

Devean Moisture Conservation Tiller - A pillar of rural livelihoods in moisture stress areas

Context

Land tilling influences rainwater run-off, rainwater soil infiltration and soil moisture conservation. Contour plowing, broad furrowing and tied-ridging are effective means of conserving soil moisture and controlling soil erosion.

The **Devean MCT** (“Devean” means “Pillar” in *Hemteгна* language) was developed by the Swiss Solidarity-funded HELVETAS Ethiopia Wag-Hemra Rural Future Initiative (WHRFI) in collaboration with the Zone Department of Agriculture. Yield increments of 33-47% (ave. 38%) were measured by WHRFI in 2014. HELVETAS Ethiopia is promoting this device with the support of the DFID-funded FAO project Disaster Risk Mgmt – Innovative Agric. Solutions (OSRO/ETH/304/UK).

Description

- Used in the final plowing operation only
- Suitable for a wide range of annual crops
- Ideal for row planting and mixed-cropping
- Significantly increases rainwater soil infiltration
- Effectively controls soil erosion
- Increases fertilizer efficiency
- Significantly increases crop yields depending on crop, soil type and moisture conditions
- Fits on any “*Maresha*” plough
- Durable design (weight 2.6 kg)
- Low cost (approx. USD 12.5)
- Easy to operate



6

The **Devean MCT** is made of just two readily available components: 2.5 mm sheet metal and reinforcement bars.



1



2



3

Devean MCT applied for sorghum, maize, sesame, groundnut, potato etc



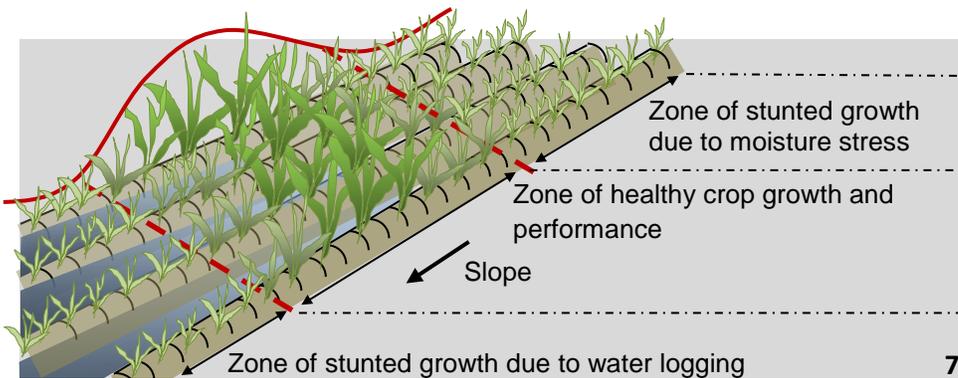
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Devean MCT applied with 2-3 m spacing for teff, barley, wheat



5

The Devean MCT can easily be fitted on any *Maresha* plough



Application and Effects

Rainwater distribution on farmland is impacted by gravity except on very flat land, even if contour plowing is applied. This causes run-off and soil erosion and creates uneven distribution of soil moisture conditions on farmland. This in turn results in uneven crop growth and yields which are highly influenced by soil moisture conditions. Stunted crop growth occurs under conditions of moisture stress, as well as water logging (see figure 7 left).

The **Devean MCT** is applied during the last plowing operation only. The device is easily fitted on any *Maresha* plow (picture 5). It creates 40-50 cm wide furrows. Tied-ridges are made by lifting the plow shortly every 2.5 meters (see pictures 2&3).

The **Devean MCT** is applied in dense crop stands with teff, barley, wheat, etc., by leaving approx. 2-3 m spaces between the furrows (picture 4). The **Devean MCT** ensures even soil moisture distribution and crop growth on farmland (picture 8). Through effective soil & water conservation and by increasing crop yields and food security, it enhances rural households' resilience to climate extremes. The **Devean MCT** is a pillar of rural livelihoods in moisture stress areas.

