Residues to maintain soil moisture in maize

Recognize the problem
Prolonged dry spells experienced in most parts of the country have been causing moisture stress in maize fields. Signs of moisture stress include stunted growth, yellowing and reduced plant densities due to less germination. Note that these symptoms can also be caused by biotic constraints such as nematodes or soil diseases, but rarely across large field areas.

Background
Crop left-overs, also called crop-residues, can cover the ground. As a result they reduce water evaporation from the soil which then better retains moisture. Crop left-overs from different types of crops can be used in maize, for example: groundnuts, cowpeas and sunflower. Crop rotation is essential so do not replant the same crop or a crop from the same family. Only use crop left-overs from maize and other cereals when these crops were healthy, otherwise pests and diseases will carry over to the next season. At the moment, Zambia is promoting conservation technologies which, among others, include leaving crop left-overs in the fields.

Management
- After harvesting a crop, the plant left-overs are left on the field without burning or feeding to livestock.
- About 70% coverage by left-overs is needed to give a good effect on the crop.
- Too much left-over crop disturbs ox-drawn rippers when making rip lines
- To reduce the quantity of the left-overs to acceptable levels, farmers need to push animals into the field to feed on some of them. This should be done under supervision.
- The remaining layer should be between 5 cm and 10 cm. Note that the left-overs do not need to be chopped if not practical.
- Land is prepared using soil-conservation methods such as ripping (lines made by ox-drawn ripper) and planting basins (planting holes made by Chaka hoe). The whole field surface is not ploughed.
- Planting is performed in the ripped lines or in the planting basins at the onset of the rains
- Crop left-overs remain between rows of ripped lines to retain moisture for use by the crop
- In case of inadequate rains or prolonged dry spells, the crop left-overs are able to retain the available moisture and slowly make them available to the maize crop, thereby reducing water stress

The recommendations in this factsheet are relevant to: Botswana, Malawi, Zambia, Zimbabwe

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