

# Agroecological Intensification in Malawi: Evidence from Farmer Research Networks

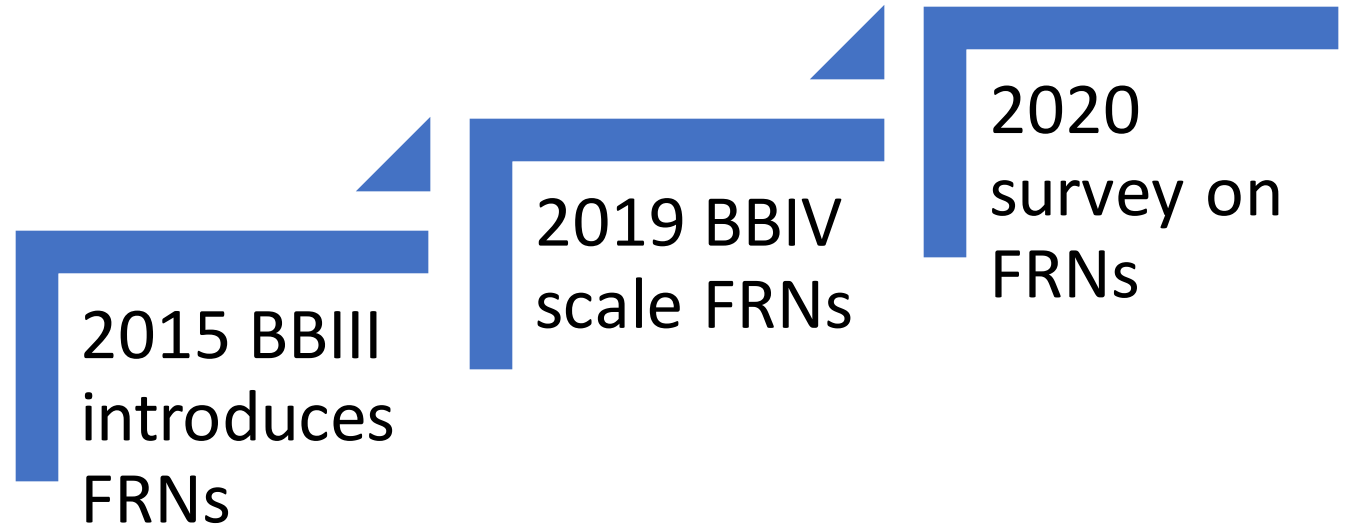


Maize-Legume Best Bets project, September 2020

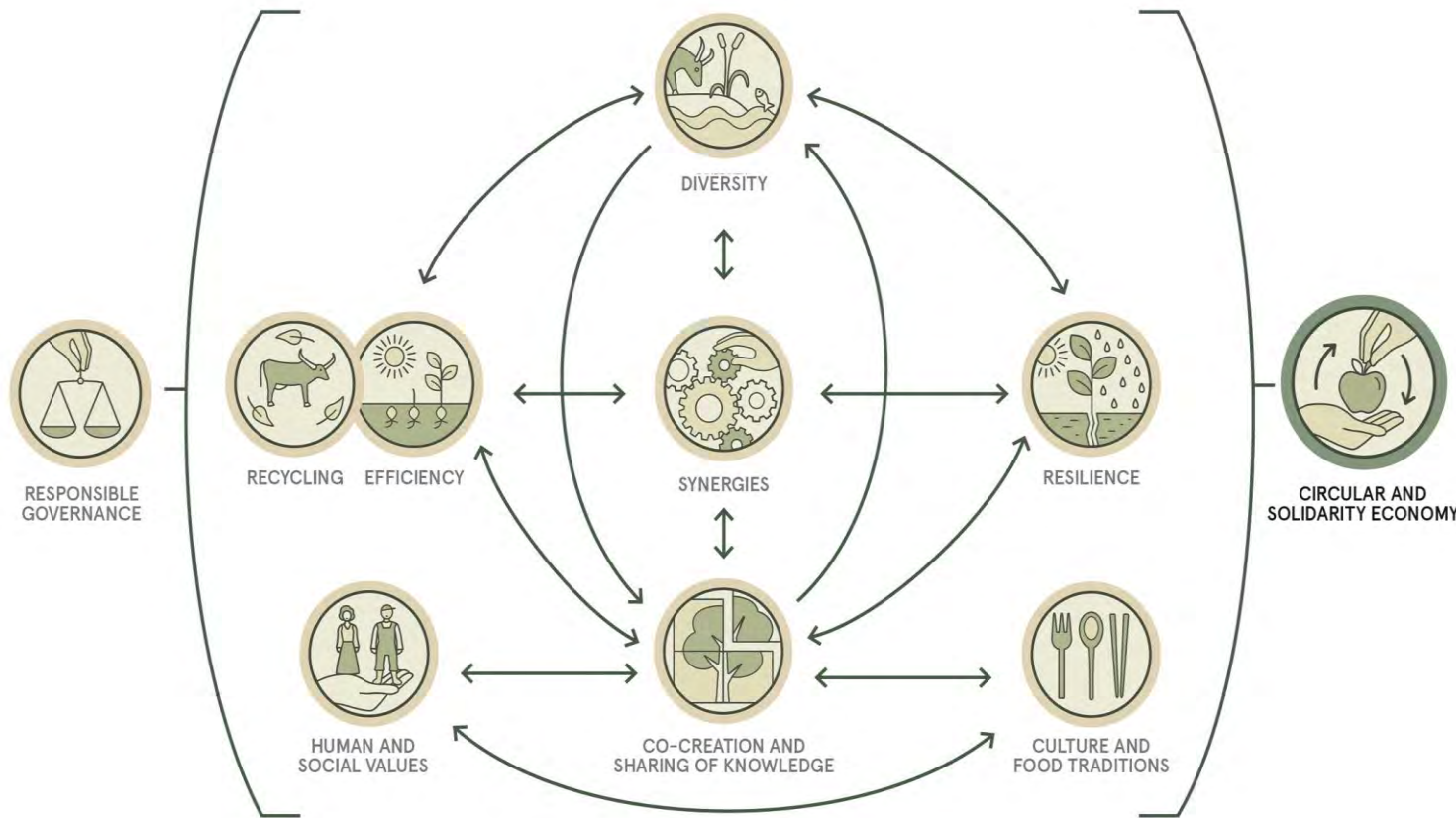
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# Introduction

- Malawi Maize-Legume Best Bets Technologies project
  - Supporting Farmer Research Networks (FRNs) to
    - Strengthen farmer engagement in soil health innovation
    - Increase scaling of soil health innovations
      - At farm level
      - Community level



# Survey inspired by FAO agroecology elements



## Other sources of inspiration

- Biovision criterion tool
- Sustainable Intensification Assessment Framework

## Elements related to Best Bets project

- Diversity
- Synergies
- Efficiency
- Co-creation
- Human and social values

# Survey objectives

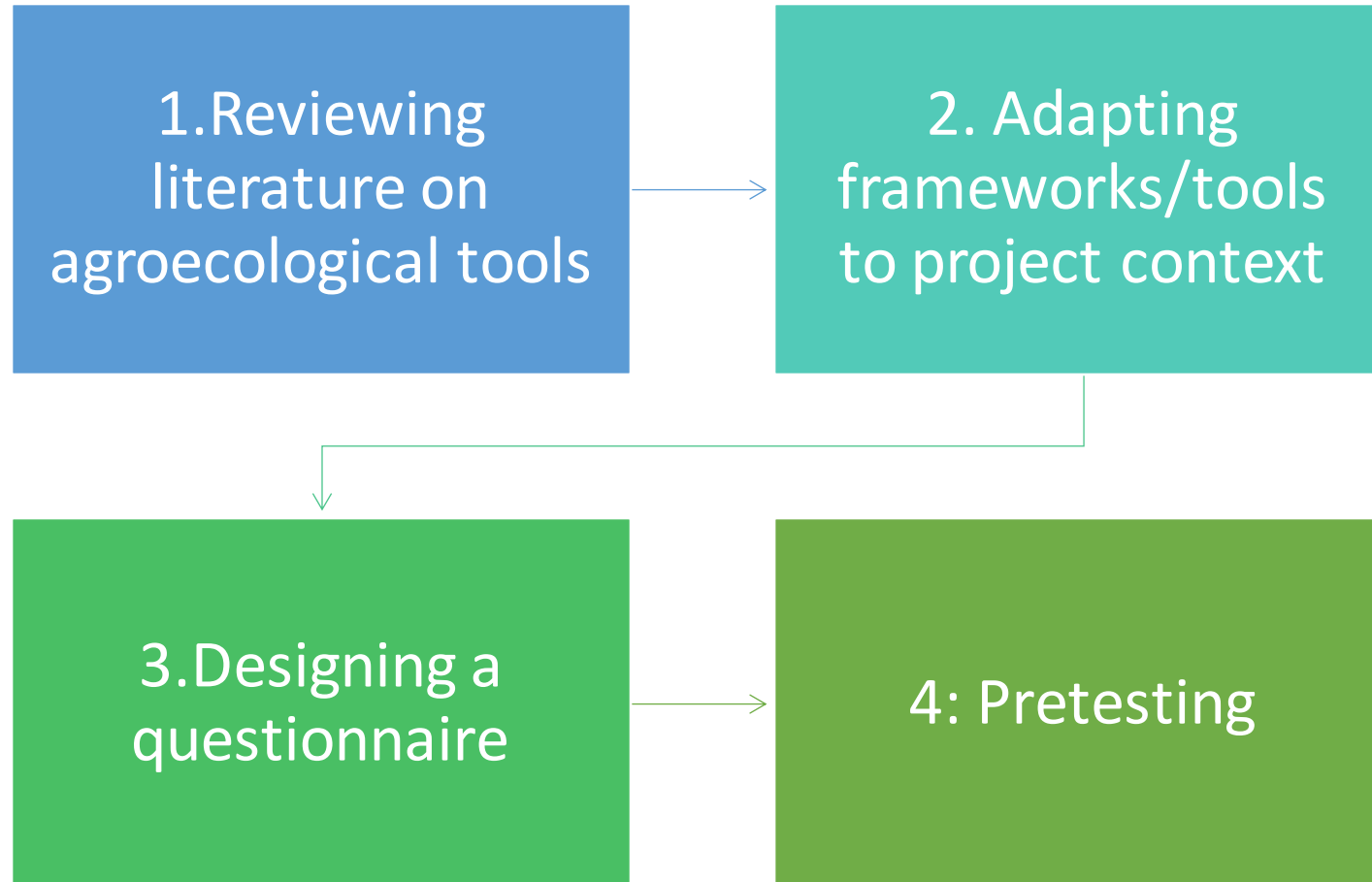
- *Main objective*

- To analyse the effectiveness of FRNs in supporting soil health innovations for agroecological intensification in maize-legume farming systems

- *Specific objective*

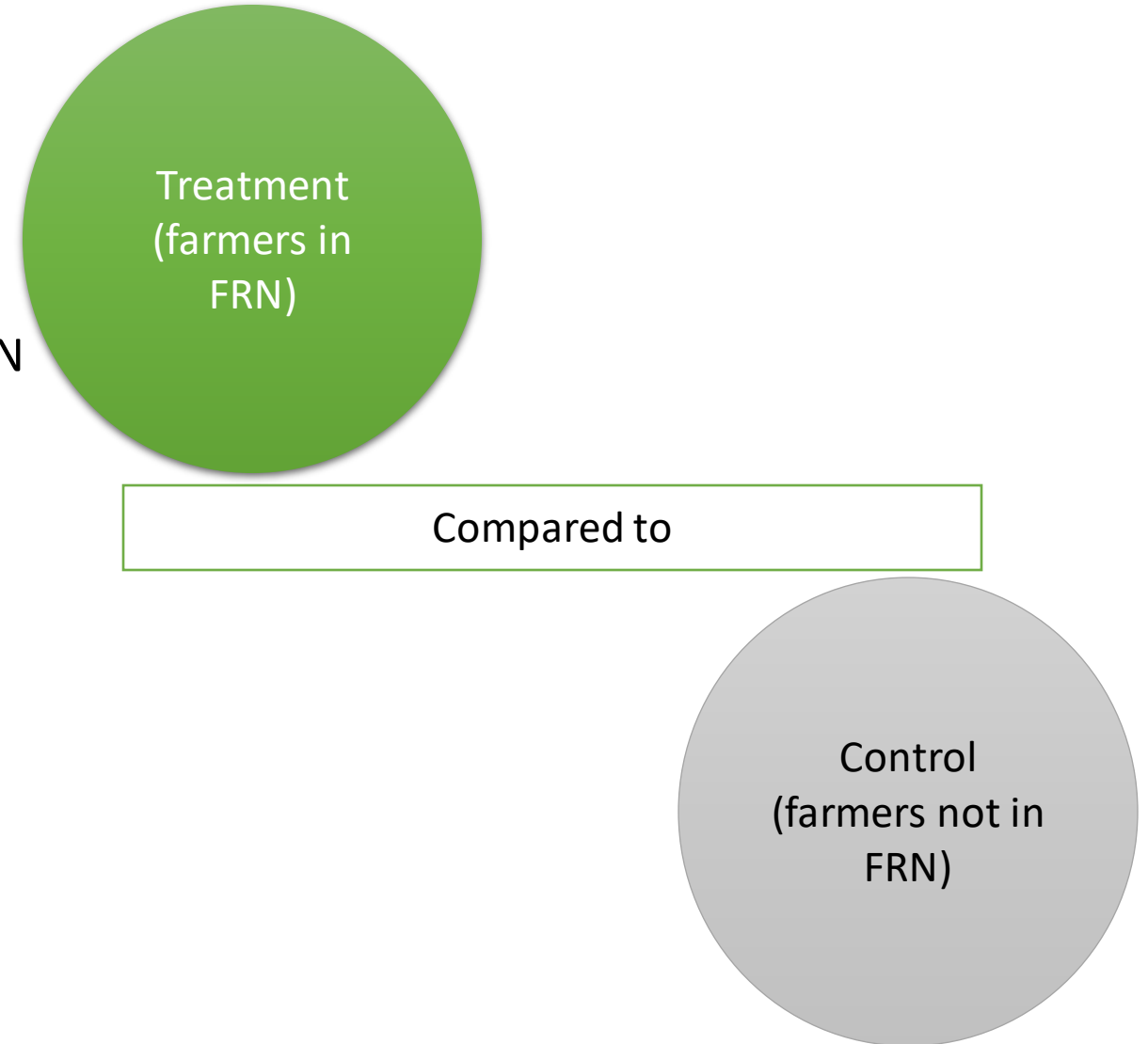
1. To analyse the diversity of farmers engaging in soil health innovation through FRNs
2. To establish the contribution of FRNs to selected agroecological elements
  - *Diversity*
  - *Synergies*
  - *Efficiency*
  - *Co-creation*
  - *Human and social values*

# Preliminary steps to the survey



# Survey design

- Quasi-experimental design (Campbell and Stanley, 2015)
  - Post-test only
    - Comparison of farmers exposed to FRN and those not exposed
      - Possible shortfalls
        - Differences in characteristics of comparison groups
        - Spill over effect
        - Mortality problem

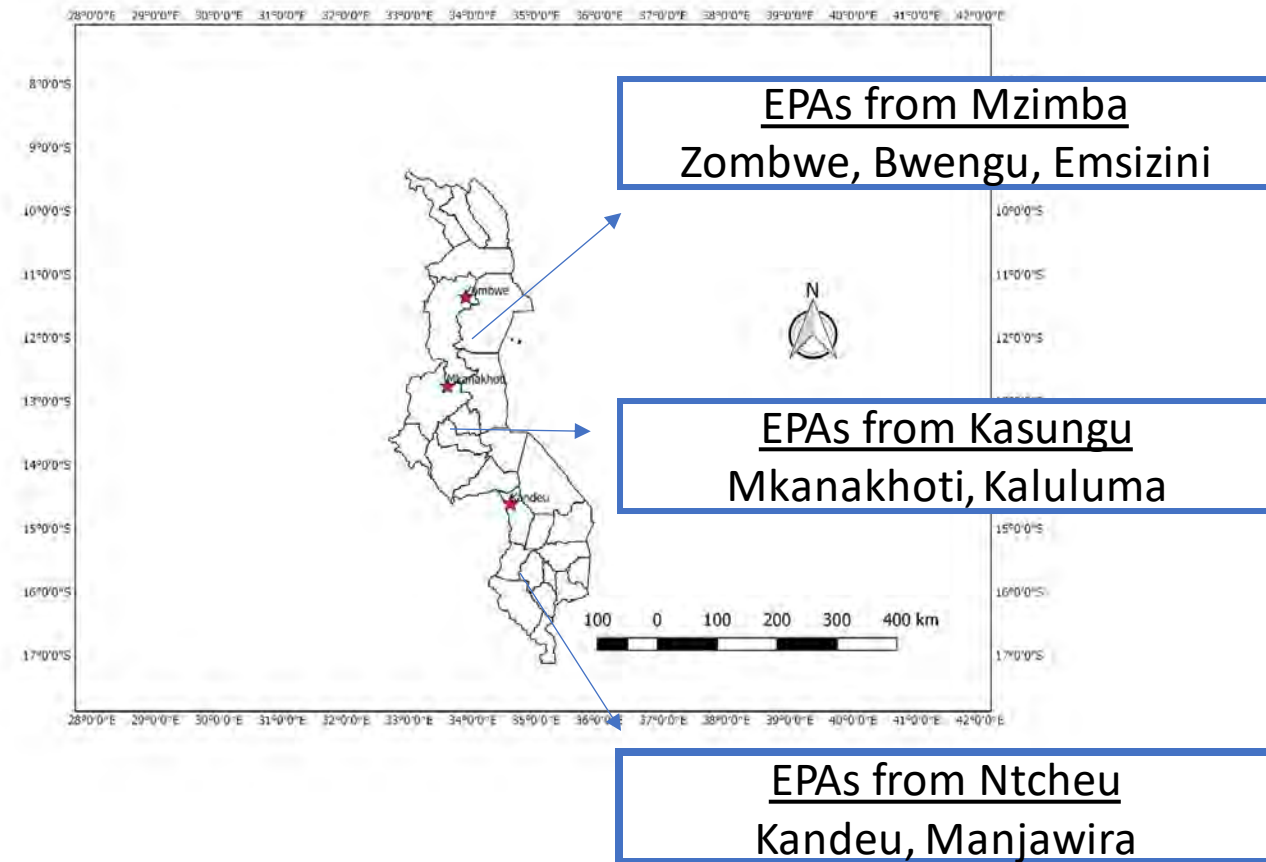




# Sampling

- Multistage sampling

Stage	Units selected	Selection technique
One	3 districts	Purposive
Two	7 EPAs	Purposive
Three	1-2 sections (treatment) 1 section (control)	Cluster and simple random sampling
Four	686 farmers	Simple random sampling



# Sample size

	Kasungu	Mzimba	Ntcheu	Total
FRN	128	116	125	369
<i>BBIII</i>	51	47	69	167
<i>BBIV (a)</i>	44	33	27	104
<i>BBIV (b)</i>	33	36	29	98
Control	90	99	97	286
<b>Total sample</b>	<b>218</b>	<b>215</b>	<b>222</b>	<b>655</b>

Almost 70% of the sample frame-list of FRN members

70% of the FRN sample

*BBIII= Farmers who joined FRNs in 2015-2018*  
*BBIV (a)= Farmers who joined FRNs in 2019*  
*BBIV (b)= Farmers who joined FRNs in 2020*



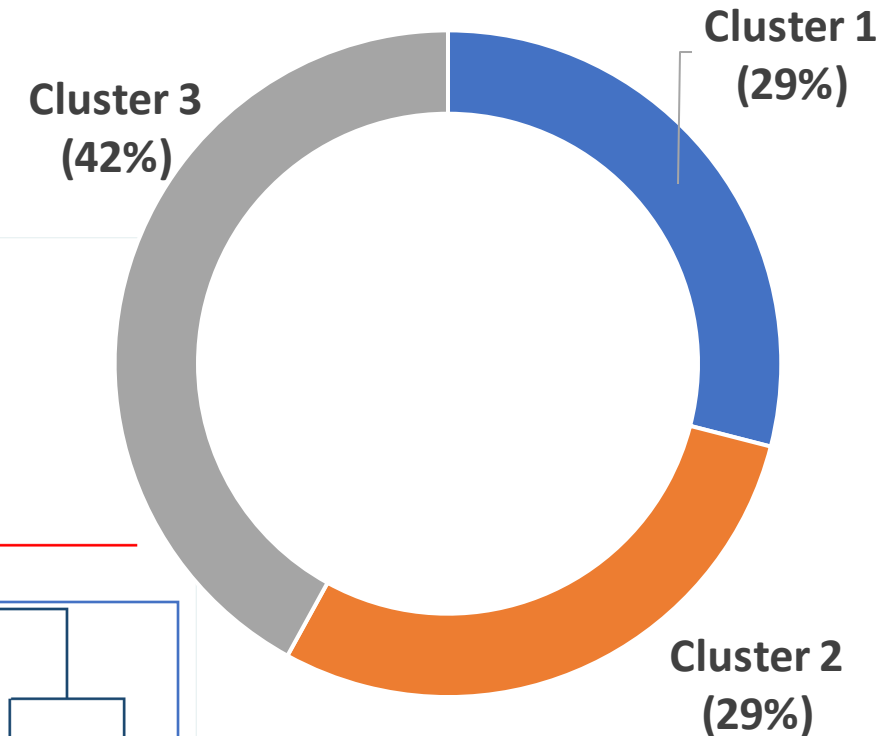
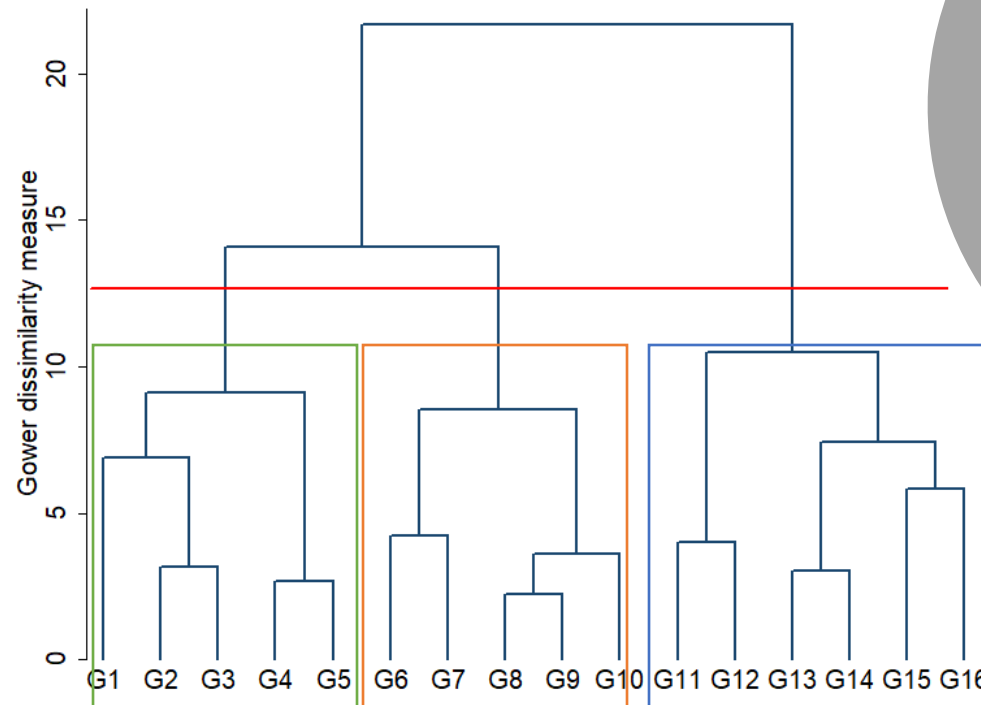
# Summary of items in the questionnaire

- 1-Farmer and farm diversity
  - Demographic characteristics
  - Farm Characteristics (2018/19 rain Season)
  - Household food security and assets
- 2- Knowledge, Attitudes and Practices (KAP) on agroecology
  - Integration of crops, trees and livestock (synergies)
  - Farm inputs and productivity of maize and legume crops (efficiency)
- 3- Farmer empowerment and engagement in innovation
  - Participation in agroecological activities(co-creation)
  - Women empowerment index (human and social values)

# Results: Diversity of farmers in FRNs

- Cluster analysis identifies three categories of farmers

Variables loaded in cluster analysis	
1	if hired labour
2	if house has iron sheet roof
3	if own cell phone
4	if own chairs
5	if use candle for lighting
6	if access tap water
7	if own cattle
8	education level
9	age of respondent
10	rained fields cultivated
11	months with inadequate food
12	dietary diversity score



# Results: Diversity of farmers in FRNs

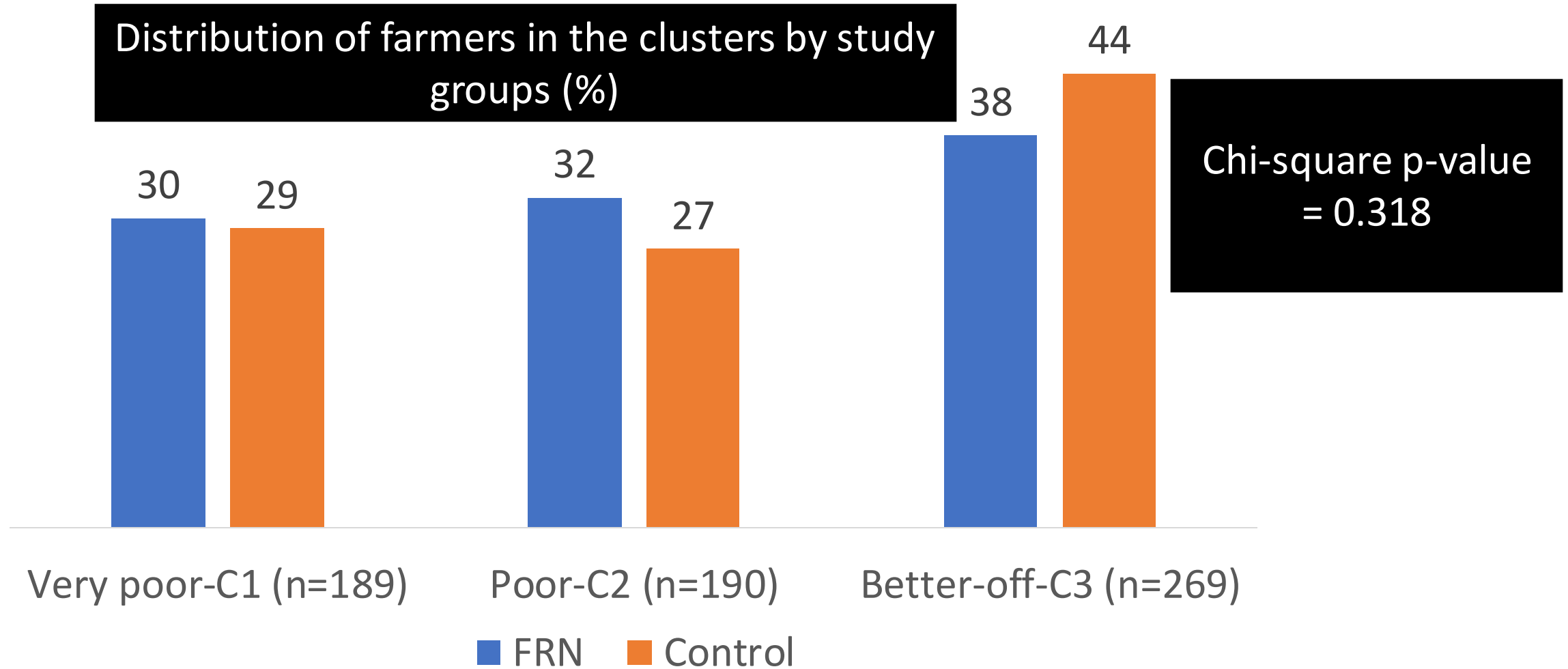
- The three farmer categories have different characteristics

Characteristics	C1	C2	C3	p<0.05
hired labour (%)	7	47	51	0.000
iron sheet roof (%)	53	6	86	0.000
own cell phone (%)	23	90	91	0.000
own chairs (%)	33	53	87	0.000
Use candles for lighting (%)	0	0	27	0.000
access tap water (%)	2	1	6	0.002
own cattle (%)	2	3	23	0.000
Education level-secondary (%)	16	31	36	0.000
mean age in years	44.4	40.3	45.9	0.0000
mean number of rainfed fields	1.8	2.0	2.1	0.0000
mean number of months without food	1.9	1.4	0.9	0.0000
mean dietary diversity score	3.6	4.1	4.1	0.0000

C1	Very Poor
C2	Poor
C3	Better-off

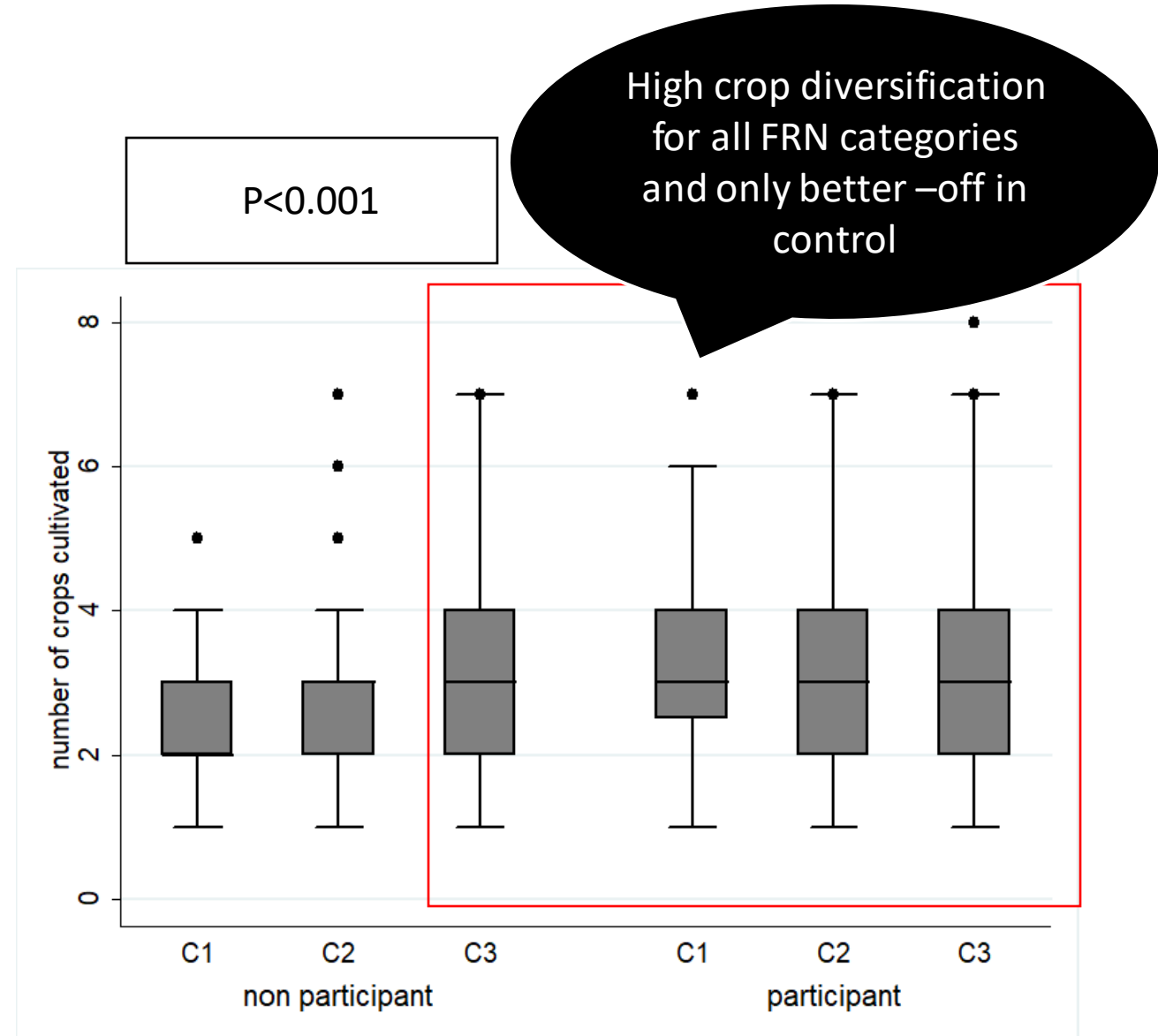
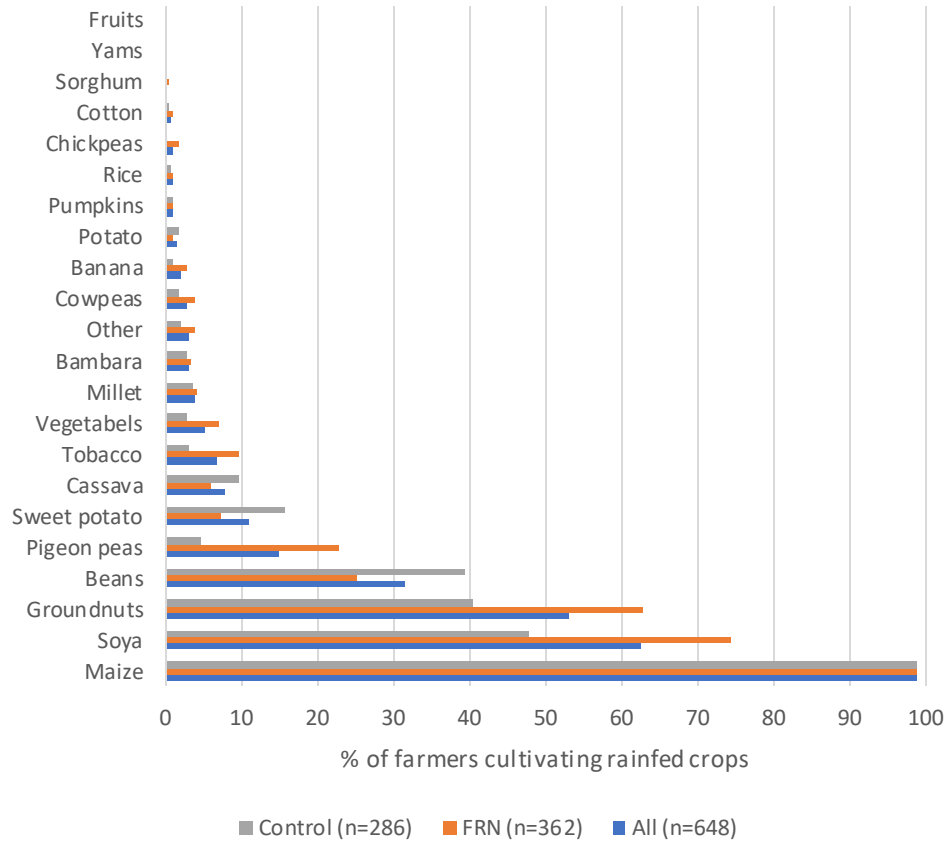
# Results: Diversity of farmers in FRNs

- All three farmer categories are represented in the FRNs



# Results: Diversity in farms

- Evidence of crop diversification in all groups, but FRN farmers are more diversified



# Results: Diversity in farms

- FRN farmers integrating legumes in farms and shifting from monocropping (maize)

Crop	Treatment	Less than quarter field	Quarter field	Half field	Three quarter field	Full field
Maize	Control (n=283)	1	5	16	27	69
	FRN (n=356)	7	10	35	27	57
Beans	Control (n=111)	5	23	14	16	51
	FRN (n=282)	17	31	15	9	37
Soya	Control (n=134)	12	37	15	8	31
	FRN (n=266)	18	37	26	9	24
Groundnuts	Control (n=113)	12	43	15	6	27
	FRN (n=222)	21	41	23	2	21
Pigeon peas	Control (n=12)	17	33	25	8	33
	FRN (n=77)	47	35	4	4	14



# Experiences with the questionnaire

- Interview lasted
  - 40 min (average)
  - What was helpful (speed)
    - Structured and closed ended questions
    - Structured questions generated from qualitative information
    - Pretesting with farmers having similar characteristics
- Farmers struggled to answer this questions
  - “How maize crops are used to support the legume crops”
    - It took time for farmers to comprehend the question
- Farmers were not able to give details on pesticides and herbicides
  - A few farmers apply chemicals
    - Are farmers, without their knowledge, already practicing agroecology?

# Next steps

- Analyse data
- Report writing (journal papers)
- Further investigations to
  - Fill in the gaps
  - Dig into issues identified from the study, for example,
    - How does the FRN model support scaling of innovations?
    - How do power imbalances affect the agroecology knowledge system?
    - Is actor collaboration viable for agroecological innovation?

Thank you  
for your  
attention

