CONSERVATION AGRICULTURE IN MALAWI:

Practices and Experiences of Total Landcare

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Brief introduction to the organization

- Total LandCare (TLC) is a Non-Profit, Non-Governmental Organization founded by Trent Bunderson and Zwide Jere in 1999.
- With its headquarters in Malawi, TLC is also registered and operates in Mozambique, Tanzania, and Zambia, each with a fully constituted Board of Trustees.
- TLC's mission is to transform the livelihoods of rural households from subsistence to prosperity and self-reliance (a "hand up" rather than "handout"). TLC's strategy to achieve its mission entails the following interlinked objectives:

  a) strengthen the governance of farmer/community groups.

  b) integrate climate smart and NRM practices with farm diversification, irrigation and small-scale mechanization at the farm and landscape levels to ensure sustainability.

  c) support the production of key market driven value chains tailored to different farming systems with strong links to inputs, finance and markets.

  d) promote the development and growth of rural enterprises and SMEs with emphasis on vulnerable groups such as women, youth, and people with disabilities.

What are the main challenges facing the farmers (including women and youth) in adopting CA?

- **Conflicting Policies:** MoA has maintained the old policy on conventional ridges on contour which is in direct opposition to conservation agriculture
- **Resistance to Change:** Compelling evidence is needed to show that CA offers significant benefits to break the deep-rooted culture of ridging and clean fields
- **Delivery of inconsistent and conflicting technical messages on CA** by different organizations creates confusion among both extension staff and farmers; incorrect messages also compromise the benefits of CA.
- **Quality Training:** Lack of practical knowledge on CA highlights the need to deliver quality training to extension staff from Govt, Projects, NGOs and the private sector on how to implement CA practices on the ground.
- **Focus on inputs:** Farmers and extension staff believe that specific inputs and/or tools are needed to undertake CA (e.g., fertilizers, herbicides, large amounts of crop residues, etc.).
- **Limited access to appropriate mechanization:** Provision of mechanized CA equipment has largely depended on short-term projects.

Conventional Ridge Tillage with Hand-Hoes

The dry loose soil in the ridges is subject to being washed down into the compacted furrows and off the field through runoff during the rains

CONVENTIONAL RIDGE TILLAGE

Smallholders commonly **remove or burn crop residues and weeds followed by building ridges 90 cm apart**, a practice repeated every year using an enormous amount of manual labor

Area Ridged and Soil Moved every Year in Malawi

Soil moved to build 1 m of ridge = 54 kg

- Most of Malawi's 2.5 million farm households construct ridges by hand on about **2 million ha** every year.
- With an average ridge spacing of 90 cm, this means constructing **11 km** of ridges per ha every year, equal to moving **600 tons of soil**.
- Across the country, this equates to **22 million km of new ridges** every year which entails moving **1,200 million tons of soil**.

CA System Promoted by TLC

➡ **Minimum soil disturbance** (reduces oxidation of carbon and soil erosion)

- No ridging or tillage by manual or mechanical means
- Direct seed into a) small planting holes on the flat or tops of old ridges with a hoe or dibble stick, or b) rip lines with animal drawn rippers

➡ **Good soil cover** - retain crop residues & weed biomass on the surface *with no burning* to capture rainfall, reduce runoff & erosion, improve soil properties, and suppress weeds.

➡ **Rotations & intercrops** with emphasis on legumes to improve soil health, to control weeds, pests and diseases, to improve ground cover, to diversify diets, and to increase returns to land, labor and capital.

➡ **Appropriate CA mechanization** on small scale – tractor hire with a ripper, ADP with Magoye ripper, 2-wheel tractor with ripper and planter.

Complementary practices – where possible, integrate other good practices to enhance productivity - quality seed, chemical & organic fertilizers, agroforestry, cover crops, FMNR, vetiver hedgerows, and others.

CA Planting Holes – an age-old practice before the introduction of ridging

Planting holes using hoes (left) or dibble sticks (right)

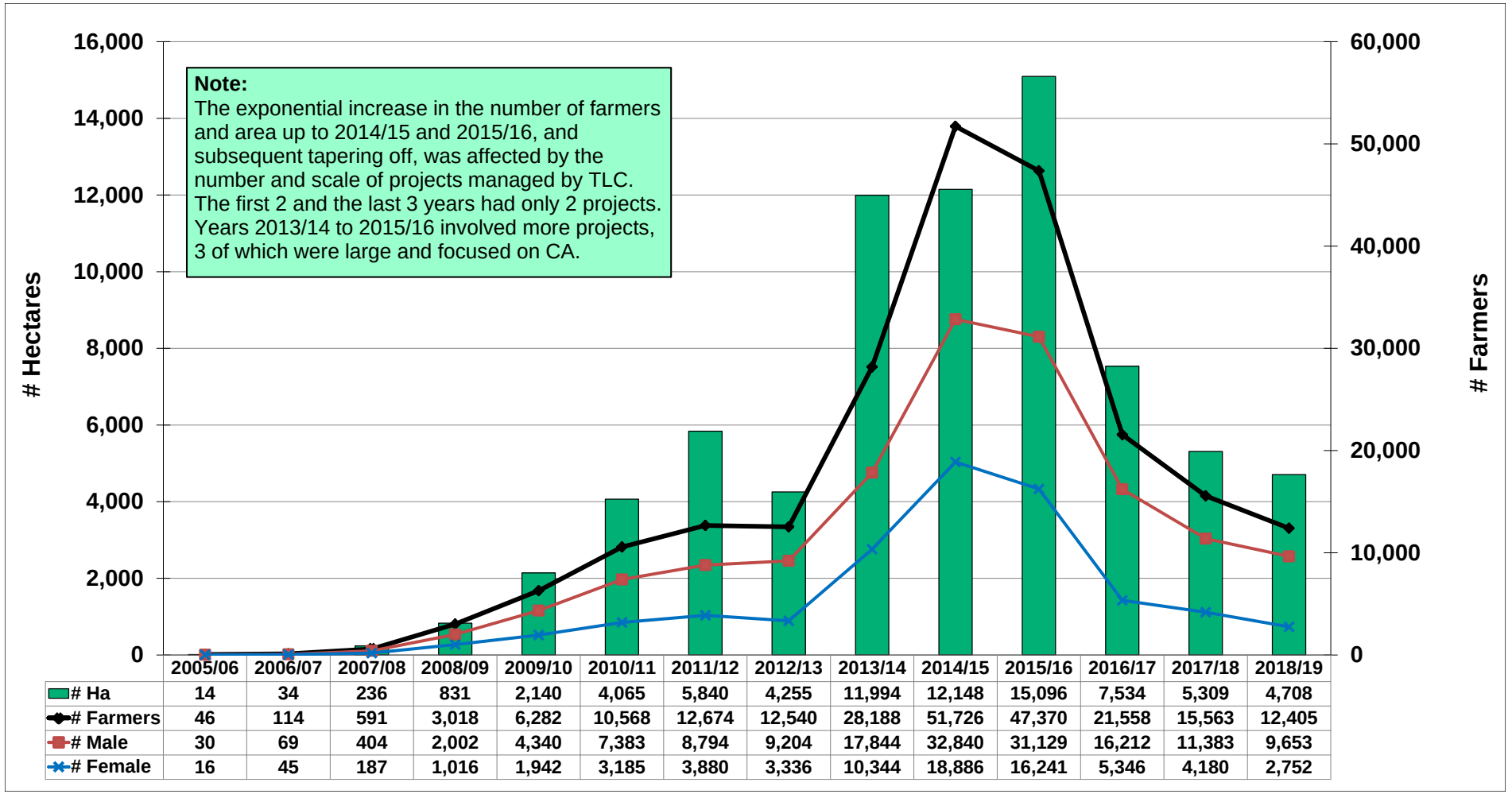
Weed-free maize planted on the flat with crop residues

MAIZE – COWPEA RELAY CROP

High returns to land, labor and capital, suppresses late season weeds, provides good soil cover and offers a more diversified diet

Young Cowpea relay crop with maize (left); cowpea crop with *Faidherbia* trees after maize harvest with no weeds (right)

Area of CA and Number of Farmers Practicing CA across TLC Programs in Malawi, 2006 to 2019 (Note: These are not cumulative figures). Source: Bunderson, W.T., Thierfelder, C.L, Jere, Z.D. & Museka, R.G.K. Assessing the Application and Practice of Conservation Agriculture in Malawi.



	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
# Ha	14	34	236	831	2,140	4,065	5,840	4,255	11,994	12,148	15,096	7,534	5,309	4,708
# Farmers	46	114	591	3,018	6,282	10,568	12,674	12,540	28,188	51,726	47,370	21,558	15,563	12,405
# Male	30	69	404	2,002	4,340	7,383	8,794	9,204	17,844	32,840	31,129	16,212	11,383	9,653
# Female	16	45	187	1,016	1,942	3,185	3,880	3,336	10,344	18,886	16,241	5,346	4,180	2,752

Concluding Remarks/Recommendations

To scale up CA, we recommend the following:

- **Strengthen knowledge and support for CA** among all stakeholders with compelling evidence of its benefits and application with major crops across different agro-ecologies.
- **Make CA as an integral part of** the broader agriculture development that focuses on promoting high value commodities linked to reliable markets.
- **Develop and deliver certified training courses on CA** for lead farmers and extension staff from Government, NGOs, projects and others who are promoting the practice in the region.
- **Harmonize technical messages among implementers** to avoid distorting the true value/merits of CA and confusing extension staff and farmers.
- **Animal and mechanized ripping services:** Building on the extensive experience of CIMMYT and CFU and their handbooks, opportunities need to be explored to support the identification and emergence of entrepreneurs to offer ripping services to farmers. Land preparation using rippers powered by animals or machinery offer cost-effective, labour-saving methods to minimize soil disturbance and conserve soil and water for many farm operations.
- **Related to above, we should jointly seek long-term investment (at regional, sub-regional or muti-country level)** in appropriate and affordable mechanization targeting groups of farmers but also prioritizing medium scale farmers, e.g., TLC could target the 4 countries where it operates.

Thank you for your attention!

Practical training on ADP ripping (left) and farmers applying basal dressing fertilizer to maize planted in rip lines (right). Note the high germination percentage due to better planting conditions