Understanding the Adoption of Zero Budget Natural Farming in Andhra Pradesh, India

Duddigan, S.[1], Walker, G.[1], Cardey, S.[1], Hussain, Z.[2], Osbahr, H.[1], Shaw, L.J.[1], Sizmur, T.[1], Thallam, V.[2] & Collins, C.D.[1]

[1] University of Reading, UK [2] Rythu Sahikara Samstha, AP, India

https://research.reading.ac.uk/zbnf/

Introduction

Zero Budget Natural Farming (ZBNF) emphasises home-made, locally sourced, agrochemical-free inputs and regenerative techniques as a means to achieve socio-ecological resilience for smallholder farmers.

In Andhra Pradesh, SE India, what started as a social movement has become a state backed extension. ZBNF, more recently referred to as Andhra Pradesh Community manage Natural Farming (APCNF) has been adopted by more than 500,000 farmers, with the intension to reach 6 million.

Figure 1 – ZBNF amendments LEFT homemade jiwamrita ingredients include desi cow urine, dung, jaggery, gram flour RiGHT locally sourced dry dead mulch

Aims/Objectives

ZBNF has been reported to increase yields, thereby increasing income.
- Current evidence is largely anecdotal/ lacking statistical support
- Needs to be reinforced by controlled replicated field experiments

In addition, we sought to understand motivations behind the adoption of ZBNF based on farmer *perceptions* of the practice, including the way perceptions influenced:
- Decision making
- Paths of knowledge exchange
- Innovation processes
- Root causes behind adoption

Methods

Working in the same communities in two districts (wet and dry) spanning over 800km, we established controlled field experiments alongside participatory photography investigations led by farmers.

Figure 2 – Participatory photography activity in Women's Self Help Group

Participatory photography uses visual storytelling to understand the subjective perceptions of ZBNF among women farmers in self help groups. More details in Walker et al (2021)
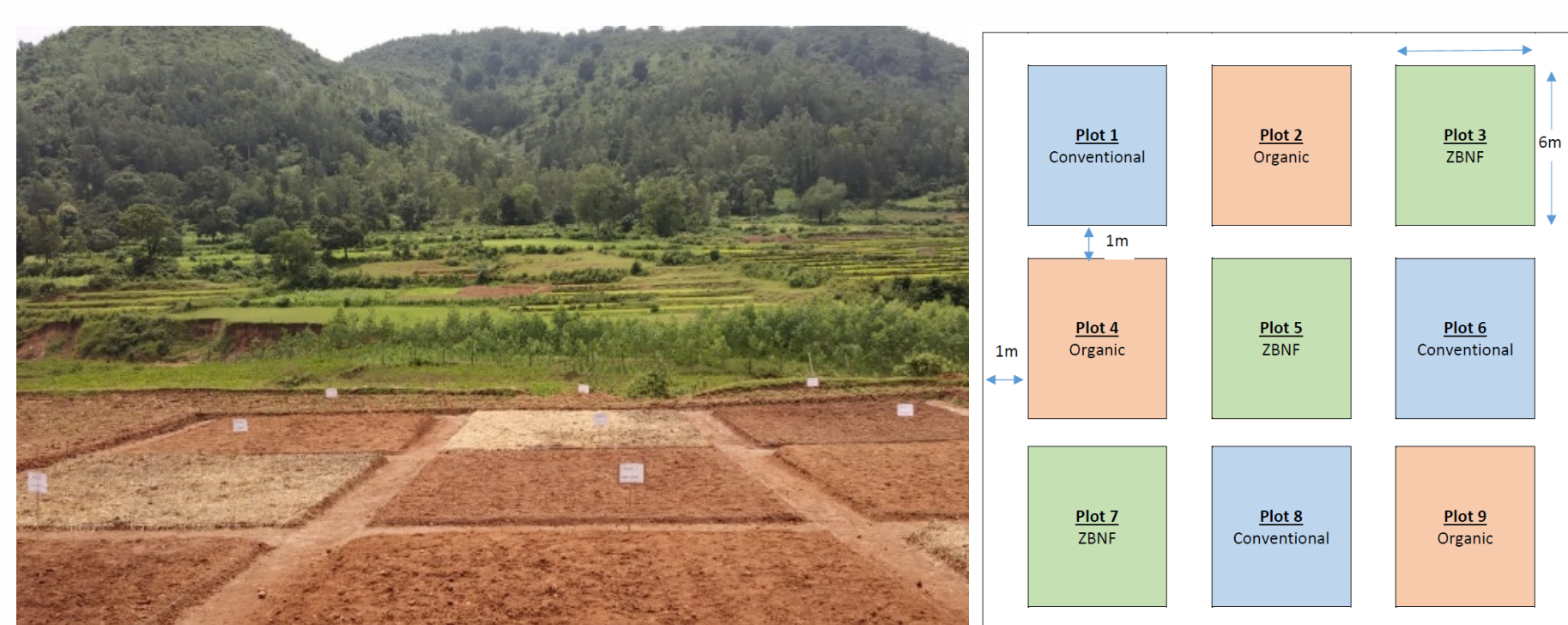

Figure 3 – Example controlled field experiment

Controlled field experiments were established in 44 locations over 3 seasons across the state. These consisted of three (6 x 6 m) replicate plots under ZBNF, conventional and organic management treatments in a latin square design. More details can be found in Duddigan et al (2022)

Results

Visakhapatnam narrative types:
- Legacy
- Memory
- Consciousness

Inclusive of stories about happiness, tradition, love of nature, clean living, good habits, being one with nature, children, the preservation of culture, shaping the future

Anantapur narrative types:
- Independence
- Consciousness
- Trouble

Inclusive of stories about water scarcity, water conservation, rains, self-reliance, the importance of money, freedom from precarity, entrepreneurship, empowerment, security

Discussion

While 'on script' messaging about the benefits of ZBNF (increased yield, increased income, lower expenditure on inputs) was a motivating factor for adoption, there were also many unquantifiable subjective gains perceived by farmers inclusive of memory, legacy, independence, and a rejection of industrialized agriculture.

In Anantapur (dry district) where there was significantly higher yield in the ZBNF treatment, farmers told stories about extra income, independence from stress, the importance of water, and security as motivations for adoption (Fig 4).

In Visakhapatnam (wet district) where ZBNF had no significant effect on yield (or a significantly lower yield), farmers connected the benefits of adoption to the love of nature, happiness, the legacy of agriculture and clean living being left to their children, and tradition.

Together, the parallel soil and social science approaches reveal the effect of ZBNF on the soil, as well as the perceptions of those transformations among the community members themselves, including the way those transformations became embedded in the overarching narratives farmers used to define their lives.
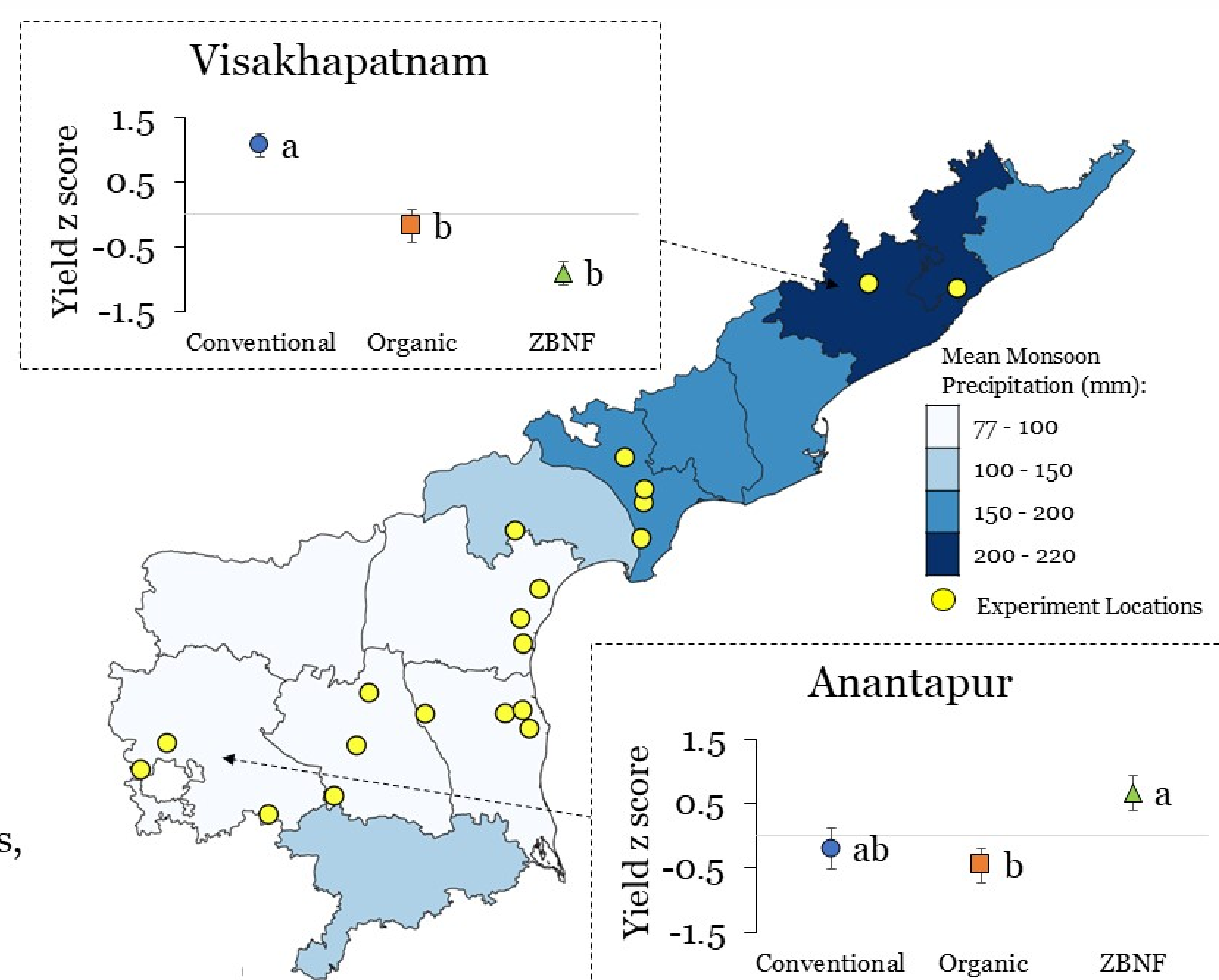

Figure 4 – Season 1 yield from controlled field experiments and narratives in participatory photography