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SUSTAINABLE AND PROFITABLE FARMING THROUGH CONSERVATION AGRICULTURE IN ZIMBABWE: PROSPECTS, OPPORTUNITIES AND CONSTRAINTS

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ABSTRACT

The paper focuses on conservation farming with a view to recommending a paradigm shift in Zimbabwe's peasant farming sector. The study comes against the background of declining agricultural productivity on account of a range of factors. Traditional peasant farming typically involves frequent and intensive turning of the soil thus depriving the soil of cover. In addition, it stresses mono-cropping, suggesting that it is unsustainable. In contrast to this, conservation farming entails minimum or nil soil disturbance, soil cover maintenance, and crop rotation, implying that it is sustainable. To date, conservation farming has only been marginally adopted in communal lands of Zimbabwe, particularly in the semi-arid southeast parts of the country, yet the problem of soil and water conservation is rampant in most communal areas of the country. To address the problem of declining fertility and the attendant declining agricultural productivity, the paper critically examines conservation farming as an alternative to orthodox farming, which should be vigorously promoted. It exposes the merits of conservation farming and, on this basis, recommends its adoption countrywide in the communal areas.

Keywords: Communal areas; Conventional Farming; Conservation Farming; Peasant Farming; Sustainable Farming

INTRODUCTION

Increasingly grim forecasts predict agricultural decline in Southern Africa. The Zimbabwe Independent (2006) cites a recent study by economist, William Cline, who predicted a 39-47% decline in agriculture in southern Africa by 2080 if greenhouse gases escalate at their present rate. That is potentially deadly news for farmers in Southern Africa where the population threatened by food shortages doubled from 3.1 million to 6.1 million in 2007 (The Zimbabwe Independent, 2006). Similarly, the same paper citing James Breen, a regional emergency agronomist with UNO's FAO, says we are losing 400 million tons of soil every year. Conventional/orthodox farming, especially in communal lands, has left swathes of land/soil utterly depleted, hence the need for sustainable conservation farming. The region is facing a meltdown, hence the need for a new paradigm in farming.

Chenga (2010) in The Financial Gazette contends that over the past decade, Zimbabwe's agriculture has been dogged by a myriad of problems, ranging from drought to shortage of farming equipment and inputs to the lack of skills and poor funding. Output has declined, resulting in the current situation where the country has been reduced from being the bread basket of southern Africa, into a bread basin. The past five (5) years, in particular, have seen the country relying more and more on imports to cover its food deficit, which has put unbearable pressure on its meager foreign currency reserves. Chenga goes on to say the Food and Agricultural Organisation (FAO) last year estimated that the number of hungry mouths were most likely going to double from 2.8 million to 5.6 million .This year, the possibility of another farming

disaster is haunting many farmers. Most farmers usually borrow to finance the current crop, while others sell everything they would have stored in the hope that the on-coming season would be normal, yet the skies have regularly not smiled at them and failed to open up. Only a few observant farmers 'read' the weather signs correctly using an indigenous knowledge system. There has been a deafening and haunting silence of the cicada and the rain birds, whose piercing calls usually signal the onset of the rainy season. Furthermore, most of the communal farmers' cows delayed to conceive. Studies of some animals of the savannah have shown that the animals normally "postpone" calving when a drought is approaching.

In the country's normally high rainfall areas, normal to below-normal rainfall forecasts have been issued by Zimbabwe's Meteorological Services Department in the past few years. As for the drought-prone areas, the department has been predicting below normal rainfall for the same period. This could be the result of climate variability and nothing to do with climate change. Climate variability refers to climatic changes taking place around the globe. Climate change experts have, over the past few years, warned humanity to brace for some of the worst changes in weather patterns in global history as the temperature rises. Whether climate change is already around or is still to come is something else. Present realities of extreme weather conditions that are causing crop failures-erratic rains, droughts, floods, and high temperatures are dawning on the world's poor states in a severe way. Muronzi (2010), in The Zimbabwe Independent, posits that the situation gets aggravated and exacerbated by poor preparations and continued disturbances on large scale commercial farms. Producing adequate food for the country is going to remain a problem as long as a way forward has not been found. Disputes on the farms need to be resolved for the benefit of the country. Against such a background, a farming method called conservation agriculture is showing promise for the subsistence farmers who are already struggling with poor food security.

CONVENTIONAL FARMING IN THE COMMUNAL LANDS

In sub- Saharan Africa, crop farming is characterized by frequent soil tillage, removal of waste crop materials from the fields by livestock grazing or burning, and, in many cases, mono-cropping (Chigonda, 2008). In addition**,** conventional tillage entails intensive ploughing and turning of the soil using the plough. This has obvious implications on soil organisms and antecedent moisture. For example, soil organisms get exposed to excessive solar radiation, while moisture loss gets accelerated through the exposure of a larger surface area. This means that plants experience moisture stress much earlier than expected. Furthermore, soil inversion enhances the oxidation of soil organic matter. Apart from that, soil turning leads to reduced infiltration and aeration as a consequence of the resultant soil compaction, which, in turn, leads to the exposure of soil to erosion agents. In contrast, conservation farming mitigates, or even cures, the drawbacks associated with orthodox tillage by guaranteeing minimum disturbance of the soil African Conservation Tillage Network (ACT, 2004; Steiner, 1998; Steiner, 2002a; Steiner, 2002b). Previously, in the 1950s to the early 1970s, African farmers could respond to declining productivity by shifting to new areas. This is no longer feasible, let alone possible, due to increasing population .In consequence, fields are getting not only overused but also smaller. The net effect is declining productivity on account of declining soil quality, soil compaction, and infiltration. At a human level, there is increasing food insecurity and poverty in the region. As Chigonda (2008) contends, only a drastic change of farming systems, from the unsustainable towards more sustainable soil management, can improve the situation or even reverse the trend. In Asia and Latin America, conservation tillage revolutionized farming systems, resulting in an increase in per capita food production there. Sub-Saharan Africa, therefore, needs and has to get a clue from Asia and Latin America, where

conservation farming has turned out to be a panacea for many ills in these regions (ACT, 2004; Dickson & Gulliver, 2001; Ghai, Bee, & Radwan (1979);International Fund for Agricultural Development (IFAD), 2001; Pretty, 1998; Steiner, 2002a)

CONSERVATION FARMING

Conservation agriculture is a method of farming that minimizes soil disturbance, applies more precise timing of planting, and utilizes crop residue to retain moisture and enrich the soil. Over the past fifty (50) years or so in Southern Africa, overall soil fertility has dropped, while erosion has increased (Whitlow, 1988). Heavy plowing and repeated growing of the same crop on the same plot (mono-cropping) eventually strips the soil of nutrients and allows water and wind to wash away the nutrient –rich top soil. Under such circumstances, the logical sequel is a downward spiral in food production. Conservation farming is premised on a number of principles. It, thus, aims to achieve sustainable agriculture. Farmers either use a method called basin tillage, in which they dig basins that capture water and plant nutrients, or they use an ox-pulled plow-like ripper. They can also use hand planters. The ripper opens a very small furrow in the soil surface, instead of turning the entire field, which increases soil moisture loss and erosion. In it, there generally is exact timing for planting and weeding.

Generally, farmers are taught to dig their basins/basin holes, fertilize them with manure, humus, compost, or manufactured fertilizer, allow the first rains to fall and collect in the basin's soil, and then plant. This is a shift from the conventional methods of rushing to plant when the rain begins. In addition to that, ground cover is similarly promoted. Instead of burning off the previous year's crop residues, farmers are encouraged to keep the soil covered. This preserves moisture and serves as mulch that also enriches the soil while decreasing the presence of weeds. Apart from that, crop rotation and intercropping are practiced as well. Mixing and rotating crops, even within the one field, so that one year's maize patch will be legumes the next, is highly rewarding and encouraged. Other plants can be grown in between the maize rows to provide additional ground cover, thus further enhancing antecedent moisture retention.

Not surprisingly, as cited by Chenga (2010), conservation farming is considered the panacea to agriculture. Conservation farming is quite simple and it has to be simple for it to work. It is a way to improve food security. In certain areas of Tanzania, Swaziland, and Zimbabwe, it has become evident that the crops produced using conservation agriculture and intercropping methods were much more successful than the crops produced using conventional methods. The practice revives and enriches the soil as well. Harvest statistics comparing production from the same farmers' plots using conventional and conservation farming show that conservation farming is quite promising. Table 1 summarizes changes in production in Zvimba, Zimbabwe.

Table 1: Change in maize production

Year	Production on the same plot	Using conventional/unconventional farming methods
2009	6 bags	conventional/orthodox
2010	15 bags	unconventional/unorthodox

Source: Adapted *from the* Sunday Mail, 7-13 March, 2010

Weathereon, cited by Chenga (2010) observed that in Tanzania, the productivity of farmers who had been using conservation techniques for 10 years increased tremendously over the past decade. When the farmer began, he was

harvesting 3 bags of maize per acre. Two years later, three became five, and at the end of the decade, the man was reaping twenty five bags from his dark fertile soils. The Sunday Mail (2010) observed that farmers in Zvimba communal lands near Harare are enjoying a new lease of life after applying new methods of farming that are giving them better yields. A few seasons ago, the farmers were at a loss after a discovering that, despite their efforts, crops ended up failing. This left many farmers in the area vulnerable to food shortages after the sandy soils in the area proved susceptible to leaching. What is needed here in Zimbabwe is a ten-year program with funding. If this happens, then conservation farming will take off. The funding would go towards the basic tool-hand planters, called 'rippers', and enough personnel to train the farmers. Ideally, more drought resistant seeds and fertilizers to revive and enrich the soil should be available for the first few years.

Environment Africa, a local organization advocating environmental awareness, has embarked on a program to teach communal farmers useful conservation farming. Farmers are taught effective methods of farming using 'zero tillage' and other unorthodox farming tactics, such as 'split application'. Such skills should be imparted onto their peers after their training. Split application fights leaching and also allows the crops to have oxygen. The Sunday Mail (2010) observed that interviewed farmers added that the new farming method makes sure that the cob grows even bigger. Zero tillage farming and the availability of fertilizer enable farmers to realize a better yield. According to The Sunday Mail (2010) , most families that were taught to use such farming methods said they were happy with the results. To them, the new farming methods have become the difference between realizing a good harvest and suffering starvation. As alluded to earlier, the method of pot-holing helps to retain moisture in the sandy soils. Productivity gets enhanced through the application of fertilizer. Before applying these new methods, farmers used cattle to plow without knowing the implications on the soil. Now farmers dig holes in which manure, humus, or compost is put down before the rains set in and this is good for the crops. Farmers have planted maize on the plots where orthodox methods have been used. Results have confirmed that the new method is better. Such farming methods can help Zimbabwe regain her status as the bread basket of Southern Africa if farmers get the proper support. Besides, recent episodes of climate change have seen weather patterns changing to prolong the dry spells and erratic rainfall as was the case in years1982, 1983, 1992, 1993, 2002, 2009, and 2010 and devastating countrywide floods in (2000). Both features (drought and floods) tend to destroy crops. This means that there is need for farmers to be educated about the weather changes and to be equipped with appropriate farming methods. This way, farmers will be able to quickly adapt to the changes and be able to realize needed yields to sustain their livelihoods and cater for the nation's requirements. People should be glad with the help they will get; they should get motivated and believe that they would manage better yields. In the near future, they will lament that zero tillage was introduced rather late. It is clear that mulching preserves moisture in the soil, which prevents the growth of weeds and grass, and becomes manure after harvesting. The new method is perfect for increasing yields, even if there is a shortage of farming inputs. With further developments, new methods will bring more successes. Once holes/basins are ready for sowing, at least three (3) seeds should be put in each hole, but thinning is later done to get a better plant population. Farmers should, however, be taught how to correctly apply top dressing fertilizer in as much as tree planting should be encouraged among the farmers. Lessons should be targeted, as well a general crop management, which helps conserve moisture and control weeds. Farmers should be encouraged to acquire rain gauges so that they can record the local rainfall pattern for them to be better prepared for the coming season. Conservation farming is, by and large, about soil and water conservation. This dictates the utilization of soil and water in a carefully planned and where possible, sparing manner. This will make the high level of crop production not only real, but also perpetual. It, thus, marks a

radical departure from the orthodox, conventional, and unsustainable tillage practices. It essentially encompasses three principal processes namely, minimum soil disturbance involving zero and minimum tillage, maintenance of soil cover, and rotation of crops. Terms often used interchangeably with it includes sustainable agriculture, conservation farming, conservation agriculture, or conservation tillage.

Globally, conservation tillage is getting adopted at an increasing pace, notably in Latin America and specifically in Brazil, Argentina, and Paraguay, where over 60% of cropland is now under a no-till based farming system (Derpsch, 1998; Chigonda, 2008). The USA, Canada, and Australia are among the leading developed countries that have espoused conservation farming (Table 2).

Table 2: Area under no-tillage in different countries

Country	**Area under no-tillage in ha 2001/2002**
USA	21,120,000
Brazil	15,046,000
Argentina	11,660,000
Australia	8,640,000
Canada	4,080,000
Paraguay	1,100,000
Mexico	650,000
Bolivia	350,000
Venezuela	150,000
Chile	100,000
Colombia	70,000
Uruguay	50,000
Others	1,000,000
Total	64,016,000

Source: Derpsch, 1998

In Africa, the rate of adoption of these farming systems has significantly increased over the past decades, particularly among commercial farmers. In small-holder communal farming systems, adoption is still low (Derpsch, 1998). For Zimbabwe, the road and journey to sustainable agriculture is a long, tortuous, and bumpy one. At independence in 1980, the new government inherited a dualistic farming system with highly mechanized, capital intensive productive, and pristine commercial farms on one hand, and labor intensive, degraded, unproductive, and overcrowded communal areas on the other hand. Commercial farmers had, by 1980, significantly adopted various conservation tillage practices.
In contradistinction to this, communal farmers had not and could not meaningfully adopt such farming practices on account of colonial neglect of the sector (Chenje, Sola, and Palency, 1998).

The new government responded to such a scenario through a resettlement program with a view to decongest communal areas. Furthermore, the government set out on a program to promote better farming methods in partnership with

development agencies. For instance, between 1988 and 1995, the government went into partnership with the Germany Development Agency in conservation tillage research and promotion. In 1995, the Institute of Environmental Studies also embarked on conservation tillage research through the Indigenous Soil and Water Conservation Initiative. The African Conservation Tillage Network got involved, in 2001, through various pilot activities in partnership with the Soil Conservation Branch of the Ministry of Agriculture and the Institute of Environmental Studies. African Conservation Tillage Network (ACT)'s input involved partial funding, linking with other pilot activities in other countries and dissemination of learning experiences (ACT, 2004). However, effort to promote conservation tillage in communal areas has not touched all of the regions of the country. Instead, there has been a concentration on arid regions of southern Zimbabwe (Hangman., Chuma & Murwira, 1995; Intermediate Technology Zimbabwe (ITZ), 1997; Madondo, 1995; Scoones & Hakutangwi, 1996), yet problems of soil and water conservation and declining yields are rampant in other communal areas of the country.

REFLECTIONS

Generally speaking, an insignificant number of communal farmers have adopted conservation agriculture. Farmers seem to be generally only aware of land preparation that makes use of the ox-drawn plow. Even those who own neither the plow nor the draught power depend on hiring from fellow farmers. This suggests late planting and, therefore, reduced yields in view of the short, rainy season. Under such circumstances, conservation tillage provides a perfect solution as it eliminates both the problem of the lack of draught power and the plow, on one side, and intensive soil turning by the moldboard plow. In addition, the problem of labor shortages also gets addressed. Farmers who experience labor shortages may not have to reduce their already small acreages as they fail to plow them on time. In any case, a lot of time and energy are wasted when plowing. Steiner (2002) contends that a farmer walks 30-40 km when plowing one hectare under the conventional system, add to this the 10 kms walked when seeding, in contrast to only 10 kms when planting maize directly without plowing. Soils, in most communal areas, are sandy, rocky, and loamy (Chenje, Sola, & Palency, 1998). This, therefore, suggests that they are suitable for zero, or minimum, tillage. Such soils, coupled with the lower precipitation in communal lands, translate to a relatively lower biomass production, thereby maximizing the risk of overwhelming weed infestation. Minimum soil disturbances will enhance the ability of the soil to resist erosion by wind and rain. Conservation tillage demands and dictates that we leave cloddy soil surfaces. The rough surface militates against both the raindrop impact and wind force besides resisting and retarding run-off formation. Where such clods were forming after plowing, particularly on clay soils, farmers tend to pulverize them into a smooth texture in preparation for planting. This removes an intensively plowed soil's only defense against erosion clods. Furthermore, farmers are in the habit of winter plowing, which is subsequently followed by another plowing phase at the onset of the rainy season. Such a practice tends to expose the soil to erosion agents for a longer period of time. It is normal to experience gusty July-August winds, which sweep away tons of exposed and loosened soils. It has been argued that winter plowing buries the remaining crop residues, thereby enhancing their decomposition. However, it should be realized that it tends to completely deprive the soil of a cover with obvious implications on erosion rates. Winter plowing is said to help retain moisture and enhance aeration and infiltration. This should be viewed against the background that it increases the frequency and intensity of soil disturbances, which disturbs the already poor soil structure by making it powdery and, hence, more vulnerable to erosion.

Plowing every year and to the same depth creates a plowing pan. Besides compromising aeration and infiltration, thus promoting runoff, the pan impedes crop-root development. Thus, with much of the seasonal rainfall being converted into overland flow, the effect of mid-season droughts, which are common in Zimbabwe's communal areas, are quickly felt. The role of soil cover management in the erosion prevention equation and weed suppression cannot be over emphasized. Sadly, there is a strong demand for crop residues, which competes with their role as ground protection against erosion or organic manure. Typically, there is a removal of crop residue from fields after harvesting and these are reserved as livestock fodder during the dry season. As if this is not enough, remains of maize cob shelling are a popular firewood substitute in communal areas where there is an acute shortage of firewood arising from rampant and extensive deforestation. Water drained through the ash from burnt shelled cobs is also used as a cooking soda substitute. Meanwhile animals clear the remaining crop residues as they roam freely during the dry season, thereby leaving a near-zero soil cover against the recommended 30% minimum cover.

Communal farmers typically grow maize as a pure stand with negligible intercropping with other crops, such as pumpkins, watermelons, cucumbers, and sweet reeds. This implies that inter-row erosion occurs throughout the greater portion of the rainy season, if not the entire season. Plant population densities are low, especially for maize, with most farmers planting one seed per station instead of the recommended two. The low plant population further exposes the soil to the raindrop impact, which not only dislodges soil particles, but also allows run-off to build up more easily. Communal farmers are in the habit of raking, heaping, and burning weeds and the remaining few crop residues, too .Worrisomely, this is usually done just before the onset of the rainy season as preliminary land preparation. This means that the rains will encounter bare soils with obvious implications on erosion rates. Ash from the burning of heaped weeds and residue is believed to enrich the soil. However, research proves that burning causes the loss of considerable amounts of plant nutrients. Some volatile nutrients, such as nitrogen, are lost as smoke (Tivy, 1998).

Communal farmers hardly rotate their crops. Maize, as the staple food crop, is typically grown as a pure stand, as alluded to earlier on. For those who rotate, they, at best, do so with other cereals, such as rapoko, sorghum, and millet crops, which require the same nutrients as maize and associated with the same pests and diseases. A very insignificant number of communal farmers include legumes in their rotation. Even so, only very small acreages are involved. Benefits of rotation are not meaningfully realized. The challenge of the relatively infertile soils of the communal lands coupled with the high costs of inorganic fertilizers and pesticides could, by and large, all be offset by proper crop rotation.

CONSTRAINTS TO CONSERVATION FARMING

In the communal areas, a number of constraints militate against conservation agriculture. Chief among these factors is the lack of knowledge about conservation farming and what it stands for among the farmers. To the farmers, the concepts of minimum soil disturbance, soil cover maintenance, particularly with crop residues, and, to some extent, crop rotation, present themselves as a radical departure from orthodox farming-a paradigm shift indeed. The fact that the communal tenure system limits the right to land use in the growing season is yet another major constraint. Compounding the problem is the fact that communal farmers depend on a short, growing, rain-fed season. The few remaining crop residues and any other biomass that would act as soil cover, such as weed, would be clean swept by freely roaming livestock under a common grazing system. In view of the crucial role of soil cover, it is abundantly clear that conservation farming is an insurmountable impossibility in communal areas.

Over and above this, livestock, in general, and cattle, in particular, is a major symbol of wealth that is strongly cherished by communal farmers. Resultantly, livestock has multiplied to exceed and surpass the land's carrying capacity. This is exacerbated by the fact that the population is increasing and, with the addition of new households, grazing lands are seriously overgrazed and the crop residue gets quickly cleared where it would have not been removed and stored as dry season supplementary fodder. At the very best, communal animal husbandry has thrived at the expense of arable farming, otherwise both of the communal sub-sectors have become so seriously compromised to the extent that communal farming is evidently unsustainable.

The low demand for other crops, with a distinct preference for maize, has also acted as a natural constraint to conservation tillage, particularly crop rotation. Rotating maize, the staple food crop, would threaten food security in light of the ever increasing population. Unless these and many other constraints are addressed, conservation tillage will remain a pipe dream in Zimbabwe.

POLICY IMPLICATIONS

The article has shown that farming in communal areas is still based on orthodox or conventional tillage practices and, thus, is unsustainable. This needs to be checked albeit to avoid the destruction of the agricultural resource base in the country. There is an urgent need for action to be taken to effect the necessary corrective measures if the communal farming sector is to survive, especially given that no less than 60% of Zimbabwe's population is dependent on agriculture for its survival. Although still novel and widely unknown among communal farmers, conservation farming would go a long way in curing the many ills of communal farming. It is logical, thus, to charter into this unknown area by creating awareness among communal farmers. This can be achieved by crafting an aggressively robust, innovative, and practical extension approach. In it, farmers should be made to see the benefits that will accrue to them once they adopt conservation farming. The first port of call would be to run refresher courses for extension workers or retraining them where necessary. This would get them to be fully equipped and grounded to impart such knowledge to their clients (communal farmers). This is vital as change is always difficult to sell and bring about. Rural people are conservative, traditional, and always treat new ideas with suspicion. To this end, there may also be need to improve the farmer-extension worker/officer ratio so that the new ideas filter or trickle down and permeate the sector fairly rapidly, given the urgency of the matter. Community Based Organizations (CBOs) would come in handy in promoting a participatory extension, which involves the farmers in decision-making. In any case, it is neither wise nor advisable to do something from above which can be done at a local level.

Awareness creation needs to be complemented with farmer support in acquiring inputs if conservation tillage is to be adopted. Such implements as direct planters, mulch shredders and rippers, fertilizer and seeds, among others, should be available at affordable prices. This would aid and ease the farmers' transition journey from conventional and unsustainable to conservation tillage, which, as has been argued above, is sustainable. Mindful of the danger of the dependency syndrome, it would be necessary for credit facilities for the purchase of the necessary implements and inputs or arrangements for hiring them out to farmers would be helpful. Perhaps non-governmental organizations and the private sector could be roped in such a program or exercise.

There is a need to create grazing areas (paddocks) for livestock separate from arable land in some grazing schemes. This could be followed by a transfer of arable land from communal tenure to individual farming rights. Such an arrangement would help eradicate problems associated with communal grazing, like soil cover depletion and soil trampling. Livestock numbers would, however, need to be kept in check, ensuring that they are consistent with the carrying capacity of the grazing scheme that's created; otherwise the demand for residues as fodder during the dry season would continue.

Agro-forestry should be encouraged, too, so as to reduce the demand for crop residues for fuel and building materials. Farmers, too, should be encouraged to build permanent structures, rather than intermittent or temporary ones. This would save not only the resources, but also labor and time for productive activities. There is also need to create demand for other crops so as to remove the strong market preference for maize. This could entail promoting other food crops into becoming the country's staple, alongside maize. Under such circumstances, conservation tillage would be promoted as a wider spectrum of various crops would be grown, so crop rotation would be practiced.

Irrigation could offset the low precipitation and short growing season, which have restricted farming to the wet season. This would enable all-year round crop production and, hence, ensure permanent soil cover through relay cropping. Besides, food security would also be realized. Such an undertaking would, however, require the construction of dams and the sinking of boreholes, activities that require huge capital outlay/injection. With support from government, multilateral funding and other rural development players, this could be achieved.

SUSTAINABLE FARMING AS THE WAY FORWARD

The article has shown that farming in Zimbabwe's communal lands is wholly based on conventional or orthodox tillage practices, hence it is unsustainable. The need for and constraints to the adoption of conservation tillage have also been exposed and they cannot be overemphasized. The article is, thus, a clarion call, an advocacy for conservation farming for communal farmers in Zimbabwe. It suggests recommendations to turn conservation tillage into a staple of communal farming. The fast track land reform program, since 2000, has seen the migration and extension of conventional farming into former commercial farms as predominantly peasant farmers got 'resettled' in an attempt to decongest the rural areas. Sadly, this tends to reverse the significant gains that had been made by commercial farmers in adopting conservation farming. This, therefore, creates the need for the promotion of conservation farming among the newly resettled farmers.

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