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**A Qualitative expert Assessment Tool (QAToCA) for assessing the
adoption of Conservation Agriculture in Africa: selected application
in Kenya and Tanzania**

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Introduction

Conservation agriculture (CA) is often promoted to reduce soil erosion and maintain soil fertility but shows lower adoption rates in Africa as compared to those of other continents e.g. South and North America or Australia.

Farmers in Africa do not adopt all components of CA due to various reasons such as limited access to inputs (herbicides, cover crop seeds), labour constraints, or insufficient resources (Baudron et al. 2005; Giller et al. 2009). Poor infrastructure, small farm sizes and the low educational level is further identified by these authors as major constraints to the promotion of CA. Most often, the lack of adoption in Africa is not due to technical problems, but because farmers are constrained in resources. Key resources under constraint are land, labour at key periods during the cropping cycle, feed for livestock, manure for soil amendment and financial capital to invest in external inputs. Therefore, investment on CA seems to compete with the basic needs of farmers. Ehui and Pender (2005) mention the general lack of support for smallholder agriculture in much of Africa, which leads to economic disincentives to invest in CA, leading to a slow adoption rate.

Nevertheless, in spite of the large amount of available literature on constraints to CA adoption, a comprehensive self-assessment tool is lacking that allows a systematic evaluation of the determinants in the CA adoption process from field, farm to regional scale and for use in a variety of regional contexts (Fig. 1).

This knowledge gap motivated us to develop a Qualitative expert Assessment Tool for the assessment of CA adoption (QAToCA, pronounced [ka:toka:]) within the EU-funded project 'CA2Africa' (www.ca2africa.eu). QAToCA is designed to assess in a semi-qualitative manner the socio-economic, institutional and cultural conditions that promote or hinder the adoption of CA in the heterogeneous farming contexts in Africa (Corbeels et al same issue).

The objective of this contribution therefore is to provide; 1) a brief description of the development of this tool, 2) its testing procedure and 3) exemplary results of its application in two African case studies, located in the Ndindikuru and Karatu districts in Kenya and Tanzania, respectively.

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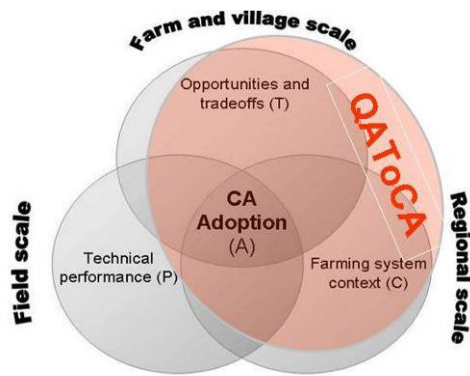


Figure 1: Analytical scales in the CA adoption process and coverage of QAToCA tool

The case studies are part of the CA-SARD project that was funded by FAO and coordinated by the African Conservation Tillage network (ACT) with the main objective to improve food security and rural livelihoods of small and medium scale farmers by promoting CA. Main interventions were the adaptation and testing of CA technologies through approaches that included farmer field schools, field days and exchange visits aiming at capacity building and creating awareness.

Material and Methods

Based on a simple Excel spreadsheet file, QAToCA specifically looks at the contextual factors not handled by quantitative, explanatory modelling approaches. Guided by existing diffusion theories and conceptual models of adoption, the tool covers seven thematic areas (A-G):

- A Object of Adoption (CA)
- B Capacity of the implementing organisation(s)
- C Attributes of Scaling up
- D Political/Institutional framework at regional level
- E Political/Institutional framework at village level
- F Economic conditions
- G Community's attitude towards CA

Each of these areas is underpinned with a systematic, expert-based list of adoption criteria with associated questions and possible scenarios for regional CA experts and practitioners to self-assess their CA diffusion activities in their respective regions. The issues covered focus on the regional or contextual scale, but with some overlap to the field and farm levels.

After two rounds of pretesting among project partners and during case study workshops (Tanzania, Zimbabwe, Burkina Faso, Madagascar, and Tunisia), a final version of the tool was developed.

QAToCA is applied by filling one spreadsheet file by several experts for one case study. With the assumption that no expert has knowledge about all levels considered in the tool, the best selection for a QAToCA working group per CA case study should include:

- a researcher,
- an extensionist/promoter of CA,
- a farmer with appropriate CA knowledge (an adopter) and
- a farmer, who adopted, but stopped practicing, or who considered adoption, but then did not implement it (a non adopter)

This group is guided through the questions of the tool by an expert facilitator who has a good knowledge of it. The venue is a workshop-like meeting with enough time for discussions (approx.

half a day). Discussions are documented reflecting the diverting opinions within the group if they arise.

Results and Discussion

In order to identify the determinants to CA adoption in Kenya and Tanzania, CA experts from these two case studies (Ndindikuru-Kenya and Karatu-Tanzania) with owned knowledge of their respective case studies and CA promotion efforts were asked to fill out a QAToCA file. The assessment revealed an overview of the relevant supporting and hindering factors (**Fehler! Verweisquelle konnte nicht gefunden werden.**), to CA adoption in the two case study regions (expert opinion)

With regards to specific thematic influence (Fig. 2), factors that made up the characteristics of CA as an object of adoption (A) and CA inputs plus market conditions (F) were observed to have outstanding negative influence on its adoption especially for the case of Ndindikuru (Kenya).

Table 1. Exemplary QAToCA results (excerpt) with supporting and hindering factors to CA adoption for two case studies in Kenya and Tanzania

Thematic area	ID	Indicator	Case study regions	
			Karatu, Kenya	Ndindikuru, Tanzania
A Object of Adoption (CA)	A01	Cost of CA and liquidity issues	-	-
	A02	Availability of CA knowledge	-	-
	A03	Complexity of CA	-	-
	A04	Labour requirements vs. endowments	-	-
	A05	Availability of social networks/org.	-	-
	A06	Residue and seeds requirements vs. availability	+	-
	A07	Machinery + fuel requirement and availability	-	-
	A08	Land requirement and availability	+	+
	A09	Observability of CA	+	+
	A10	CA yield response and time	-	-
	A11	Relative economic risk	+	-
	A12	Trialability	+	+
	A13	Flexibility/adaptability	+	+
	A14	CA and social status + prestige of farmers	+	-
	A15	CA and conflict over resources	+	-
B Capacity of the implementing organisation	B1	Concept of organisation	+	+
	B2	Availability and quality of human resources	+	+
	B3	Leadership and reputation	+	+
	B4	Organisational linkage to other CA organisations in the region	+	-
	B5	Organisational linkage with target group	+	+
	B6	Organisational linkage with stakeholders in the CA innovation systems	+	+
C Attributes of Scaling up	C01	Scaling up area, target groups and characteristics	+	+
	C02	Clarity of scaling up strategy	+	+
	C03	State and level of documentation, monitoring and evaluation	-	+
	C04	Usage of established communication channels	+	+
	C05	Diffusion strategy	+	+
	C06	Compatibility of selected diffusion strategy with the target groups	-	+
	C07	Linkage of promoting organisation with farmers	-	+
	C08	Organisation and level of involvement in capacity building	+	+
	C09	Type of communication channel	-	+
	C10	Usage of incentives in the diffusion process	-	+

+ Supporting factor; - hindering factor

On the other hand, those that assess the capacity of implementing institutions (B) were identified as having a major positive influence over adoption for the case of Karatu (Tanzania). Attributes of scaling up (C), the political and institutional frame conditions at village and regional levels (D and E) as well as the community's attitude towards CA were identified as positively influencing CA adoption especially for the Ndindikuru case study (Kenya).

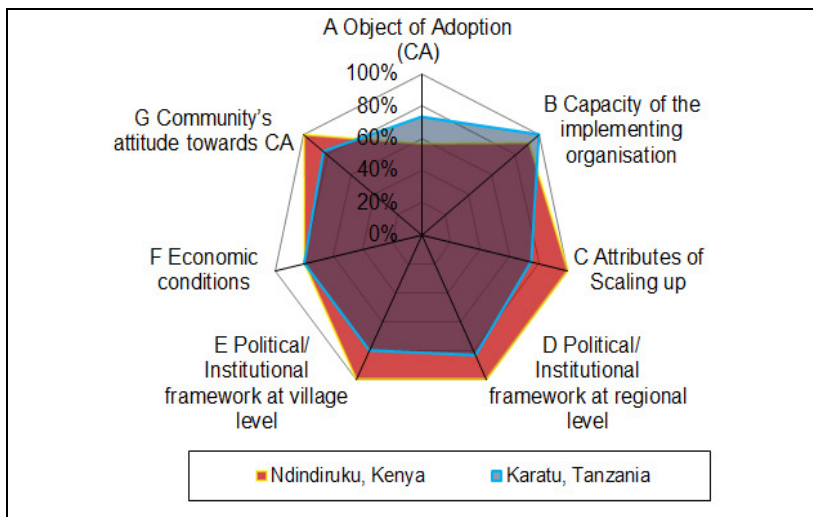


Figure 2: Exemplary results for two case studies aggregated over the seven thematic areas of QAToCA

Conclusions and Outlook

A close look at the influencing factors reveals a certain dominance of supporting factors to adoption over hindering factors (**Fehler! Verweisquelle konnte nicht gefunden werden.**) hence a much better chance for CA adoption in the region. Nevertheless, a scaling up in CA adoption can only be expected if efforts are made towards improving on the needed basic infrastructures such as market access and roads, credit facilities and adapted CA equipments to the two case study regions.

The comparative analysis of the two case studies yielded in a better understanding of the specific regional socio-economic, cultural and institutional settings that determine adoption of CA and can help in targeting CA technologies within smallholder farms in the region. The tool is currently used in ten heterogeneous African countries (each with a number of different case studies) to evaluate the adoption potential of different CA practices under different biophysical and institutional conditions.

References

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