

Implications for conservation agriculture

Strategies for scaling up conservation agriculture need to recognize which local actors are critical to local knowledge development and transfer and target them for special consideration in any communication campaigns. These findings offer a starting point for identifying the individuals who are likely to be key agents in whether or not the promotion of conservation agriculture will be successful.

Agricultural service sector/community agents are agreed that maintaining a permanent crop cover is the thing to do. On the other hand, this conventional wisdom is not held by the farmers of Bungoma who predominantly disagree, particularly the larger farmers. This finding is linked to the expressed concern of many farm and non-farm agents that Bungoma is too dry to produce cover crops in addition to food crops. However, it is whether tillage causes land degradation that is the critical unresolved issue. Non-farm agents are equally divided and farmers are mostly uncertain.

The analysis of relationships presented in the network map suggests a number of challenges for the introduction of conservation agriculture in Bungoma. Important allies for the introduction of conservation agriculture are the chief, extension, and a local NGO, One Acre Fund. Interestingly, the National Cereals and Produce Board and Agricultural Finance Corporation, which are housed in the same building, take opposing positions. Most importantly, many of the community agents, who interact more frequently with farmers, disagree or strongly disagree. Addressing community agent beliefs is thus of primary importance for changing the local mindset to be more receptive to conservation agriculture.

Research and field demonstrations will need to clearly demonstrate farmer benefits in the short-run if conservation agriculture is going to make much progress in Bungoma.

Contact Information



Dr. Eusebius Juma Mukhwana, Director
SACRED Africa
Siritanyi Campus
Po Box 8771-00200
Nairobi, Kenya
Email: director@sti.co.ke
Mobile: +254-721-624977

Dr. Dominic Ngosia Sikuku, Kenya/Uganda
Research Director, Kitale, Kenya
sdngosia@yahoo.com

Professor Robert Okalebo, Chepkoilel
University, Eldoret, Kenya
rokalebo@yahoo.com

SANREM CRSP Lead-PI
Dr. Jay Norton
University of Wyoming,
Laramie, Wyoming, USA
Email: jnorton4@uwyo.edu



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SANREM CRSP is supported by the United States Agency for International Development and the generous support of the American people through Cooperative Agreement No. EPP-A-00-04-00013-00.



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Network opportunities for promoting conservation agriculture

Bungoma, Kenya



What are the opportunities and constraints in local agricultural production networks to introduce and scale up conservation agriculture? In Bungoma, 75 farm households were surveyed about their network contacts and beliefs about agricultural production. Follow-up interviews were conducted with 19 most frequently-reported farmers' agricultural production contacts.

Based on these findings, this brochure:

1. Identifies central actors in the Bungoma Agricultural Production Network
2. Describes perspectives on agricultural production and predispositions for conservation agriculture
3. Maps information flows and beliefs about whether tillage causes land degradation

Beliefs about agriculture production

In order to understand the predisposition of farmers and agents toward conservation agricultural production practices, we asked them whether they agreed with three statements concerning the principles of conservation agriculture. Believing that there may be differences in perspective according to farm size and position as various community agents/service sector providers, the following graphs report the percentage of respondents in each

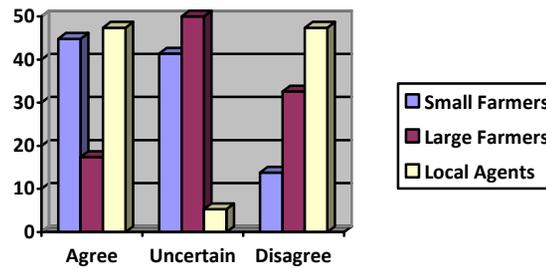
Rotating crops is best practice:



category. Small farmers have three acres or less in cultivation.

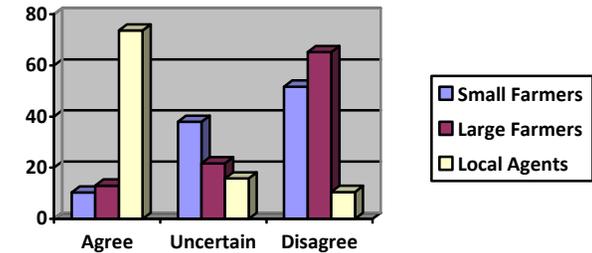
We did not find compelling evidence of interdependence among these beliefs. Farmers and non-farm agents consider them independent concepts, not a set of behaviors associated with a particular style of agricultural production. Nevertheless, there is nearly unanimous support among all farmers and non-farm agents that rotating crops is a best practice.

Tillage causes land degradation:



However, while the majority of non-farm agents agree that one should maintain a permanent crop cover, most farmers and a majority of large farmers disagree. There is even more diversity of responses among both farmers and non-farm agents over whether tillage causes land degradation. Farmers are generally uncertain, but small farmers tend to agree while large farmers tend to disagree. Non-farm agents are equally divided between agreeing and disagreeing.

One should maintain a permanent crop cover:



Analyzing network structure

In analyzing Bungoma's agricultural production network, this research was interested in identifying actors who had the highest number of contacts, and which actors exercised the most control over the flow of information between actors in the network. In network analysis, these two measures are known as degree and betweenness centrality. The table below presents the top-scoring actors for each type of measure in Bungoma.

The table below demonstrates that in Bungoma there appears to be a break between the two most central actors and a number of non-farm agents. Both the farm organization leader and the chief are highly connected and serve a key gatekeeper function in facilitating communication between other agents in the network. The local veterinarian and youth leader play a secondary role, followed by the pastor, market vendor, and extension agent.

Central Actors in Bungoma Agricultural Production Network

| Agent | Degree Centrality | Rank | Agent | Betweenness Centrality |
|--------------------------|-------------------|------|--------------------------|------------------------|
| Farm Organization Leader | 20 | 1 | Farm Organization Leader | 26.87 |
| Chief | 19 | 2 | Chief | 24.44 |
| Local Vet* | 9 | 3 | Local Vet | 13.33 |
| Pastor* | 8 | 4 | Youth Leader | 11.76 |

* Rank is tied.

