

Options	Targets	Impact on livelihoods	Barriers	Effect on labour/energy	Miscellaneous
Conservation Agriculture – hand hoe farmers (very poor)					
Basin Planting (Siyavonga, Zambia).	The basins (potholes to retain water) are used as a water harvesting device; they are made by hand hoe during the dry season before the rains start; this way the labour is spread and shifted to a time where labour is available. Making the potholes takes a similar time as preparing a field for maize. Compost, trash or fertilizer is incorporated.	The poorest households are those that do not have access to draught animal power (DAP) for land preparation, hence they are the target group for the basin system.	More drought resistance due to the water harvesting effect of the basins; hence higher and more stable yields.	Small farmers and vulnerable household members need strong incentives to make the basins if they have not been exposed to the basin system before.	Should not be 'labelled' as a system for the poorest households because of resistance from households so "labelled" or stigmatised. The basins can be made in portions each year; existing basins can be 'maintained' with little labour requirement.
Pit farming (GTZ, Southern Province, Zambia).	Conserves water, labour (through minimal cultivation and weeding), and reduces the risk of soil erosion through minimal disturbance of surface vegetation.	Male and female farmers, small-plot agriculturalists.	Round holes filled with organic material can be used for 4-5 years before refilling required. Intercropping with legumes as well as fruit trees.	Initial labour required. For households affected by HIV and AIDS, pooling of village labour, including available youth, is practiced to meet labour needs in initial outlay. Extension across Zambia.	Spreading through farmer-to-farmer extension. Though very labour intensive for initial layout and digging, pit farming saves considerably on labour in subsequent planting seasons.
Soil cover using crop residues (Karatu, Tanzania).	Soil cover and crop residues which are left on the field suppress weeds and reduce labour demand for weeding.	The poorest households sometimes use this approach as a 'coping mechanism'.	Increases water retention capacity of soils and maintains soil moisture, hence helps to improve yields in dry years.	Conflict with free-ranging livestock is a probability. Conflicts with the standard extension messages of maintaining a clean seedbed (land preparation) and a clean field during cropping cycle (weeding throughout)	Community leaders should be involved in acknowledging and accepting this way of farming. In garden farming, soil cover reduces requirements for watering (irrigation).

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Soil cover – Using <i>dolicos lab lab</i> and <i>mucuna</i> as cover crops (Karatu, Tanzania).	It requires an additional activity to intercrop the cover vegetation (crop) but results in high labour savings by almost eliminating weeding; the cover crops are leguminous crops that fix nitrogen, hence natural fertilisation of soil and improving soil fertility occurs without additional labour input.	Cover crops have been very attractive to vulnerable households; technical assistance and training needed plus assistance in getting access to crops in the beginning.	The legumes fix nitrogen from air in the soils, hence natural fertilization; <i>Dolicos lab lab</i> is a cash crop as middle men from Kenya are buying the bean harvest.	Conflicts with free-grazing livestock but cover crops do produce fodder. Availability of cover crops seeds. Change of perception of 'dirty fields'.	South to South co-operation is encouraged as this system of incorporating various cover crops has been developed by farmers in Brazil.
Lightweight hand hoes for planting.	Lighter hoes are less energy-demanding.	Hand hoes are available but specific lighter hand hoes are sometimes difficult to find.			Light hoes should be part of emergency interventions together with the standard heavy hoe.

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<p>Hand Jab Planter (hand tool to plant into soil cover) – widely used in Brazil and Paraguay.</p>	<p>Reduces labour / energy demand after a period of learning how to best use it.</p>	<p>A hand labour tool like the hand hoe is suitable for small farmers. Can be used by women and older children.</p>	<p>Can be produced locally. Is an investment opportunity for local manufacturers and for specialising in being 'hand jab planter service provider'</p>	<p>Cost is approximately \$10 and is currently made in CARMATEC / Arusha or imported from Brazil.</p> <p>Repair and maintenance; cultural acceptance of this new approach?</p>	<p>South to South co-operation and technology transfer is encouraged.</p>
<p>Forage chopper (labour saving technology introduced by MAIAF, Uganda. See http://www.fao.org/sd/ip/)</p>	<p>The project is aimed at promoting promising farm power, crop processing and household energy-based technologies with a strong gender perspective. Improved fixed knife forage choppers found to be ergonomically safe, less cumbersome with reduced forage-chopping and controlled length of chop.</p>	<p>Attractive to affected households as it reduces labour time, suitable for small farmers, particularly women.</p>	<p>Addressed constraints encountered by farmers in forage chopping using hand machetes. They reduced the risks posed by machetes to the users, fodder spoilage, low labour productivity and feed-use efficiency.</p>	<p>Uptake, dissemination and adoption have not been well understood. Despite the advantages to using the improved fixed knife forage choppers, many farmers (87%) had not yet adopted them due to financial limitations, lack of awareness of the possible sources and advantages of the technology, as well as the false beliefs and opinions about difficulties encountered in the maintenance of the choppers.</p>	<p>Data on available chopping methods indicated that 88% of male-headed and 79% of female-headed households used machetes, 10% of male-headed households and 18% of female-headed farm families utilised fixed knife choppers and only 3% of both male- and female-headed households had adopted manual crank wheel choppers</p>

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<p>Treadle pump water conveyance (labour-saving technology introduced by MAIAF, Uganda. See http://www.fao.org/sd/ip/)</p>	<p>The project aimed at promoting promising farm power, crop-processing and household energy-based technologies with a strong gender perspective. Treadle pump has the capacity to draw water and raise it to sufficient levels and convey it for household use.</p>	<p>Children played the largest role in water collection. Saved labour for girls, boys, women and men.</p>	<p>Reduced time/ labour constraints. - Head portage at 43% (bicycle at 34% and a combination of head portage and bicycles at 13%) was the major method of collecting water from sources, located about a mile away. Improved livestock productivity.</p>	<p>Uptake, dissemination and adoption have not been well understood. In addition, knowledge about the appropriateness, relevance and effectiveness of such technologies has hitherto been lacking. Farmers had not largely adopted this technology because its applicability was not consistent with the existing terrain.</p>	
<p>Treadle pump water conveyance (introduced by Oxfam-GB in Mulanje District, Malawi)</p>	<p>Modified treadle pumps reduced time spent on irrigating one field, before modification it took 6 hours to finish an average sized field. After modification it took between 3 and 4</p>	<p>Groups of farmers with access to wetland/ dambo land. Vulnerable households benefited through community sharing.</p>		<p>Technical support not available for households which had never used the pumps. The pumps were dismantled when delivered without help provided in installing them. Community education/ sensitisation of new technology not adequate.</p>	

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Conservation Agriculture - Introduce draught animals and DAP technologies to reduce hand labour					
Ripper (another type of tool, is a substitute for the plough)(Babati / Tanzania).	Done before onset of rains (spreading labour similar to basin system) with 2 animals, cuts furrow rather than soil inversion, faster than	Poorest households don't have access to draught animals but it might be easier for them to find one or two rather than four oxen.	Is available locally as it is adjusted from the mouldboard plough.	Difficult to use when too much soil cover and crop residues are on the field Training of oxen required.	Also available with planter attachment to combine ripping and planting.
Knife roller to chop the cover crop for land preparation which eliminates slashing by panga(Karatu/ Tanzania)	Only one or two animals required.	See above. Only available in selected pilot sites e.g. Karatu.	Time saving allows people to work for others.	Accessibility of fodder availability, vet care.	Can be made locally. Currently only available in pilot sites.
No-tillage direct planter(FAO - Karatu / Tanzania)	Planting through soil cover, eliminates land preparation; two animals can be used instead of four.	See above.	Time saving allows farmer to diversify or work for others.	Not available locally, Expensive.	South to south transfer and communication required (Brazil/ Paraguay to Africa).
Livestock					
Restocking of small animals such as rabbits and guinea fowl	Diversifying livelihoods given that those affected by AIDS can cultivate less.	Most vulnerable need quick return, especially for orphans, and elderly-headed households.	Income-generating activities, food source, can act like a savings account to mitigate risks.	Care of animals, this increases with the size of the animal.	Options for types of animals e.g. rabbits, guinea fowl; chicken, goats.
Donkeys	Use for transportation of goods and people, water harvesting, firewood, marketing.	Specifically targeted to women farmers as donkeys have relatively low status.			Are not slaughtered for funerals; are normally not eaten

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Using lesslabour intensive crops					
Cassava Cuttings distribution (Oxfam Malawi).	Cassava is a root crop, can be harvested as required for food.	Normally considered a women's crop. Food crop.			
Crops of millet.	Weeding of millet is labour-intensive.	Protein-rich plant, very nutritious.	Sold to make beer as income-generating activity.		
Traditionally under-utilized crops that are labour-saving (Uganda, Theta NGO)	Those crops should be made available if they have labour-saving features; should be included in seed banks and see fairs.	Local indigenous farmers may use locally known seed sources			Must be adapted to local conditions and climates
Fishing					
Project to provide start-up cost for households to purchase fish that they then dry and sell (and buy more fish to sell...).	Attractive to households with minimal labour, such as orphan-headed households, and those run by older women.	Grandparent and orphan households	Source of income.	Competition to buy fresh fish (context-specific)	Any intervention with fishing communities should have a specific programme on HIV and AIDS prevention and mitigation as fishing communities have high HIV prevalence rates.