	%	3.2%	5.0%	4.1%
N		601	600	1201

3.8.11 Organic Farming

Before the information session took place in their village, a considerable share of respondents , i.e. 35% in Tasikmalaya and 24% in Yogyakarta, had never heard about organic farming. Thus, this project constitutes their first exposure to organic farming. In control villages this exposure was only in the form of the information session and in treatment villages in the form of the information session and the invitation to the training. Here it should be noted that 'recently practiced organic farming' is a self-assessment of the farmers. In some cases farmers classify themselves as practicing organic farming while using chemical inputs at the same time.

While the majority of respondents was sampled among the attendants of the information session, there are also some respondents that did not attend the information session. Some respondents are the spouse or family member of a person who attended the information session. However, most of them were selected after the information session when attendance of active farmers at the information session was too low.
Some respondents already participated in an organic farming training in the past. However, in most cases this training was more than three years ago. Notably, the share of former training participants is much higher than share of farmers who state that they are currently practicing organic farming. This already hints at the challenges to influence organic farming uptake through training.

Around half of the respondents perceive organic farming as old-fashioned. In the follow up we will investigate whether this changed among the farmers that participated in the training. Most households do not consume organic products. Regarding the households that do report to consume organic products, it should again be noted that this refers to respondents' understanding of organic products.

To investigate whether the training affects the knowledge about organic farming, we asked several questions that relate to content that was discussed during the training. With regard to organic labels, most respondents state that they are not aware that organic labels exist.

Table 21 Organic Farming

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Before info session, respondent… organic farming				
… never heard about	%	34.6%	24.3%	29.5%
… heard	%	55.1%	51.7%	53.4%
… practiced (not currently)	%	6.2%	6.3%	6.2%
… currently practices	%	4.2%	17.7%	10.9%
Respondent attended info session	%	77.9%	84.5%	81.2%
In the past, respondent participated in an organic farming training	%	24.8%	29.7%	27.2%
… this training lasted # days	mean	5.1	10.7	8.1
… is more than 3 years ago	%	65.1%	62.9%	63.9%
Respondent perceives organic farming as …				
… old-fashioned	%	49.5%	53.2%	51.4%
… modern	%	41.1%	40.6%	40.8%
… cannot say	%	9.4%	6.2%	7.8%
Household consumes … organic products				
… no	%	60.8%	66.7%	63.8%
… sometimes, but not very often	%	10.6%	10.6%	10.6%
… from time to time	%	26.7%	10.9%	18.8%
… nearly always	%	1.0%	8.4%	4.8%
Respondent knows …				
… not whether there are organic labels	%	78.5%	77.0%	77.8%
… that there are organic labels, but not the names	%	21.1%	21.0%	21.1%
… national organic label		0.3%	2.2%	1.2%
… PAMOR	%	0%	0.5%	0.2%
… international certificates (e.g. US, EU)	%	0%	0.3%	0.2%
N		584	594	1178

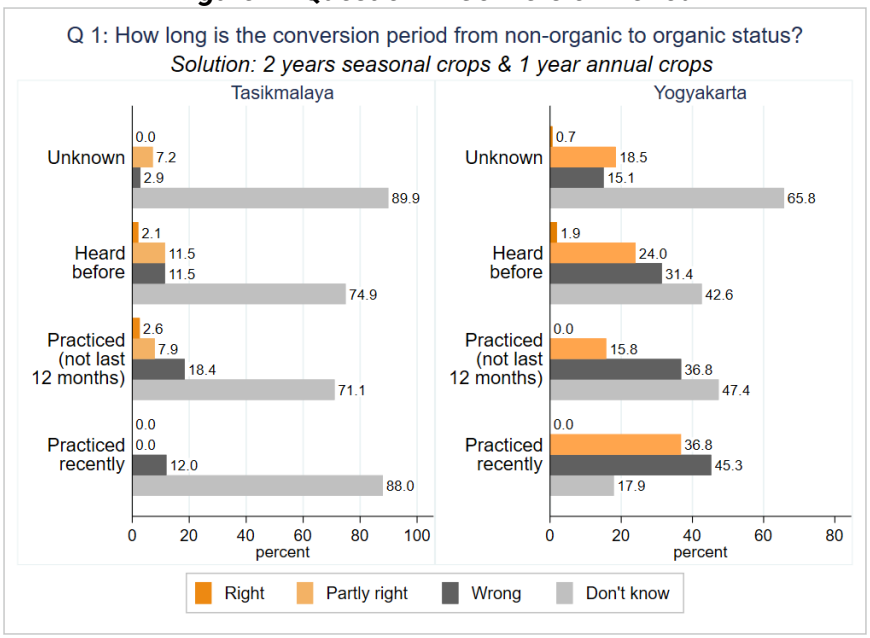
Note: There is incomplete data for 23 respondents. The data is complete for the information on exposure to organic farming before the information session and information session attendance. However, there is missing data for 23 respondents (all reported that organic farming was unkown to them before) for the classification in modern or old - fashioned.

The following figures display the answers to some additional questions related to the content from the training. Answers are displayed separately for the four exposure groups, i.e. respondents who did not know organic farming, respondents who knew but never practiced organic farming, respondents that practiced organic farming in the past and finally respondents who state that they recently practiced organic farming.

There is no clear pattern. For questions one to three, respondents in Yogyakarta perform better. For questions four to six, respondents in Tasikmalaya perform better. Surprisingly, respondents in Yogyakarta who consider themselves as recent practitioners perform quite badly in question four to six. In most cases, even respondents who never heard of organic farming before the information session, and are thus most likely only guessing, performed better.

Figure 4 shows that only very few respondents knew the length of the conversion period from non-organic to organic status. In Tasikmalaya, respondents who recently practiced organic did not perform better than the other groups. In Yogyakarta, recent practitioners did better than the other groups given that they most often had part of the answer correct (at least one of the two right answers but none of the wrong).

Figure 4 Question 1: Conversion Period



The following question (Figure 5) is about the type of seeds that farmers are allowed to use in order to be named 'organic'. In Tasikmalaya, the most frequent answer across all groups was that respondents do not know. In Yogyakarta, many knew part of the answer (most often that organic seeds are allowed). Respondents with higher exposure to organic farming did relatively better.

Figure 5 Question 2: Seeds

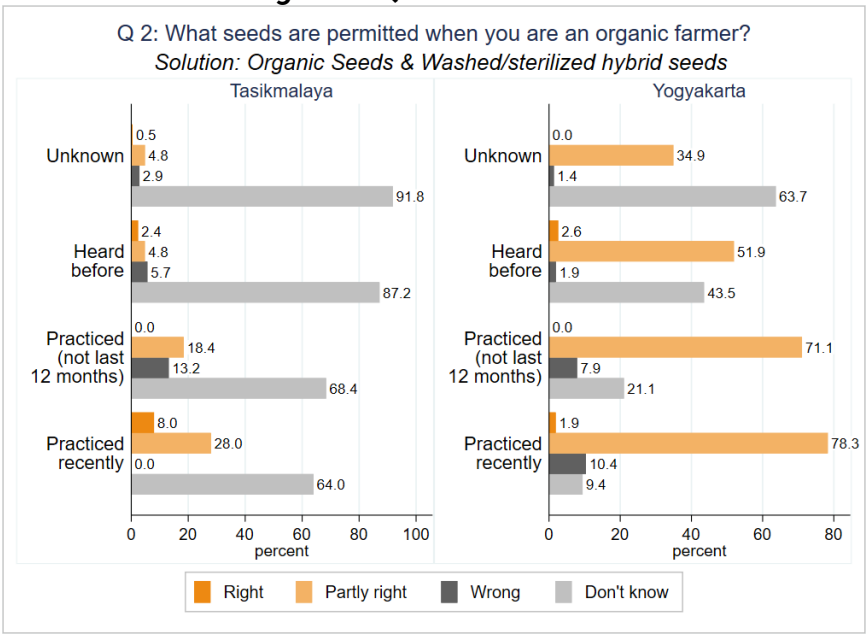


Figure 6 displays the answer to a question on buffer zones between fields. Only few respondents in both regions knew the right answer, but again, respondents in Yogyakarta and respondents with higher exposure performed relatively better.

Figure 6 Question 3: Buffer zones

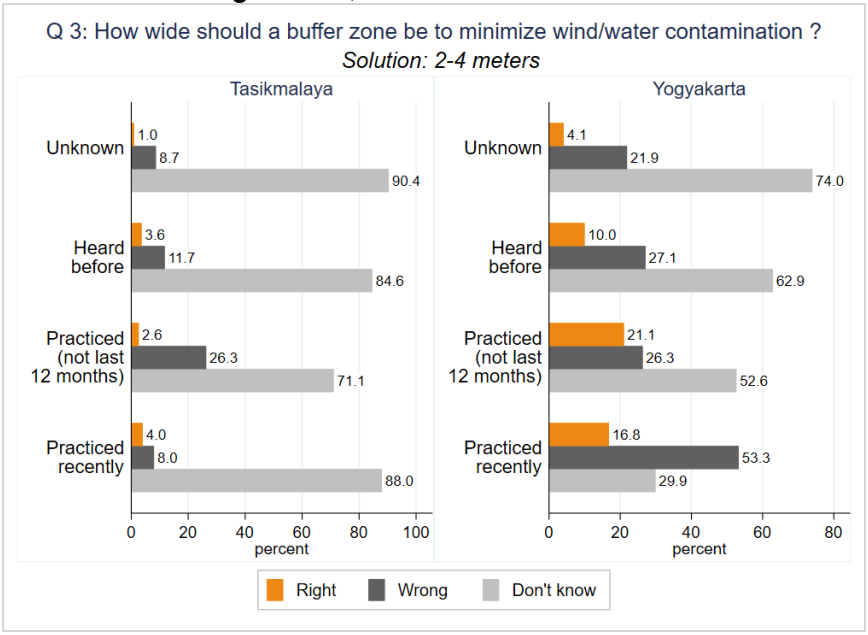
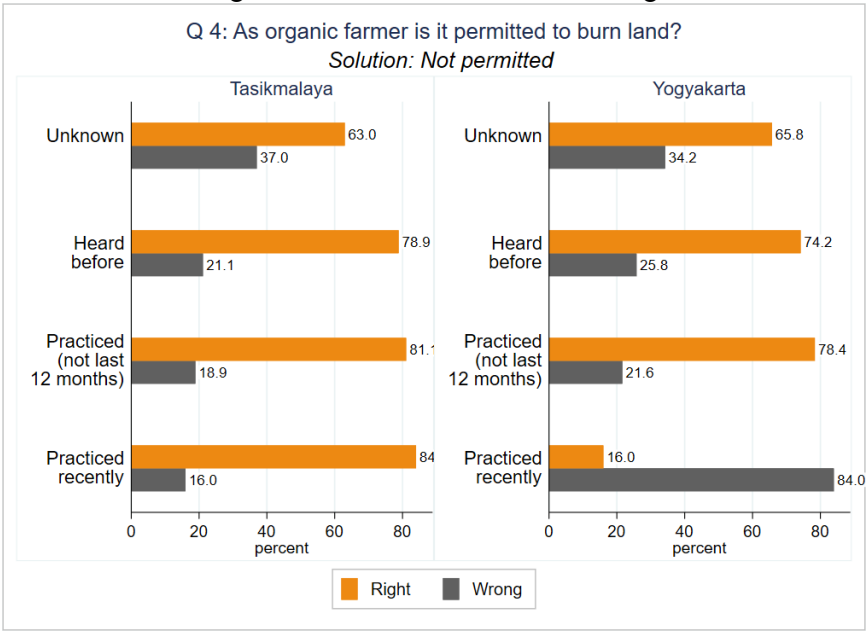


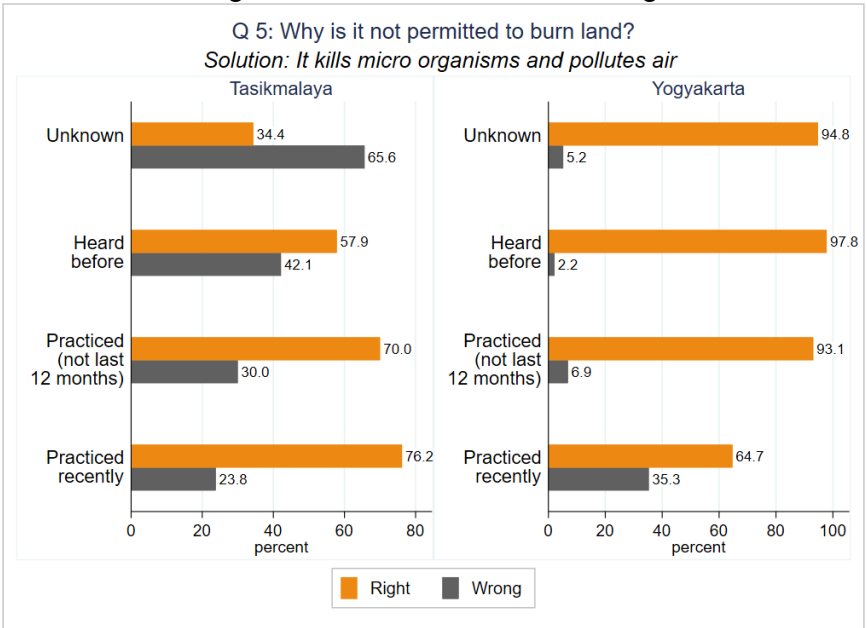
Figure 7 reports on the answers regarding the question whether it is allowed to burn land as an organic farmer. In contrast to the questions before, respondents in Yogyakarta that consider themselves recent practitioners performed much worse than all other groups.

Figure 7 Question 4: Land Burning



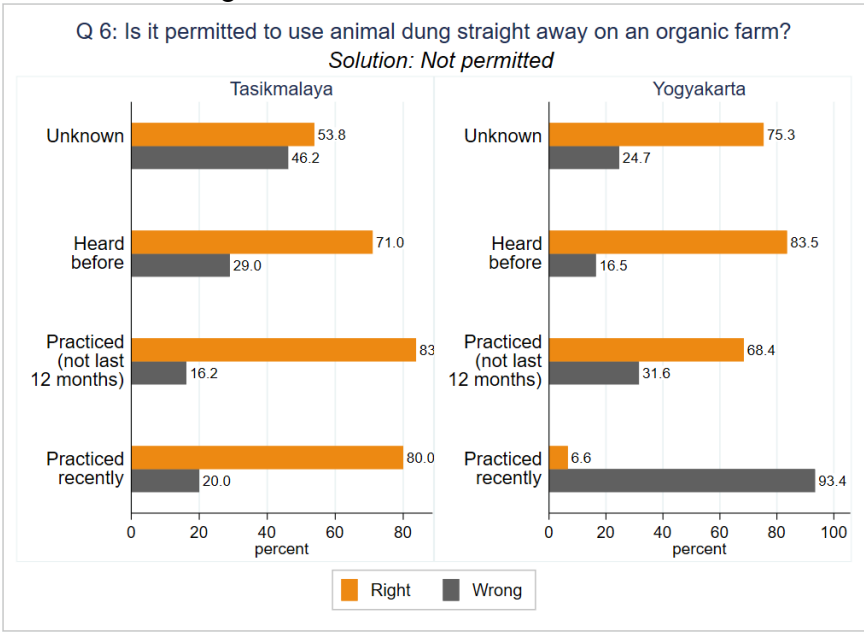
For question 5 we asked respondents who answered Question 4 correctly why it is not allowed to burn land. In Tasikmalaya, most of the respondents knew the answer. Only among the respondents completely new to organic farming the majority provided the wrong explanation. For Yogyakarta, recent practitioners performed worst again.

Figure 8 Question 5: Land Burning



For Question 6 we asked respondents whether organic farmer are allowed to use animal dung straight away without processing. The pattern is similar to above, respondents in Tasikmalaya perform better and respondents in Yogyakarta who classify themselves as recent practitioners perform worst.

Figure 9 Question 6: Use of Manure



3.9 Environment

We collected information from each respondent on perceived changes in soil fertility and chemical input use as well as stakeholder environment relationships. This allows us to analyse, for instance, whether participation in the training changes the awareness regarding agricultural environmental pollution.

Respondents in our sample have mixed perceptions regarding the development of soil fertility of their cultivated land over the past five years. In Tasikmalaya, only around 23% of respondents stated that they noticed an increase in soil fertility. In Yogyakarta, nearly 50% noted an increase in soil fertility. Regarding changes in the use of chemical inputs over the past five years, about half of the respondents reported that they use the same amount of chemical fertilizer and 36% to 40% reported that they use the same amount of chemical pesticide. If the intervention changes training participants' perception towards chemical inputs or knowledge about alternative practices, we should see an increase in the share of respondents that use less chemical inputs.

Nearly 70% of respondents in both regions stated that all individuals are responsible for reducing society's negative impact on environment. However, in Tasikmalaya, only about half of respondents agreed that farmers' decisions have an important impact on the environment. Consequently, about half of the respondents in Tasikmalaya rated their own impact on the environment through their farming activities as low. In line, only 40% perceived pollution through agriculture as problematic. The data suggests that awareness was higher among respondents in Yogyakarta.

Table 22 Environment

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Soil fertility … over past 5 years				
… did not change	%	35.4%	26.0%	30.7%
… improved	%	23.3%	49.7%	36.5%
… decreased	%	41.3%	24.3%	32.8%
Compared to 5 years ago, HH … chemical fertilizer				
… uses less	%	20.5%	37.8%	29.1%
… uses more	%	26.0%	10.0%	18.0%
… uses the same amount of	%	50.2%	50.3%	50.3%
… did not use	%	3.0%	1.7%	2.3%
Compared to 5 years ago, HH … chemical pesticide				
… uses less	%	16.3%	28.5%	22.4%
… uses more	%	23.3%	7.7%	15.5%
… uses the same amount of	%	39.6%	36.2%	37.9%
… did not use	%	19.6%	27.0%	23.3%
According to respondent, … is responsible to decrease society's negative impact on environment				
… nobody	%	21.0%	7.3%	14.2%
… government	%	12.0%	32.8%	22.4%
… companies	%	0.3%	24.5%	12.4%
… NGO's	%	0%	1.3%	0.7%
… everybody (all individuals)	%	69.1%	69.7%	69.4%
Respondent thinks farmers' decision affect the environment	%	50.7%	64.2%	57.5%
Respondent thinks agricultural environmental pollution is problematic	%	39.4%	51.7%	45.5%
Respondents concerned about agricultural environmental pollution are most concerned about …				
… water pollution	%	8.4%	26.8%	18.8%
… air pollution	%	1.7%	3.2%	2.6%
ecosystem	%	20.3%	13.2%	16.3%
… threat to human health	%	18.6%	3.5%	10.1%
… reduced quality of own product	%	5.5%	3.5%	4.4%
… soil quality	%	32.1%	15.2%	22.5%
… general negative effects on environment	%	13.5%	34.5%	25.4%
N		601	600	1201

3.10 Famer Group and Extension Worker

Consistent with our sampling, nearly all respondents are members of a farmer group. Only four respondents report that neither they themselves nor a family member is a farmer group member. On average about 20% of respondents in Tasikmalaya and Yogyakarta report that their farmer group was not visited by an extension worker in the past six months. Extension workers can be an important channel for the distribution of farming knowledge. The data suggests that the frequency of exposure to extension services is quite different among farmer groups. 14% in Tasikmalaya and 10% in Yogyakarta report that their farmer group is visited even more than once a month while others report that they are visited less than once a month. However surprisingly, there is quite some heterogeneity in answers within farmer groups with regard to farmer groups exposure to extension work.

Table 23 Farmer Group and Extension Worker

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondent is farmer group member	%	99.0%	99.2%	0.0%
Respondent participates regularly in farmer group meeting	%	87.4%	95.3%	91.3%
According to respondent, an extension worker attended farmer group meeting … in the last 6 months				
… never	%	20.5%	20.8%	20.6%
… less than once a month	%	30.6%	41.8%	36.2%
… around once a month	%	34.9%	27.3%	31.1%
… more than once a month	%	14.0%	10.0%	12.0%
According to respondent, farmer group particpates in …				
… Pajale	%	28.3%	33.0%	30.6%
… SRI	%	32.8%	38.7%	35.7%
… other government project	%	1.7%	26.2%	13.9%
… no government project	%	49.1%	31.0%	40.0%
N		601	600	1201

Pajale is an extension program that focuses on rice, maize and soybean. System of Rice Intensification (SRI) focuses on rice only. About 30 % of respondents report that their farmer group participated in Pajale and around 33% to 39% state their farmer group participated in SRI. In particular SRI incorporates some practices similar to organic farming such as the use of organic matter as fertilizer. Exposure to this program might affect the intervention intensity.

3.11 Sources for Agricultural Information

Respondents were also asked about their information sources regarding cultivation methods, inputs and machinery. Farmer groups play an important role in Indonesia. Our data confirms that the farmer group head and other farmer group members are important sources for information and advice with regard to farming. Extension workers also seem to be an important source of information. This might be relevant to consider during the follow up in case extension workers focus more on conventional agricultural techniques, which then might lower the effect of the intervention. NGOs on the other hand do not seem to be a common source for information on farming.

Table 24 Sources for Agricultural Information

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Information sources for cultivation methods in the last 12 months				
Neighbours and friend:				
… no	%	36.8%	44.2%	40.5%
… yes	%	32.8%	28.7%	30.7%
… yes from time to time	%	30.4%	27.2%	28.8%
Farmer group head:				
… no	%	18.1%	22.2%	20.1%
… yes	%	58.9%	58.5%	58.7%
… yes from time to time	%	23.0%	19.3%	21.1%
Other farmer group member:				
… no	%	15.6%	12.5%	14.1%
… yes	%	52.4%	55.7%	54.0%
… yes from time to time	%	31.9%	31.8%	31.9%
Extension worker:				
… no	%	23.5%	48.7%	36.1%
… yes	%	43.3%	29.0%	36.1%
… yes from time to time	%	33.3%	22.3%	27.8%
NGO:				
… no	%	96.5%	86.8%	91.7%
… yes	%	1.0%	3.7%	2.3%
… yes from time to time	%	2.5%	9.5%	6.0%
Other source:				
… no	%	94.3%	71.2%	82.8%
… yes	%	4.7%	14.0%	9.3%
… yes from time to time	%	1.0%	14.8%	7.9%
N		601	600	1201

3.12 Intra Household Decision Making

Overall, respondents in Tasikmalaya attach considerably more importance to the opinion of their spouse with regard to farming decisions. This is consistent with the higher share of spouses that are engaged in agriculture in Tasikmalaya compared to Yogyakarta and the higher share of men among the spouses in Tasikmalaya. Only about half the respondents in Yogyakarta reported that they ask their spouse about her or his opinion and that this opinion affects their own decision.

Table 25 Intra Household Decision Making

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
When it comes to deciding on whether to adopt a new technology or to make major changes to the way of farming, I ask my spouse what he/she thinks. Respondent …				
… does not agree	%	9.7%	19.3%	14.4%
… is undecided	%	0.2%	3.3%	1.7%
… agrees	%	81.8%	47.7%	65.0%
… strongly agrees	%	8.4%	29.7%	18.9%
Generally speaking, the opinion of my spouse affects my decision regarding technology adoption or changes in the way of farming. Respondent …				
… does not agree	%	12.9%	20.4%	16.6%
… is undecided	%	2.7%	4.5%	3.6%
… agrees	%	75.1%	46.9%	61.3%
… strongly agrees	%	9.3%	28.2%	18.6%
N		559	539	1098

Note : Information only collected for respondents who reported to be married.

3.13 Risk Aversion and Time Preferences

Attitude towards risk most likely influence the uptake of new technologies such as organic farming. To explore this further, we asked respondents questions with regard to risk aversion, adoption behaviour and time preference.

In Tasikmalaya, around 60% of respondents attributes themselves some willingness to adopt new non-agricultural technologies. Only 7.5% state their willingness to adopt new non-agricultural technologies is high. Around 11% and 21% respectively rate their willingness as zero or low.

In Yogyakarta, relatively more respondent rate their willingness as zero or low. This could be due to the different age structures among respondents in Tasikmalaya and Yogyakarta. In

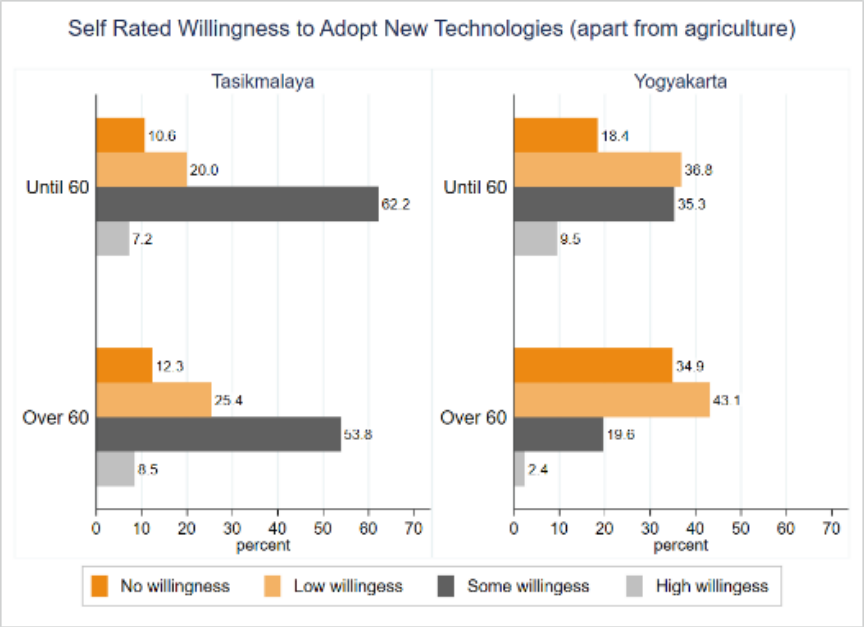
Figure 10 we investigate this further. The share of respondents who rate their willingness to adopt new technologies as low or zero is higher in Yogyakarta compared to Tasikmalaya among both, respondents aged below and over 60 years. However, in particular among respondents aged over 60, the difference is large between the two regions. The majority of elderly respondents in Yogyakarta rates their willingness very low.

Compared to their surrounding community, most respondents in both regions would classify themselves as average adopters. We further asked respondents whether their household possesses a smartphone with internet connection, a refrigerator, a washing machine or a cable TV. These items were suggested by our Indonesian team members as items that might be classified as 'new technology items'. 44% of respondents in Tasikmalaya and nearly 30% of respondents in Yogyakarta report that their household does not own any of these items. Given that the listed items are also relatively expensive, we asked respondents why their household does not own one or more of these items. Given that the question refers to multiple items, multiple answers were possible. The data shows that, in fact, high prices are relevant. However, in Tasikmalaya low desirability of the item is also relevant.

Table 26 Technology Adoption

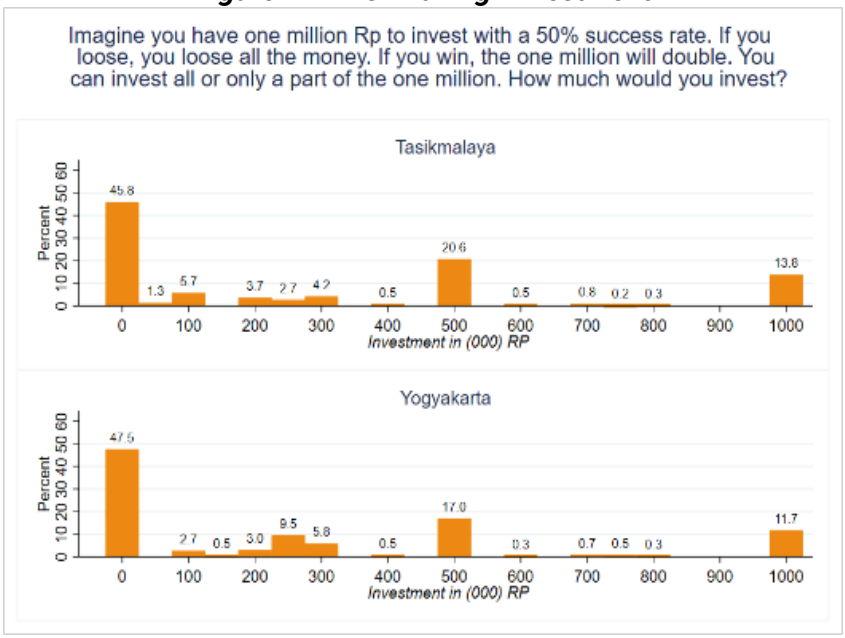
Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Respondents assessment of own willingness to adopt new non-agricultural technologies as …				
… no willingness	%	11.0%	24.2%	17.6%
… low willingness	%	21.1%	39.0%	30.1%
… some willingness	%	60.4%	29.8%	45.1%
… high willingness	%	7.5%	7.0%	7.2%
Compared to the sourrounding community, respondent asses her/himself as … adopter				
… early	%	16.5%	7.3%	11.9%
… average	%	62.7%	60.7%	61.7%
… late	%	20.8%	32.0%	26.4%
HH owns…				
… smartphone with internet connect	%	34.6%	45.0%	39.8%
… refrigerator	%	36.8%	40.3%	38.6%
… washing machine	%	11.3%	16.8%	14.1%
… cable TV	%	9.8%	20.3%	15.1%
… none of the listed	%	44.1%	29.0%	36.6%
If HH does not own one or more of these items, this is due to …				
… low desirability of item	%	60.6%	67.8%	64.2%
… high price	%	63.4%	27.7%	45.5%
… lack of knowledge on use of item	%	7.8%	5.7%	6.7%
… lack of knowledge on where to buy item	%	0%	0.2%	0.1%
N		601	600	1201

Figure 10 Willingness to Adopt by Age



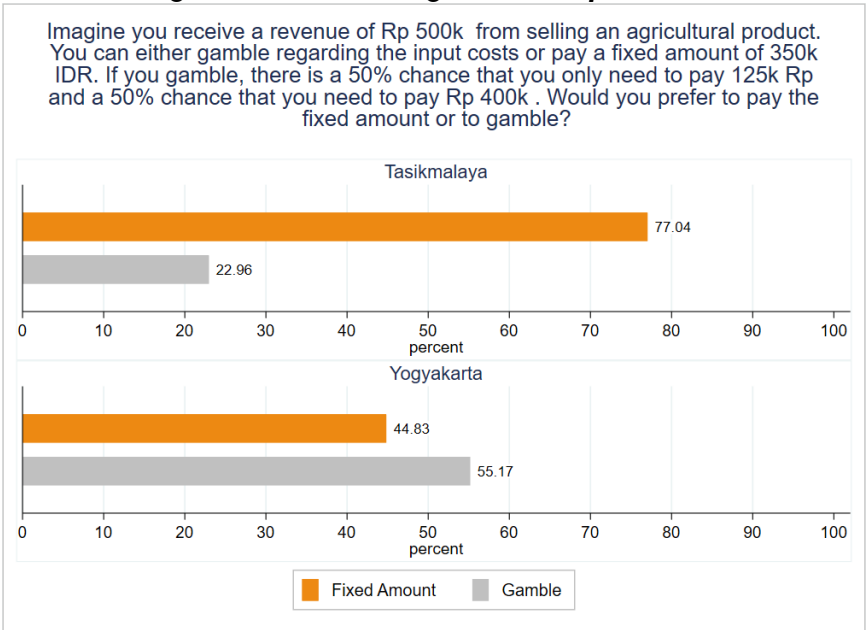
To learn more about risk aversion of respondents, we further asked the respondents how much of Rp 1m they would invest given that there is 50% chance the investment doubles and a 50% chance their investment is lost (see Figure 11). Nearly half of the respondents answered that they would not invest anything. Based on this, one could classify them as risk averse. 14% of respondents in Tasikmalaya and 12% of respondents in Yogyakarta would invest 100% indicating that they are risk loving.

Figure 11 Risk Taking: Investment



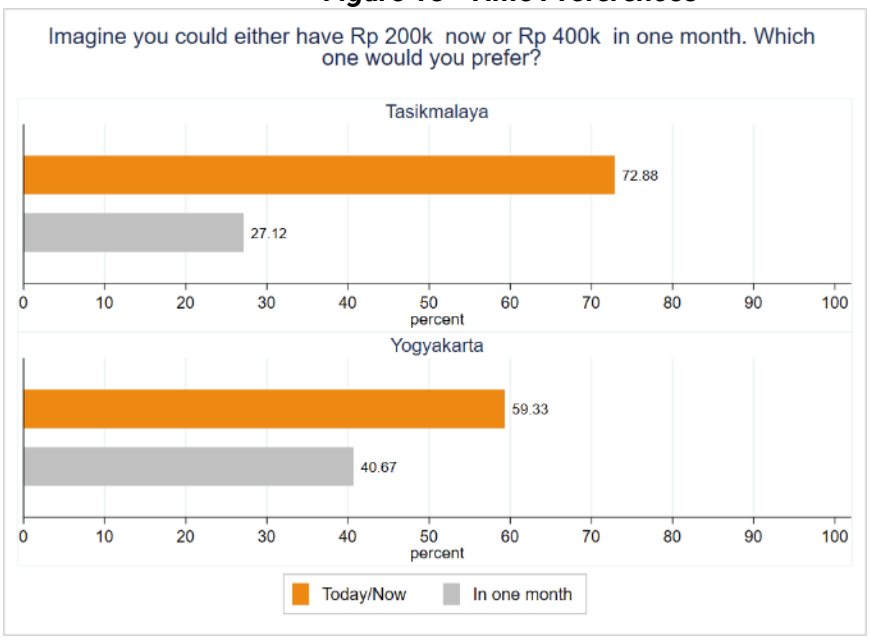
Additionally, we asked respondents whether they would rather gamble regarding the input costs of an agricultural product or pay a fixed price (see Figure 12). For Tasikmalaya, the answers seem to be generally in line with the answers for the previous question. Most respondents would prefer to pay a fixed amount. However, in Yogyakarta the answers are less conform with the previous question. More than half of the respondents would gamble. One potential explanation for the difference is that this question was closer to any real live situation the respondent might encounter than the investment question.

Figure 12 Risk Taking: Gamble Input Costs



To assess respondents time preference we asked whether they would prefer to receive Rp 200,000 today or Rp 400,000 in one month (see Figure 13). In both regions, the majority of respondents would prefer the lower payment today rather than twice as much in one month. Given that returns from converting to organic farming are unlikely to occur immediately but rather need some time to materialize, this is an important finding.

Figure 13 Time Preferences



4. BALANCE TEST

In this section, we present balance tables to check whether treatment and control group are comparable prior to the intervention. We examine respondent characteristics, household and economic characteristics, land ownership and cultivation, agricultural production aspects as well as information on organic farming exposure and respondents perception of organic farming and the environment.

Based on the observed characteristics, we find that overall treatment and control groups are comparable. For few variables such as gender of the respondent or cultivated land size we find differences that are statistically significant. However, the randomization process was performed similarly for both region and we find that the statistically significant differences occurs mostly only in one of the regions. This relates to the fact that some statistical significant differences are likely to occur by chance. Furthermore, the collection of baseline data will allow us to control for these characteristics when assigning the impacts of the intervention.

4.1 Respondent Characteristics

The comparison of selected respondent characteristics suggests that treatment and control group in both regions are broadly balanced. However, in Tasikmalaya, there are significantly more female respondents in the control group than in the treatment group. Figure 14 in the Appendix shows the distribution of gender in Tasikmalaya in more detail. For Yogyakarta, this difference is not statistically significant and the share of male respondents is high in both groups.

In addition to gender in Tasikmalaya, the difference with regard to age is statistically significant in Yogyakarta. Yet, it is only significant at the 10% level. Respondents in the control group are slightly older than in the treatment group.

Table 27 Balance Test: Respondent Characteristics Tasikmalaya

Indicator	Full Sample	Treatment	Control	t-Test
Respondent is … years old	51.161	50.980	51.342	0.362
Respondent is male	0.717	0.790	0.645	-0.145***
Respondent is married	0.938	0.937	0.940	0.004
Respondent completed … years of schooling	7.443	7.600	7.286	-0.314
Last month respondent suffered from …				
… no health complaint	0.481	0.497	0.465	-0.032
… from fever	0.140	0.153	0.126	-0.027
… from cough	0.168	0.157	0.179	0.023
… from diziness	0.148	0.130	0.166	0.036
Respondent's main activity is farming	0.797	0.787	0.807	0.021

Table 28 Balance Test: Respondent Characteristics Yogyakarta

Indicator	Full Sample	Treatment	Control	t-Test
Respondent is … years old	56.317	55.207	57.427	2.22*
Respondent is male	0.940	0.950	0.930	-0.020
Respondent is married	0.900	0.893	0.907	0.013
Respondent completed … years of schooling	8.862	8.903	8.820	-0.083
Last month respondent suffered from …				
… no health complaint	0.460	0.460	0.487	0.027
… from fever	0.103	0.103	0.083	-0.020
… from cough	0.223	0.223	0.180	-0.043
… from diziness	0.143	0.143	0.203	0.060
Respondent's main activity is farming	0.780	0.780	0.763	-0.017

4.2 Household and Economic Characteristics

Overall, most of the household and economic variables are balanced across treatment and control groups. In Tasikmalaya the difference in the number of income sources and whether or not households received transfers from RASKIN are statistical significant at the 10% level. On average, households in the control group in Tasikmalaya receive income from slightly more sources and receive RASKIN more often. For all other variables, there are no statistical significant differences.

Table 29 Balance Test: Household and Economic Characteristics Tasikmalaya

Indicator	Full Sample	Treatment	Control	t-Test
HH size	3.712	3.813	3.611	-0.202
Main buidling is owned by HH	0.930	0.927	0.934	0.007
HH owns motorcycle	0.724	0.747	0.701	-0.046
HH owns refrigerator	0.366	0.380	0.352	-0.028
HH receives income from … sources	1.609	1.517	1.701	0.184*
HH's main income is from farming	0.581	0.613	0.548	-0.065
HH received RASKIN in past 12 months	0.188	0.150	0.226	0.076*
HH was in financial distress in past 12 months	0.631	0.610	0.651	0.041

Table 30 Balance Test: Household and Economic Characteristics Yogyakarta

Indicator	Full Sample	Treatment	Control	t-Test
HH size	4.082	4.077	4.087	0.010
Main buidling is owned by HH	0.842	0.827	0.857	0.030
HH owns motorcycle	0.938	0.947	0.930	-0.017
HH owns refrigerator	0.377	0.413	0.340	-0.073
HH receives income from … sources	2.307	2.297	2.317	0.020
HH's main income is from farming	0.645	0.640	0.650	0.010
HH received RASKIN in past 12 months	0.228	0.243	0.213	-0.030
HH was in financial distress in past 12 months	0.475	0.500	0.450	-0.050

4.3 Land Ownership

Table 31 suggests that in Tasikmalaya the cultivated land size is statistically significant different at the 1% level between the treatment and control group. Even when one village with very high reported land sized is excluded ("adjusted"), the effect remains statistically significant at the 5% level and is quite large in magnitude. In the group that is excluded in the second line, the large majority of farmers reported very large cultivated land areas for crops different from rice. Figure 15 and 16 in the Appendix show the distribution of land in control versus treatment group in more detail. We stratified the sample according to urban and rural status and according to the distance in minutes from Tasikmalaya city before we randomized treatment and control. Yet, while the treatment groups with very high average land sizes in Tasikmalaya share the common feature of being relatively far away from Tasikmalaya city, the control farmer groups far away from Tasikmalaya city do not feature very high land sizes.

Further, there is a statistical significant difference at the 10% for the share of land rented in Yogyakarta. Households in the treatment group rent more of the land they cultivate than households in the control group.

Table 31 Balance Test: Land Ownership and Cultivation in Tasikmalaya

Indicator	Full Sample	Treatment	Control	t-Test
Land in m2 cultivated by HH	5152.814	6408.377	3901.422	-2506.955***
Land in m2 cultivated by HH "adjusted"	4744.258	5650.307	3901.422	-1748.885**
HH owns all cultivated land	0.644	0.630	0.658	0.028
HH rents all of cultivated land	0.156	0.147	0.166	0.019
HH rents part of cultivated land	0.200	0.223	0.176	-0.047

Table 32 Balance Test: Land Ownership and Cultivation in Yogyakarta

Indicator	Full Sample	Treatment	Control	t-Test
Land in m2 cultivated by HH	2621.758	2529.733	2713.783	184.050
HH owns all cultivated land	0.355	0.320	0.390	0.070
HH rents all of cultivated land	0.303	0.300	0.307	0.007
HH rents part of cultivated land	0.342	0.380	0.303	-.0766667*

4.3 Farming Production

Given the difference in cultivated land area between the control and the treatment group in Tasikmalaya, it is not surprising that total revenue from crops is also different. Households that cultivate more land, on average, harvest more and have to keep less of their harvest in relative terms for their own consumption. Consequently, these households can sell more and generate more revenue (correlation between land size and revenue is 0.4).

In Yogyakarta, the opposite appears to be the case. Households in control groups report higher revenues from the last planting period. This difference is statistically significant at the 10% level. Again, this might be explained, at least partly, by differences in the size of the land cultivated.
In terms of organic fertilizer use, the difference between treatment and control is statistically significant at the 10% level. Households in treatment groups use more organic fertilizer. However, the opposite holds for organic pesticide use. Here, control groups seem to use slightly more. Therefore, it may be argued that control and treatment groups in Tasikmalaya are broadly balanced regarding organic inputs. Similarly, treatment and control groups in Yogyakarta seem to differ slightly regarding the organic fertilizer input. However, the significance level is only 10%.

Further, respondents in the treatment group in Yogyakarta work less hours per day on the field. This difference is statistically significant at the 10% level. This is surprising, given that households in control groups reported a larger area of cultivated land.

Table 33 Balance Test: Agricultural Production Tasikmalaya

Indicator	Full Sample	Treatment	Control	t-Test
HH cultivates rice	0.936	0.926	0.947	0.021
Revenue from Crops last period in (000) Rp	2276.228	3544.605	1108.983	-2435.621***
HH did not use chemical fertilizer	0.038	0.040	0.037	-0.004
HH was offered chemical fertilizer subsidies	0.628	0.600	0.654	0.054
HH used organic fertilizer	0.433	0.454	0.412	-0.042
HH applied manure	0.490	0.464	0.515	0.051
HH did not use chemical pesticide	0.580	0.623	0.538	-0.085*
subsidies	0.030	0.034	0.027	-0.007
HH used organic pesticide	0.099	0.095	0.103	0.008
HH did not experience problems when selling crops	0.632	0.593	0.671	0.079*
Hours repondent works on the land cultivated by HH	4.624	4.699	4.548	-0.151
Spouse also works on the land cultivated by HH	0.737	0.715	0.760	0.045
Hours spouse works on the land cultivated by HH	4.280	4.315	4.245	-0.070

Table 34 Balance Test: Agricultural Production Yogyakarta

Indicator	Full Sample	Treatment	Control	t-Test
HH cultivates rice	0.907	0.887	0.926	0.040
Revenue from Crops last period in (000) Rp	2419.022	1997.393	2842.060	844.667*
HH did not use chemical fertilizer	0.023	0.027	0.020	-0.007
HH was offered chemical fertilizer subsidies	0.721	0.753	0.689	-0.064
HH used organic fertilizer	0.312	0.360	0.264	-0.096*
HH applied manure	0.628	0.683	0.572	-0.111**
HH did not use chemical pesticide	0.439	0.437	0.441	0.005
subsidies	0.027	0.037	0.017	-0.020
HH used organic pesticide	0.073	0.047	0.100	0.054*
HH did not experience problems when selling crops	0.932	0.930	0.933	0.003
Hours repondent works on the land cultivated by HH	5.326	5.553	5.097	-0.456**
Spouse also works on the land cultivated by HH	0.439	0.467	0.411	-0.056
Hours spouse works on the land cultivated by HH	4.127	3.922	4.353	0.431

4.3 Organic Farming and Environment

The comparison of variables relating to organic farming and environment suggests that control and treatment groups are balanced in both regions. Notably, there is no statistically significant difference regarding the attendance of the information session.

Table 35 Balance Test: Organic Farming and Environment Tasikmalaya

Indicator	Full Sample	Treatment	Control	t-Test
Organic farming was unkown to respondent before information session	0.346	0.350	0.342	-0.008
Respondent, spouse or family member attended information session	0.772	0.783	0.761	-0.023
Respondent perceives organic farming as modern	0.399	0.380	0.419	0.039
Respondents thinks demand for organic products increased in past 5 years	0.363	0.373	0.352	-0.021
Respondents thinks farmers' decisions have an important impact on environment	0.507	0.507	0.508	0.002
Respondent thinks pollution through agriculture is a problem	0.394	0.400	0.389	-0.011

Table 36 Balance Test: Organic Farming and Environment Yogyakarta

Indicator	Full Sample	Treatment	Control	t-Test
Organic farming was unkown to respondent before information session	0.243	0.263	0.223	-0.040
Respondent, spouse or family member attended information session	0.827	0.843	0.810	-0.033
Respondent perceives organic farming as modern	0.402	0.403	0.400	-0.003
Respondents thinks demand for organic products increased in past 5 years	0.327	0.303	0.350	0.047
Respondents thinks farmers' decisions have an important impact on environment	0.642	0.620	0.663	0.043
Respondent thinks pollution through agriculture is a problem	0.517	0.503	0.530	0.027

5. INTERVENTION

5.1 Treatment Description

The treatment consists of a three-day training on organic farming methods and principles. The aim was to encourage the practice of organic farming methods, to increase the awareness for problematic aspects of conventional farming and to increase the knowledge on principles. AOI designed the training content and schedule together with two local partners, TOM and MSA. These three organisations also provided the trainers for the trainings. Both, TOM and MSA can build on many years of experience regarding the training of farmers on organic farming and the marketing of organic products.

We invited the 20 interviewed farmers in each treatment village to participate in the training. In each farmer group we sampled the farmer group head whenever it was possible, i.e. when the farmer group head was an active farmer. Given the importance of the farmer group, we expect that this enhances the uptake of any organic farming methods. The training was held on three consecutive days in each farmer group's village. Organising the training in the respective villages minimized the barriers for farmers to attend. The farmers received Rp 50,000 for each day of the training (only if they attended) to reimburse any transport costs and to some extent work loss. After the training, the farmers received a printed manual on organic farming.

The enumerators distributed individual invitations to the farmers after they completed they survey activities in the respective village. This strategy also avoided bias during the interview. In Tasikmalaya, we further had to rely on the farmer group head to communicate the training date to the farmers. The date was chosen together with the group subsequent to the survey. However, distances in Tasikmalaya were too far to send the enumerators back many days after the survey ended. Thus, the farmer group head was asked to communicate the chosen date.

As mentioned in the introduction, we implemented three different treatment versions. Some farmer groups received only the training (treatment 1) while others either received the training plus a video and related discussion on health and environment effects of conventional agriculture (treatment 2) or the training plus a role play aiming to strengthen support within the group (treatment 3).

AOI, TOM and MSA designed and implemented the trainings in an interactive manner. During the training itself, the farmers received information and practice on soil and water management, management of cultivation of plants (especially rice), management and control of pests and diseases as well as information on business opportunities and marketing of organic products.

In the video session, the farmers were exposed to an intense video that showed the negative effects of using chemical inputs on the environment and on human health, particular the health of farmers who work with chemical inputs every day. The trainers then discussed the video content with the farmers.

During the role-play session, the farmers were invited to participate in a role-play addressing the accountability of organic farmers towards their consumers. The focus hereby was on generating understanding for the importance of recording the process of organic cultivation and working as a group.

5.2 Training Attendance

Overall, the attendance during the trainings was higher in Yogyakarta than in Tasikmalaya. In Yogyakarta on average 18 farmers and in Tasikmalaya on average 16 farmers attended the training. Reasons for non-attendance include both, lack of interest but often also lack of time. Some farmers are part-time farmers and had to engage in their other job during the time of the training. Further, some farmers attended some but not all days of the training, indicating that the lack of attendance was due to a lack of time.

In Tasikmalaya, we had very low attendance on the first day in one of the villages due to diverting interests of the farmer group head. Unfortunately, the farmer group head informed other villagers instead of the surveyed ones about the training dates. On the first day the team from AOI and MSA tracked down the survey participants and held the second and third training day only with them. To discourage these practices we had the policy to pay the transport fee only to individuals who were on our list of surveyed farmers in the respective village.

Table 37 Training Attendance Tasikmalaya

#	Kecamatan	Day 1	Day 2	Day 3	Average
2	Cigalontang	19	20	20	*19.67*
6	Culamega	16	16	16	*16.00*
8	Pancatengah	14	14	12	*13.33*
9	Leuwisari	20	20	20	*20.00*
10	Sukaresik	16	16	16	*16.00*
14	Sariwangi	0	8	11	*6.33*
15	Salopa	14	16	16	*15.33*
21	Sukaratu	16	18	18	*17.33*
23	Cineam	16	13	13	*14.00*
25	Pancatengah	20	16	20	*18.67*
27	Cisayong	20	18	16	*18.00*
28	Jatiwaras	20	20	20	*20.00*
29	Karangnunggal	19	19	18	*18.67*
30	Salopa	12	14	12	*12.67*
33	Jatiwaras	15	14	14	*14.33*
		15.8	**16.1**	**16.1**	**16.0**

Table 38 Training Attendance Yogyakarta

#	Kecamatan	Day 1	Day 2	Day 3	Average
9	Bantul	20	20	20	*20.0*
11	Bantul	19	19	19	*19.0*
13	Kulon Progo	13	13	13	*13.0*
14	Kulon Progo	17	18	19	*18.0*
15	Kulon Progo	19	20	20	*19.7*
18	Sleman	15	15	17	*15.7*
27	Sleman	20	20	20	*20.0*
28	Bantul	15	16	16	*15.7*
29	Sleman	19	20	19	*19.3*
30	Sleman	20	20	20	*20.0*
33	Kulon Progo	18	18	18	*18.0*
36	Bantul	18	20	20	*19.3*
38	Kulon Progo	20	20	19	*19.7*
42	Bantul	18	17	17	*17.3*
43	Sleman	14	15	15	*14.7*
		17.7	**18.1**	**18.1**	**18.0**

6. APPENDIX

Table 39 Spouse Characteristics

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Spouse is …				
… male	%	26.9%	5.2%	16.2%
… years old	mean	47.4	51.7	49.5
Spouse is …				
… household head	%	27.1%	4.6%	16.1%
… spouse of household head	%	72.9%	95.0%	83.8%
… child of household head	%	0%	0.4%	0.2%
Spouse is …				
… Muslim	%	99.8%	93.9%	96.9%
… Christian	%	0.2%	3.7%	1.9%
… other	%	0%	2.4%	1.2%
Spouse is …				
… Sundanese	%	99.3%	0%	50.5%
… Javanese	%	0.7%	99.4%	49.2%
… other	%	0%	0.6%	0.3%
N		558	538	1096

Note: Information not for full sample as not all respondents are married. Further, information for 2 spouses is incomplete.

Table 40 Spouse Health

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Spouse experienced …. last month				
… no health complaint	%	59.9%	61.8%	60.8%
… fever	%	8.6%	7.6%	8.1%
… cough	%	11.9%	11.4%	11.6%
… cold	%	9.5%	6.3%	8.0%
… asthma/breathing difficulties	%	2.3%	0.7%	1.6%
… diarrhea	%	1.6%	1.1%	1.4%
… headache/migrain	%	6.5%	4.7%	5.6%
… skin irritation	%	2.0%	2.0%	2.0%
… diziness	%	10.4%	16.6%	13.4%
… backpain	%	7.4%	4.5%	5.9%
Spouse has health insurance card	%	41.9%	85.5%	63.3%
N		556	537	1093

Note: Information not for full sample as not all respondents are married. Further, information for 5 spouses is incomplete.

Table 41 Spouse Education

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Spouse can read and write	%	97.5%	95.3%	96.4%
Spouse attended # years of school	mean	7.1	8.4	7.7
Spouse obtained …. diploma				
… no	%	3.1%	9.9%	6.4%
… primary school (and equivalent)	%	70.9%	34.3%	52.9%
… junior high school (and equivalent)	%	16.2%	18.2%	17.2%
… secondary high school (and equivalent)	%	7.7%	29.2%	18.3%
… tertiaryhigh school (and equivalent)	%	2.2%	6.7%	4.4%
N		556	537	1093

Note: Information not for full sample as not all respondents are married. Further, information for 5 spouses is incomplete.

Table 42 Livelihood Activities and Employment Spouse

Indicator	Summary statistics	Tasikmalaya	Yogyakarta	Full Sample
Spouse's main economic activity during the last 12 months was …				
… farming on own or rented land	%	55.8%	36.7%	46.4%
… other agricultural activities	%	4.1%	0.4%	2.3%
… paid agr. activities for others	%	3.9%	7.2%	5.6%
… public/government job	%	1.3%	4.5%	2.8%
… other permanent job	%	7.0%	5.6%	6.3%
… other temporary job	%	7.0%	4.5%	5.7%
… own non-agr. business	%	9.7%	16.9%	13.2%
… other economic activity	%	1.1%	3.7%	2.4%
Respondents second main economic activity during the last 12 months was …				
… farming on own or rented land	%	14.0%	8.7%	11.4%
… other agricultural activities	%	4.7%	2.6%	3.6%
… paid agr. activities for others	%	4.8%	8.7%	6.7%
… public/government job	%	1.1%	0.9%	1.0%
… other permanent job	%	4.5%	1.7%	3.1%
… other temporary job	%	3.8%	4.6%	4.2%
… own non-agr. business	%	1.6%	1.9%	1.7%
… other economic activity	%	65.7%	70.9%	68.2%
… no economic activity	%	0.0%	0.0%	0.0%
N		559	539	1098

Note: Information not for full sample as not all respondents are married.

Figure 14 Gender Balance in Tasikmalaya

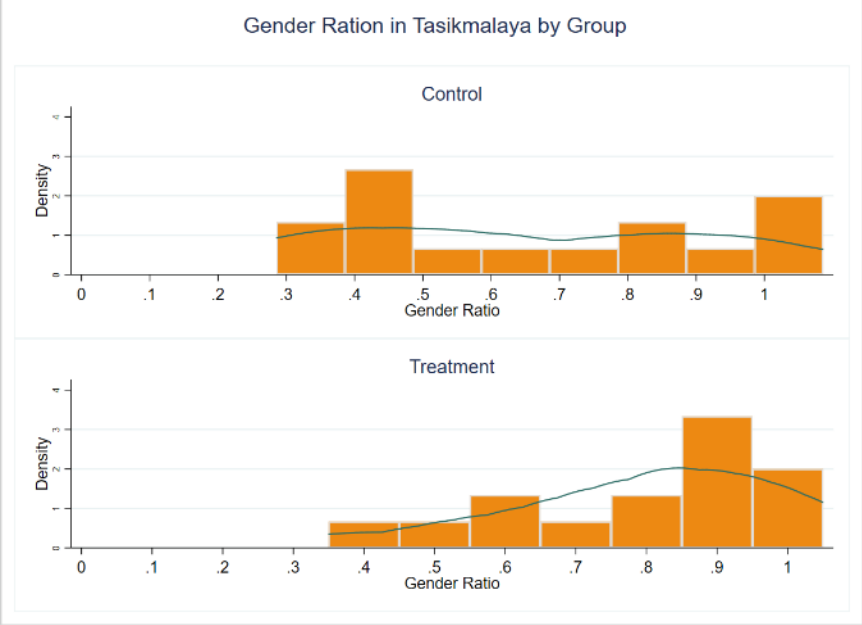


Figure 15 Balance of Land Size in Tasikmalaya

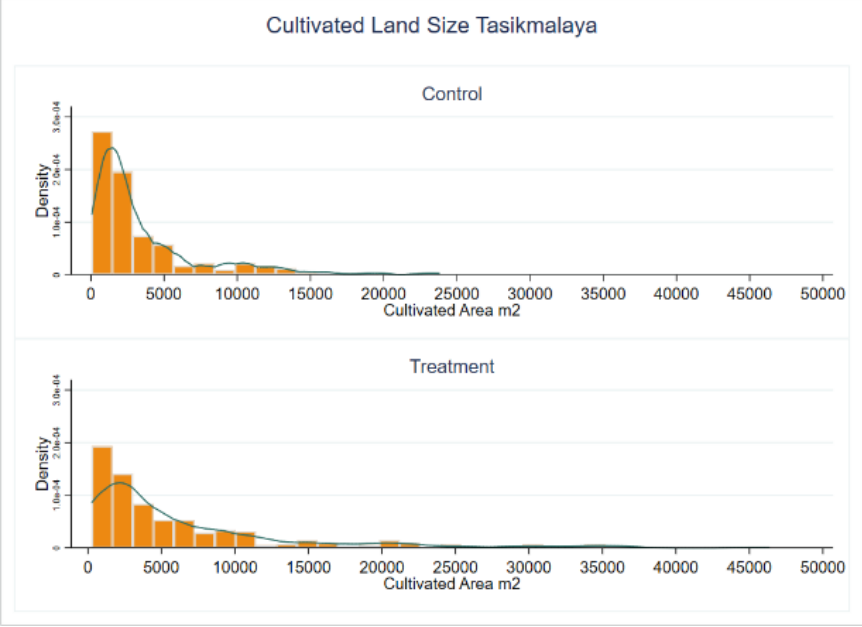


Figure 16 Balance of Land Size in Tasikmalaya by farmer group