

# Sorghum grown under poor management

Compaction of soil with tracking animals and tractors

Use of poor seeds

No hedges to protect the soil from erosion by wind

Burning of crop residues or overgrazing of harvested fields

Poor weed management

Poor pest and disease management

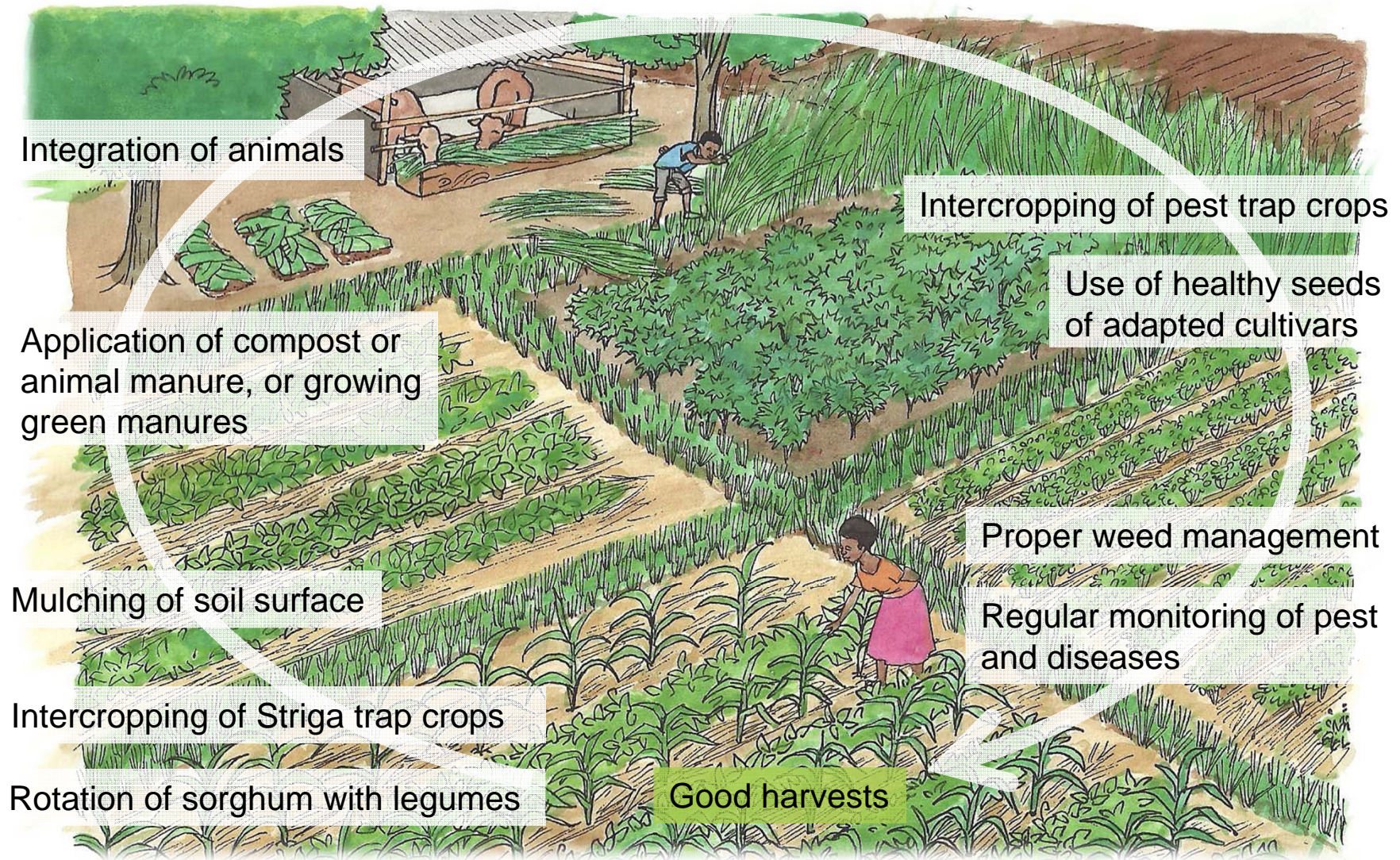
No cover crops or mulches to conserve water in the soil

Continuous planting of sorghum season after season

Poor harvests



# Improved cultivation of sorghum



Integration of animals

Intercropping of pest trap crops

Use of healthy seeds of adapted cultivars

Application of compost or animal manure, or growing green manures

Proper weed management

Mulching of soil surface

Regular monitoring of pest and diseases

Intercropping of Striga trap crops

Rotation of sorghum with legumes

Good harvests



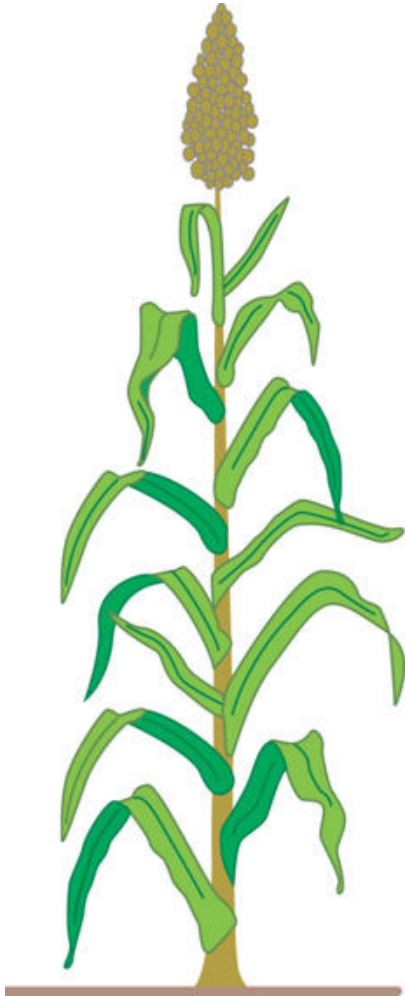
# Selection of appropriate cultivars



The new variety we are trying out seems to grow well under our conditions, but will it make heads? Our local variety, planted at the same time, is near maturity.



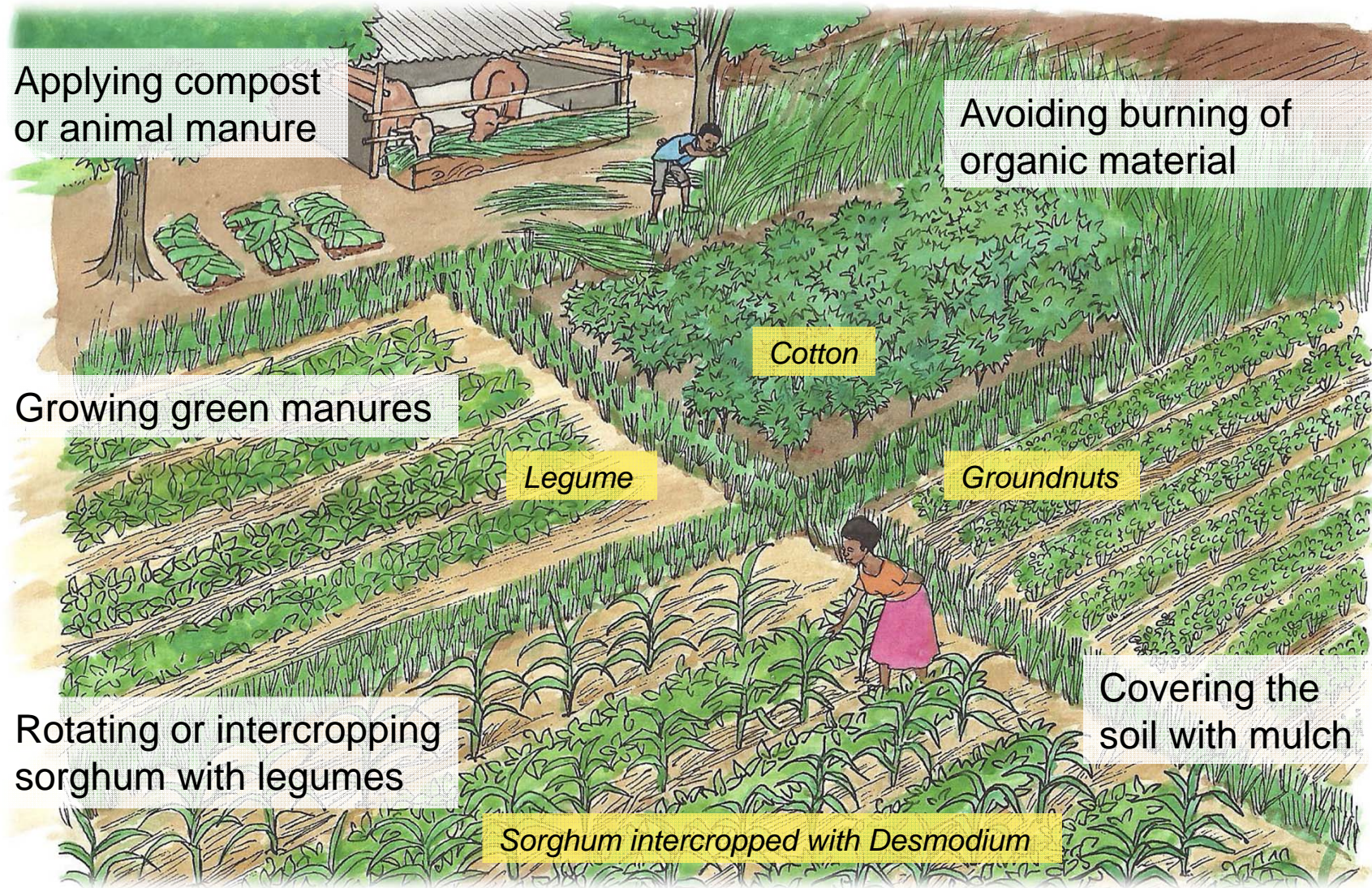
# Criteria for selecting sorghum cultivars



- › Type corresponding to the intended use
- › Adapted to local growing conditions
- › Tolerance to the main local pests and diseases like leaf diseases, green bugs, sorghum midge, stemborers, panicle feeding bugs
- › Early and uniform maturity
- › Dual purpose with good grain and good stover yields to provide fodder for livestock also
- › Grain quality that corresponds to processing requirements and consumer preferences



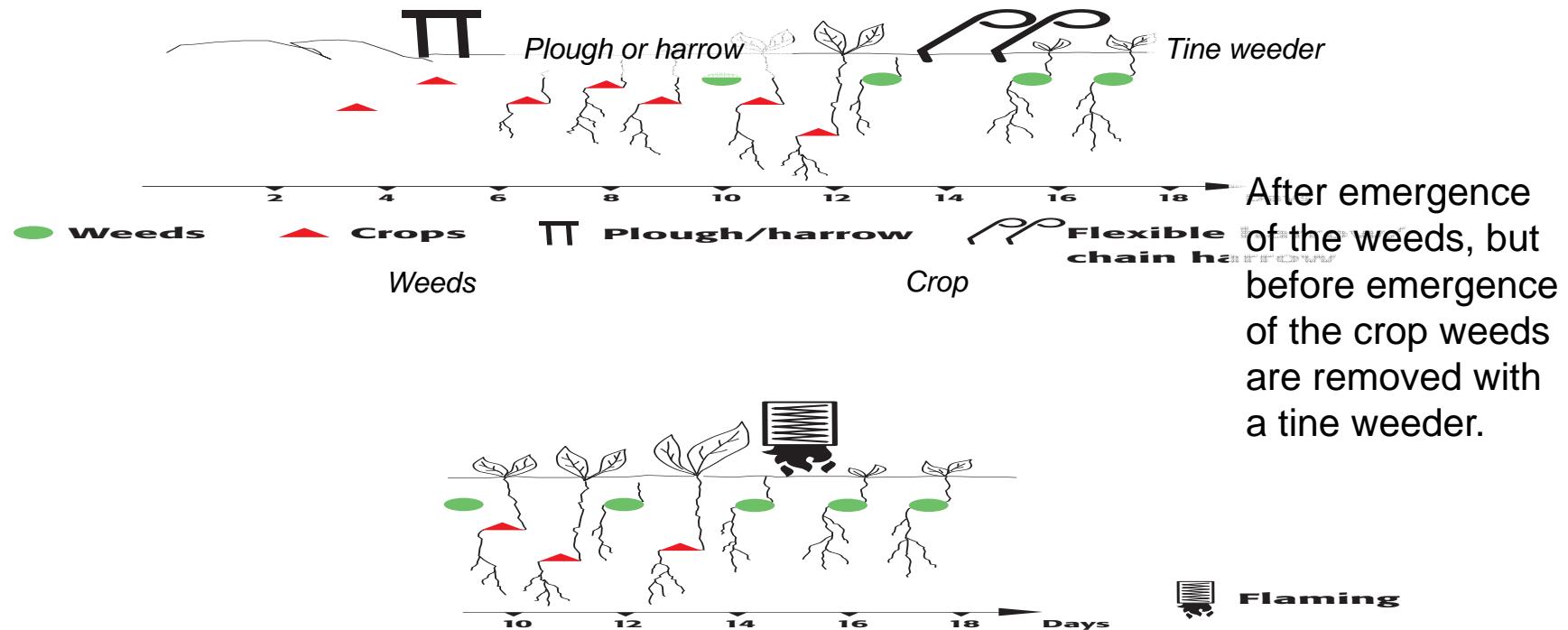
# How to ensure good nutrition of sorghum



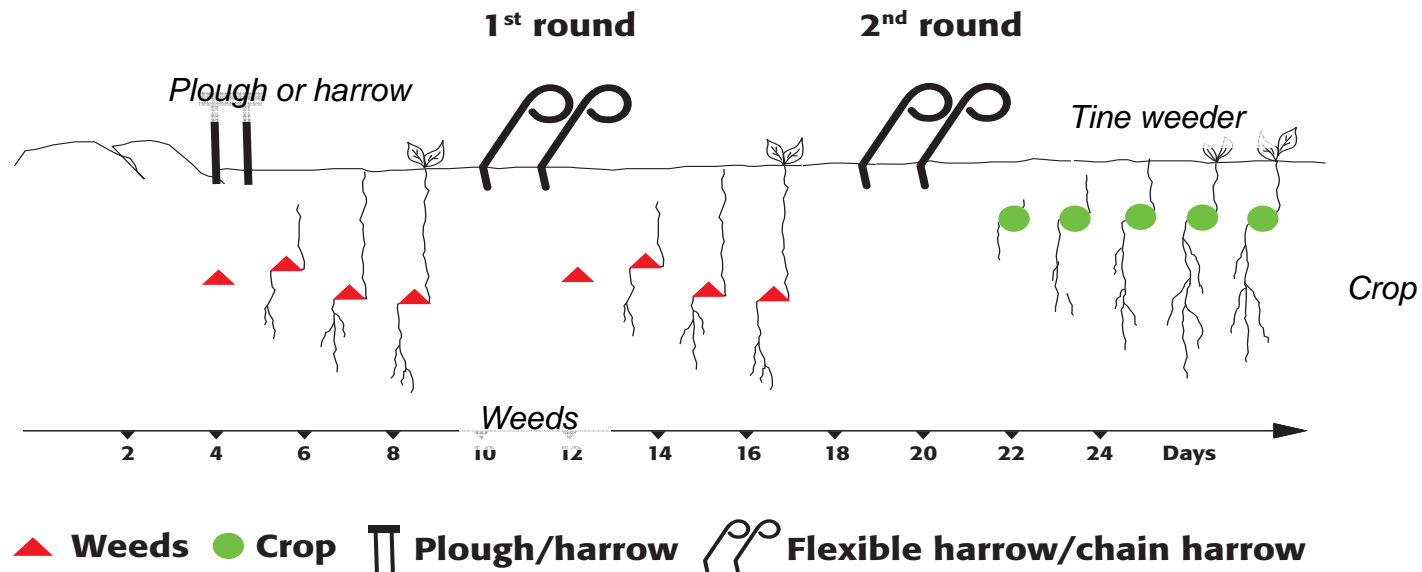
# Blind harrowing

- › Controlling weeds between sowing and crop emergence

In ploughed fields with bare soil weeds can be controlled using a tine weeder.



# False seedbed



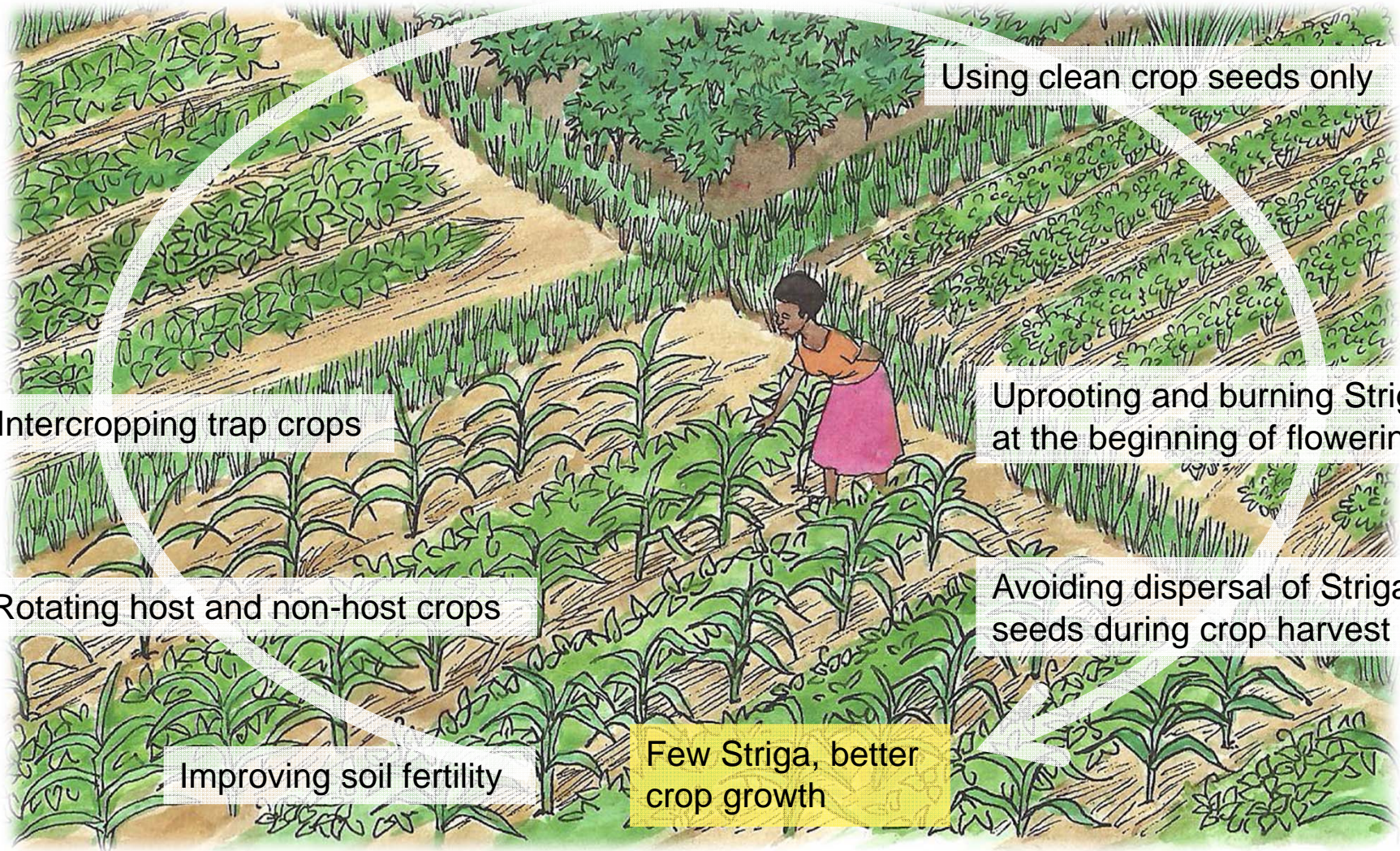
1. Prepare the seedbed early (2 to 4 weeks before seeding or planting).

2. Wait until the weeds have emerged.

3. Destroy the weeds at intervals of 7 to 10 days using a tine-weeder.



# How to control Striga effectively





# How to improve water supply of sorghum

Planting hedges as wind barriers

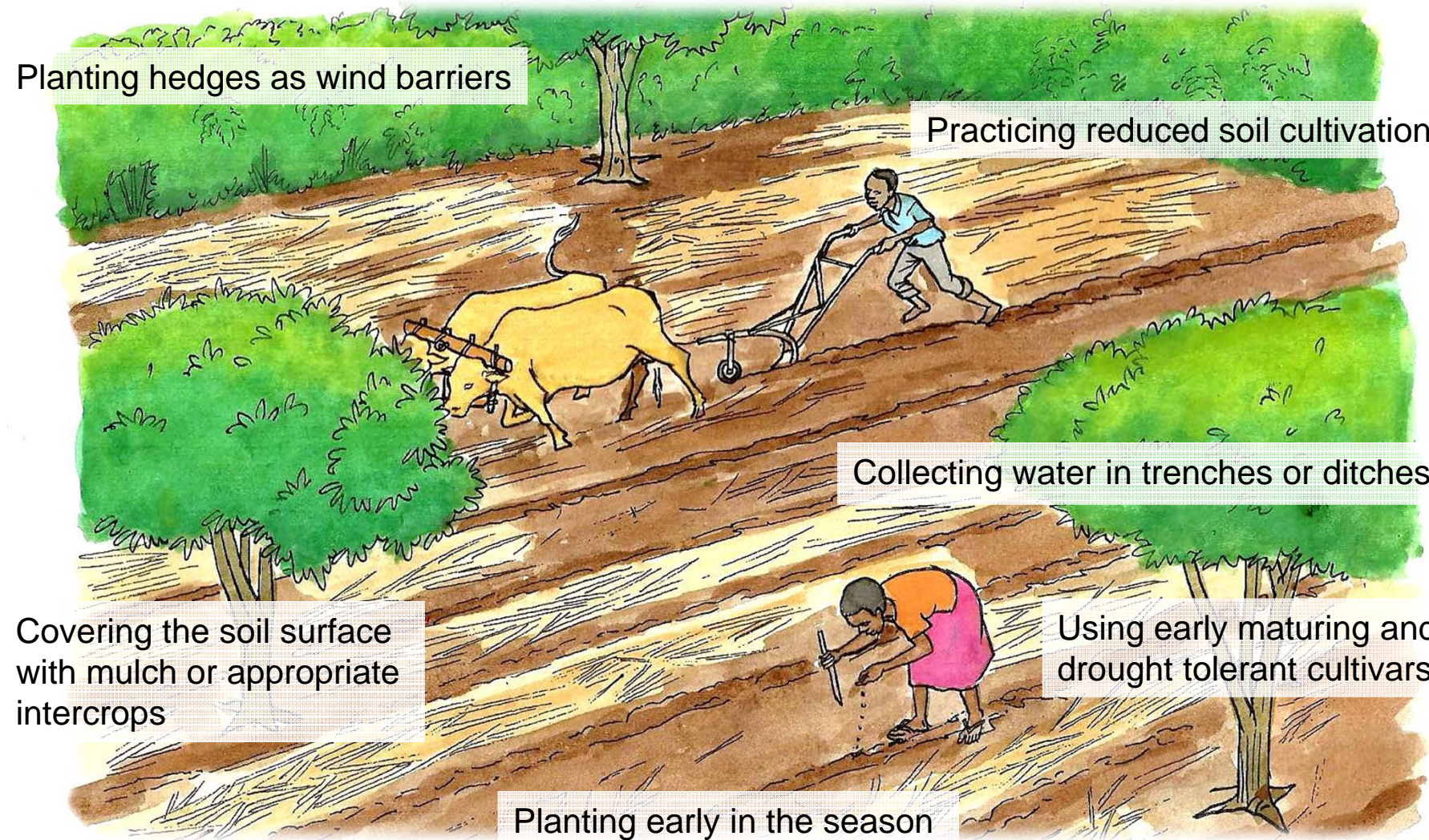
Practicing reduced soil cultivation

Collecting water in trenches or ditches

Covering the soil surface with mulch or appropriate intercrops

Using early maturing and drought tolerant cultivars

Planting early in the season



# Controlling stemborer with the push-pull method



2. Plant 2 to 3 rows of healthy Napier grass around the plots before the rain season at 75 cm between rows and 50 cm within rows
3. Sow repelling intercrops together with sorghum
4. Weed intercrops repeatedly



# Control of major diseases of sorghum

Diseases	Symptoms	Control measures
<b>Stalk rot</b>	<ul style="list-style-type: none"> <li>› Rotting of roots and premature death</li> <li>› Infected stalk tissue turns dark red</li> <li>› Lodging of plants</li> </ul>	<ul style="list-style-type: none"> <li>› Crop rotation</li> <li>› Use resistant cultivars</li> <li>› Proper spacing</li> </ul>
<b>Anthracnose</b>	<ul style="list-style-type: none"> <li>› Orange, red- or blackish purple leaves</li> <li>› Small leaves with circular or elliptical shape</li> </ul>	<ul style="list-style-type: none"> <li>› Use resistant cultivars (hybrids)</li> <li>› Rotation with pulses</li> <li>› Encourage decomposition of crop residues after harvest</li> </ul>
<b>Smuts</b>	<ul style="list-style-type: none"> <li>› Sorghum kernels are replaced by a cone-shaped gall (Covered kernel smut)</li> <li>› Long and pointed galls formed by loose kernels (Loose kernel smut)</li> <li>› Large, dark-brown smut galls emerging in place of the panicle (Head smut)</li> </ul>	<ul style="list-style-type: none"> <li>› Use resistant cultivars or certified disease-free seeds</li> <li>› Hot water treatment of seeds</li> <li>› Crop rotation with non-cereals</li> <li>› Removal of infected panicles</li> </ul>
<b>Downy mildew</b>	<ul style="list-style-type: none"> <li>› Vivid green and white stripes on the leaves and heads</li> <li>› Heads partially or completely sterile</li> </ul>	<ul style="list-style-type: none"> <li>› At least 3 years between two sorghum or maize crops</li> <li>› Use of resistant cultivars</li> <li>› Use of clean, properly dried seeds</li> <li>› Proper plant spacing</li> </ul>



# Control of major pests of sorghum

Pests	Preventive and cultural measures	Direct control
<b>Shoot fly</b>	<ul style="list-style-type: none"> <li>› Use of tolerant cultivars (for late planting mainly)</li> <li>› Early, uniform sowing at high seeding rates</li> <li>› Intercropping of legumes (non-host plants)</li> <li>› Removal of wild grass species</li> <li>› Incorporation of crop residues into the soil</li> </ul>	<ul style="list-style-type: none"> <li>› Removal and destruction of infested plants</li> <li>› Spraying of <i>Bacillus thuringiensis</i> against larvae</li> <li>› Spraying of Neem solution against larvae</li> </ul>
<b>Stemborer</b>	<ul style="list-style-type: none"> <li>› Early sowing</li> <li>› Intercropping of repelling plants</li> <li>› Promotion of natural enemies</li> <li>› Planting of Napier grass as a trap crop</li> <li>› Destruction of infected crop residues after the harvest</li> </ul>	<ul style="list-style-type: none"> <li>› Application of a Neem- or a fish bean plant extract sawdust/clay mixture into the funnel of young plants</li> </ul>
<b>Sorghum midge</b>	<ul style="list-style-type: none"> <li>› Early and uniform sowing with high densities</li> <li>› Use of resistant cultivars</li> <li>› Crop rotation and intercropping with pulses</li> <li>› Removal of host weed species</li> <li>› Incorporation of crop residues after harvest</li> </ul>	<ul style="list-style-type: none"> <li>› Spraying of pyrethrum extract</li> </ul>

