LOCAL UNDERSTANDINGS OF SOIL FERTILITY, RAINFALL AND CONSERVATION AGRICULTURE IN LAIKIPIA, KENYA: A QUALITATIVE ANALYSIS

1. INTRODUCTION AND RESEARCH QUESTIONS

1.1 A few pillars of Kenyan agricultural policies:
- Insufficient harvests
- Soil infertility as a risk
- Climatic challenges
- Up-scaling high productive strategies

1.2 Principles of Conservation Agriculture (CA)

Minimun or no-tillage | Crop rotation | Soil cover
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Overcome food insecurity and soil degradation (Cotula, 2015).
Acceptable profits with high and sustained production levels (Thiombiano and Méthot, 2009).

Pictured as a win-win approach

1.3 Forms of knowledge: production, transmission and hierarchy

Local knowledge has been represented in opposition to modern knowledge. However, knowledge is not monolithic nor culturally bound and knowledge frontiers are blurred (Gudheru, 2012).

In contexts of resettlement, as the one in Laikipia (Kenya), people integrate but also produce knowledge (Muduge, 2007).

1.4 Research goals:
- Local understandings about soil fertility, rainfall and other factors limiting productivity, and rainfall or crops.
- Farmers' views about Conservation Agriculture (CA).

2. STUDY AREA AND RESEARCH METHODS

April-June 2015 | Locations of Eth and Umande (Laikipia East, Kenya).
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Visits to CA, non-CA and mixed farms;
Semi-structured interviews (>80 min each), 4 in-depth interviews and informal conversations with farmers with CA experience, farmers with no CA experience, extension officers, employees of the ministry of agriculture, employees of non-governmental organisations (NGOs), service providers, input providers.
Archive research.

Data was coded and analysed in Atlas.ti.

64 people interviewed: 50 farmers (21 women, 29 men).

3. RESULTS: SOIL, RAIN, CONSERVATION AGRICULTURE

3.1 Laikipia region timeline (from interviews and archive research)

- Ndomestic pastoralism
- No-tillage, farming with sticks and machetes
- Colonial settlement: intensive tillage for wheat production
- Inorganic fertilizers and pesticides
- Independence of Kenya (1964)
- Resettlement: land division in 3.5 acres (1970-80s)
- Democritisation of tilling machinery (tractors, hoes, ploughs)
- Prevention of soil erosion: agroforestry, terraces, ditches, stone barriers to avoid soil carriages.
- First Conservation Agriculture programs in Laikipia (2007)
- Introduction of no-tillage practices and pre-seeding herbicides

Tillage was introduced during colonialism as a high-technological method to increase production. In Laikipia, soil erosion has been a concern after the independence of Kenya (1964).

3.2 Classification of soil fertility by farmers in Laikipia

Types of soil
- Umoja watiri (fat soil) “with a lot inside"
- Muhengwa watiri (soil that doesn’t give expectations, doesn’t have enough food for the plants"
- Mutumia ne munu (fat soil)
- Mutumia ne mechake (thin soil)
- Turi mутьure (red soil, traps the rain, easy to work)
- Muthichuru (black soil, hard to work, does not handle intense rains)
- Gudheru (black soil)
- Muthange (sandy soil).

3.3 Portrayals of change in rainfall: decreasing, cyclic and/or longstanding:

Fighting the “tiredness of the soil”:
- manure from dung or trees;
- inorganic fertilizer;
- fallowing sections of the farm;
- crop rotation;
- leaving barriers of napier grass;
- furrows to prevent soil carriages by the rain;
- slashing the weeds and leaving them in the farm;
- mulching plus tillage for producing manure;
- weeding and mixing the weeds with the soil;
- minimum tillage (only among CA farmers).

CA in Kiswahili is Kulima na dawo “farming with chemicals”.

“IT is a way of planting without ploughing, you just put herbicides” (M26). “For ploughing we use machines — a tractor, or chemicals — herbicides” (M21).

Resistance to drought

About the 2014 drought:
- “There was a bit I got from the CA but not from the farmer’s practice” (F02).
- “There was no maize in the shamba, we planted but we didn’t harvest, only small, less, but harvesting no. Even in our shamba of CA” (F13).

4. CONCLUDING THOUGHTS

CA principles are individually conformed with others in a mix-strategies approach.

Farmers discern soil condition and use several methods to improve soil fertility. Trouble of drought is portrayed as a long standing threat with difficult prospects. Lack of irrigation systems is the main constraint to crop production.

Both CA and non-CA farmers added a feature to their understandings of CA — herbicides’ use, which is not clearly stated in CA literature.

Local people produce, integrate and transfer knowledge (Nygren 1999) as they also challenge others’ conceptual paradigms, like the CA definitions.

CA maybe recognised to provide slightly better yields than non-CA but it is not resistant to severe drought.

There are ethical, environmental and health issues to be discussed regarding the introduction of pre-seeding herbicides in Laikipia through CA promotion. Alternatives to managing weeds should be carefully researched.

More attention should be given to strategies that guarantee soil cover. Otherwise the success of CA in Laikipia will be limited.

5. LITERATURE


Muduge, Rachel N. 2007. ‘An Ethnography of Knowledge: The Production of Knowledge in Multi-stakeholder Agreements (MSA)’. Nordic Africa Institute (NAI), Uppsala.


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