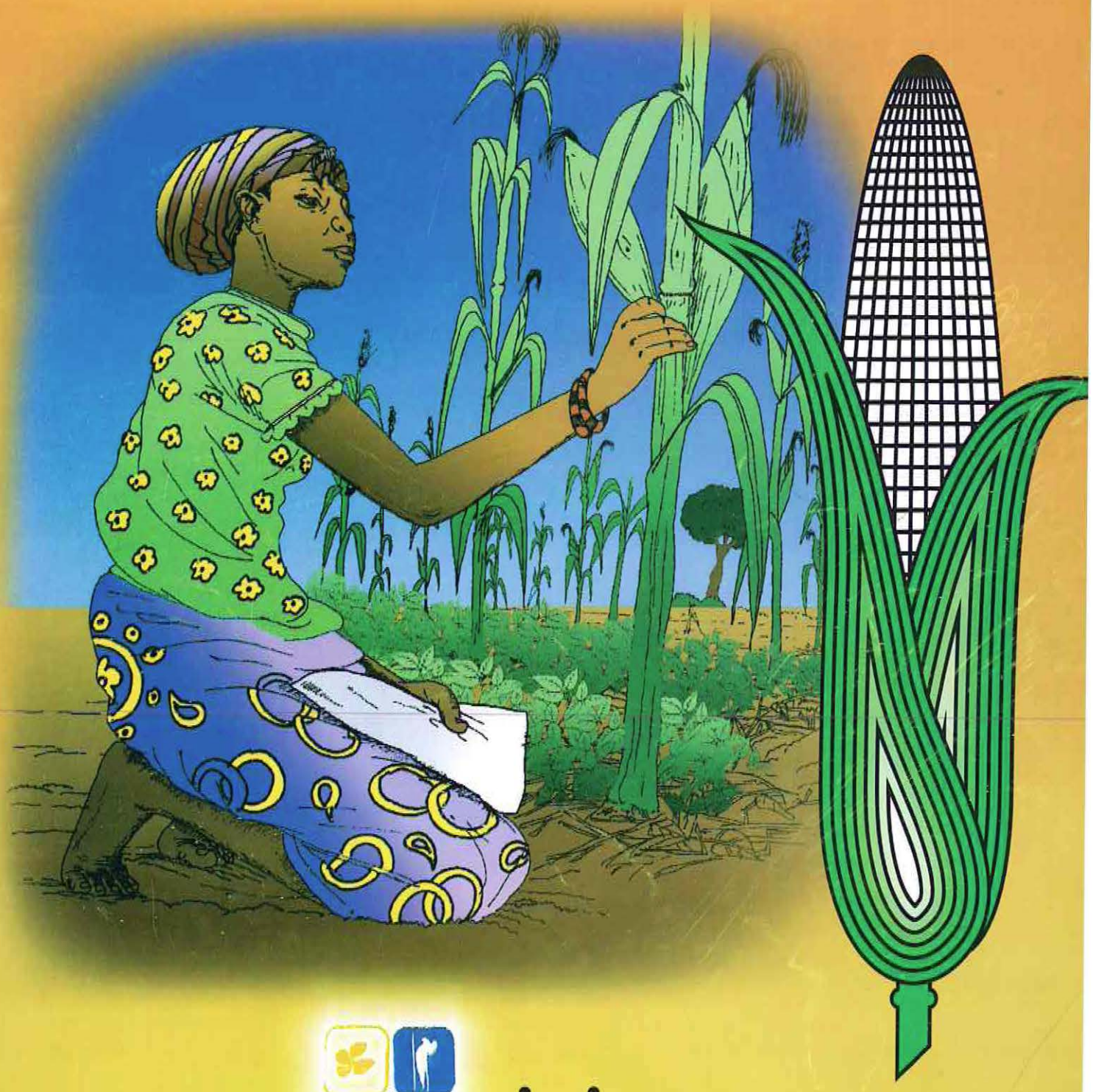
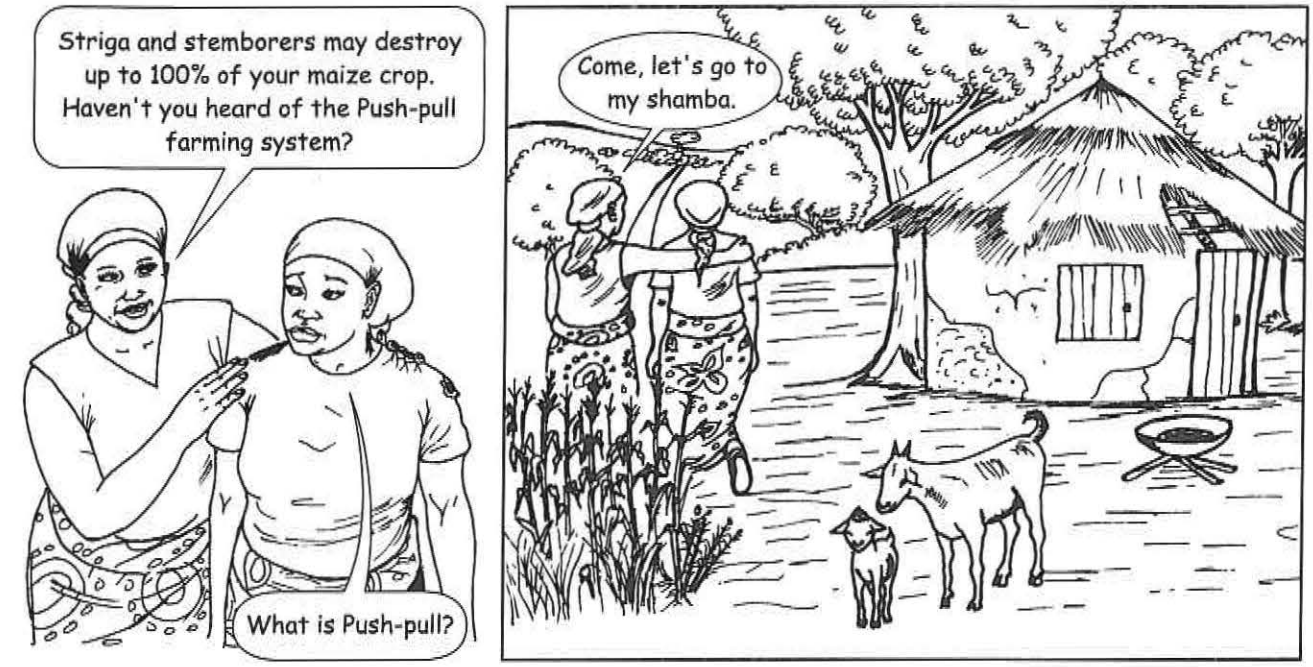
Push-pull
Improving Livelihoods

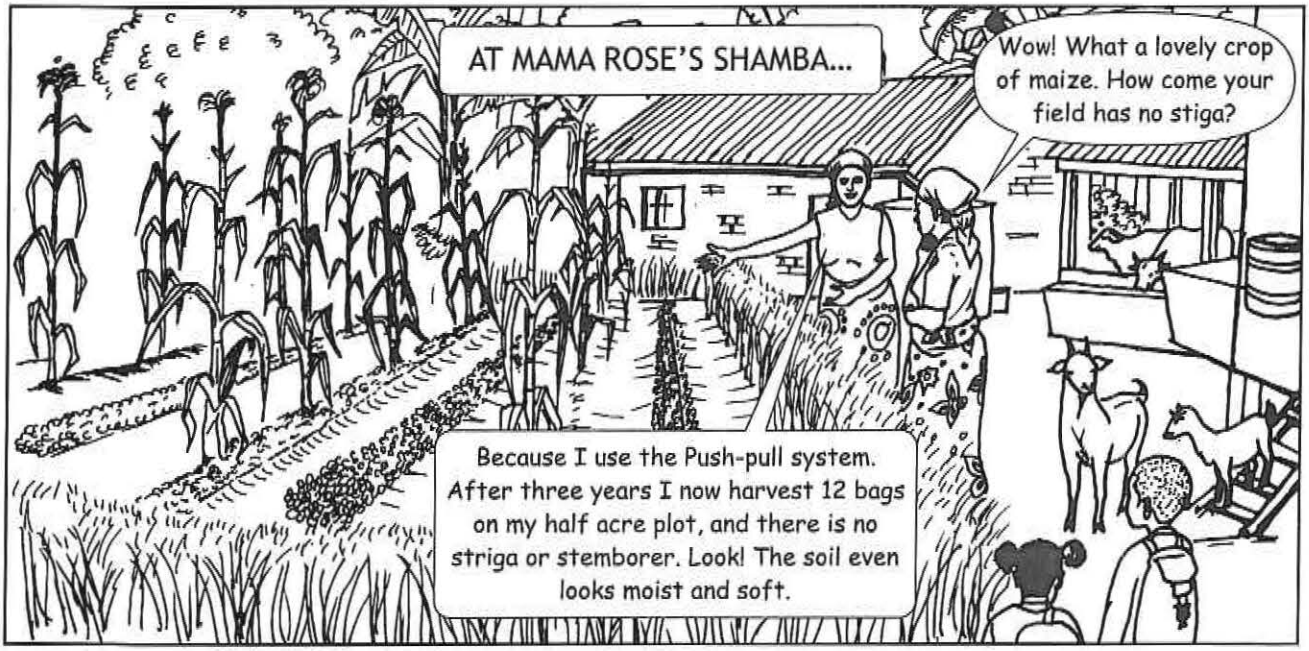


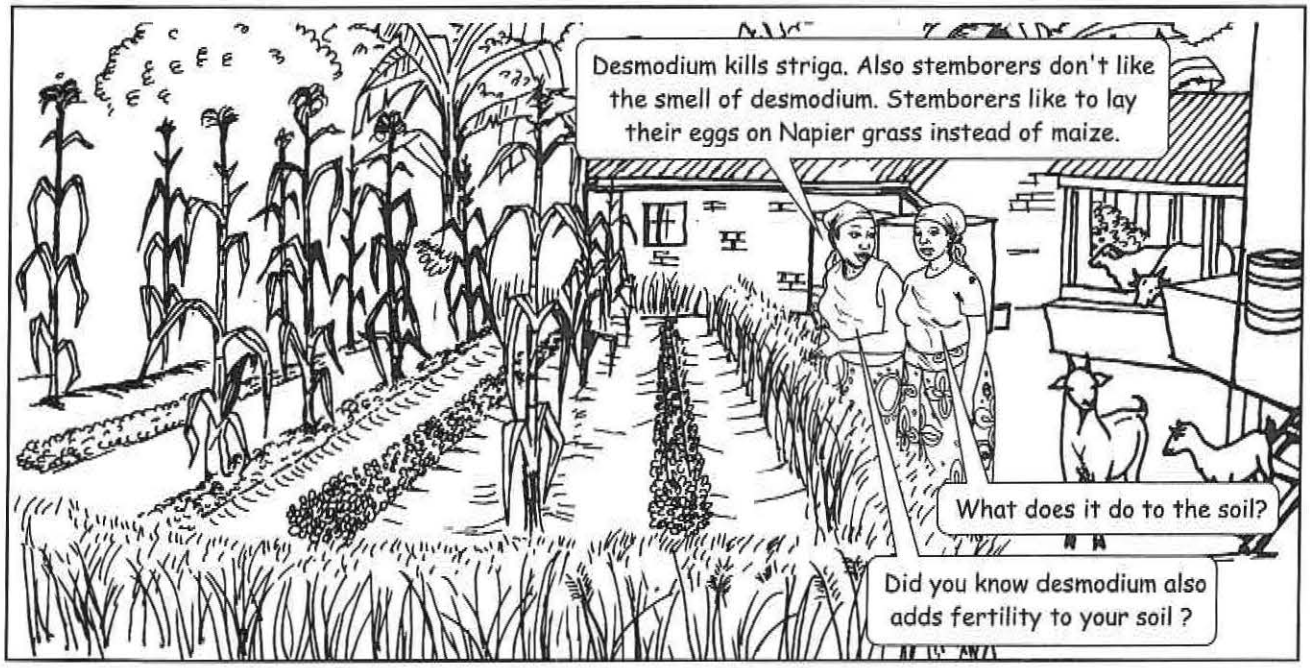
icipe

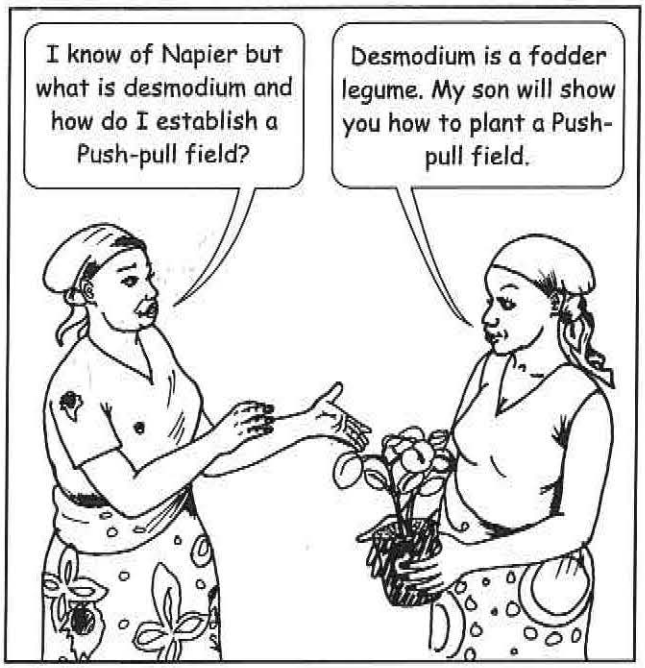
African Insect Science for Food and Health


MAMA JANE'S LIFE HAS IMPROVED AFTER ADOPTING PUSH-PULL. HER WOMENS GROUP WANTS TO KNOW HOW SHE DID IT.
Mama Jane should share with us her secrets to success. Since the past three harvest seasons she has become wealthier and healthier.
Oh yes, even her crop seems to be happier. What have you been up to?
Yes, Mama Jane. Share with us the secrets to your success!
Well, it all started one Saturday afternoon when mama Rose came visiting me...
Mama Jane, What is the problem?
My problems are "Kayongo" (Striga) and stemborers. They destroy my crops every season.
I can see that the poor soil is also affecting your crop
Look at your maize plant. Striga has attached itself to the roots sucking away the nutrients for the plant. Stemborers are also damaging the maize.


Striga and stemborers may destroy up to 100% of your maize crop. Haven't you heard of the Push-pull farming system?
What is Push-pull?
Come, let's go to my shamba.

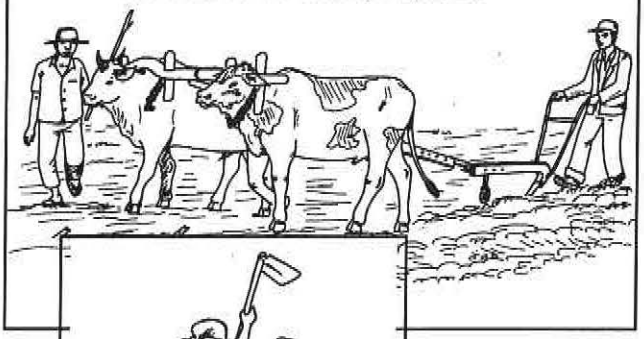

AT MAMA ROSE'S SHAMBA...
Wow! What a lovely crop of maize. How come your field has no stiga?
Because I use the Push-pull system. After three years I now harvest 12 bags on my half acre plot, and there is no striga or stemborer. Look! The soil even looks moist and soft.


Desmodium kills striga. Also stemborers don't like the smell of desmodium. Stemborers like to lay their eggs on Napier grass instead of maize.
What does it do to the soil?
Did you know desmodium also adds fertility to your soil ?



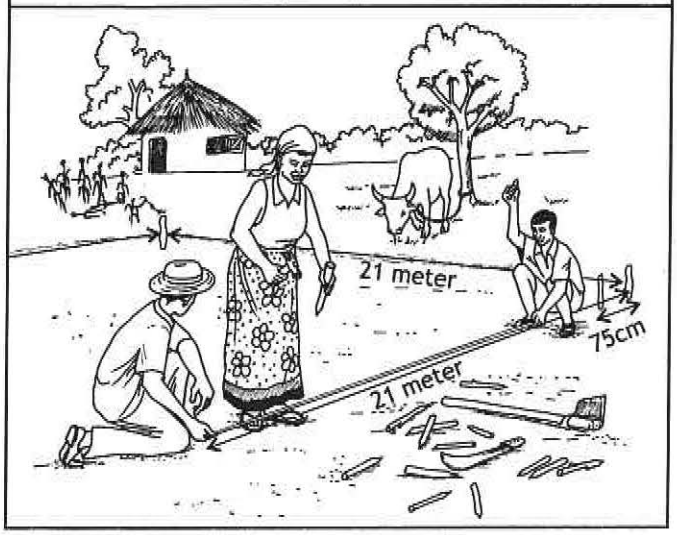
ESTABLISHING A PUSH PULL PLOT

We cleared the land, ploughed...

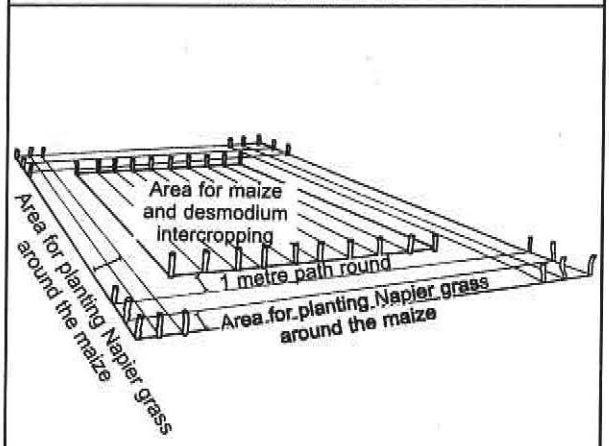


...and broke down the soil until it was fine.

Using pegs and ropes, we measured the first plot of 21m x 21m. A push-pull plot can be as small as 10m x 10m, or as big as any shamba.



We used a string to measure and ensured that we had a square. We put pegs at opposite sides of the square at intervals of 75cm each. When we finished marking the plot with pegs and strings it looked like this.

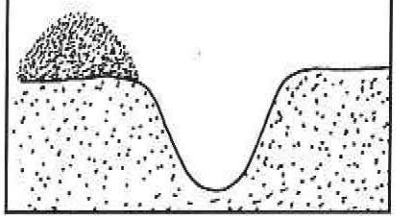


TO PLANT NAPIER GRASS

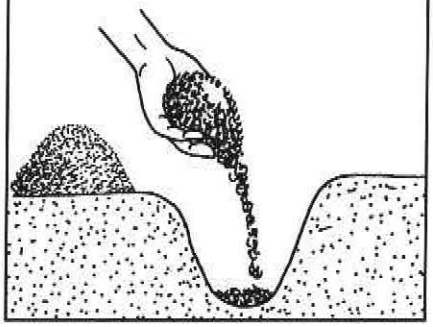
Dig holes along the demarcated lines ready for planting.

Bana is the best variety of Napier grass for use in Push-pull. Follow these steps when planting Napier grass in your Push-pull plot.

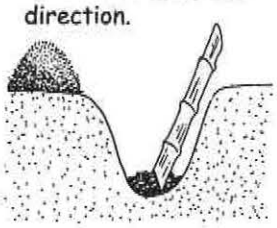
1. Did holes at each peg on border of the marked plot.



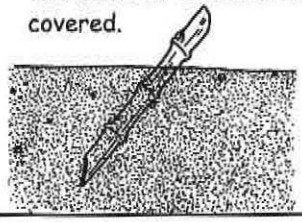
2. Apply one teaspoonful of triple super phosphate fertilizer or 2 hand-fulls of well decomposed farmyard manure in each hole.



3 Place a three node cane into each hole at an angle of 30° to 40° all facing one direction.

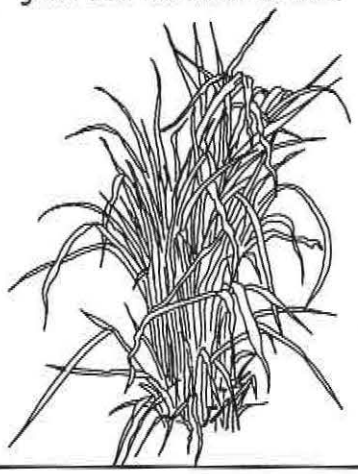


4 Cover with soil ensuring that two nodes of the cane are well covered.

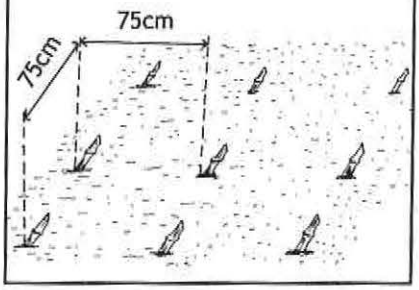


AVOIDING NAPIER GRASS DISEASE

Select healthy Napier grass for planting. Do not plant Napier grass that has stunt disease.

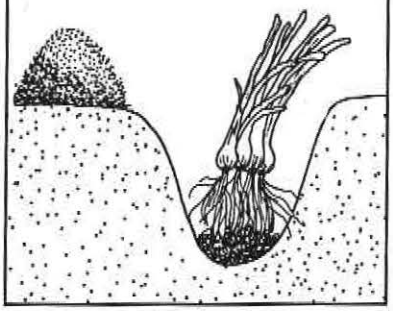


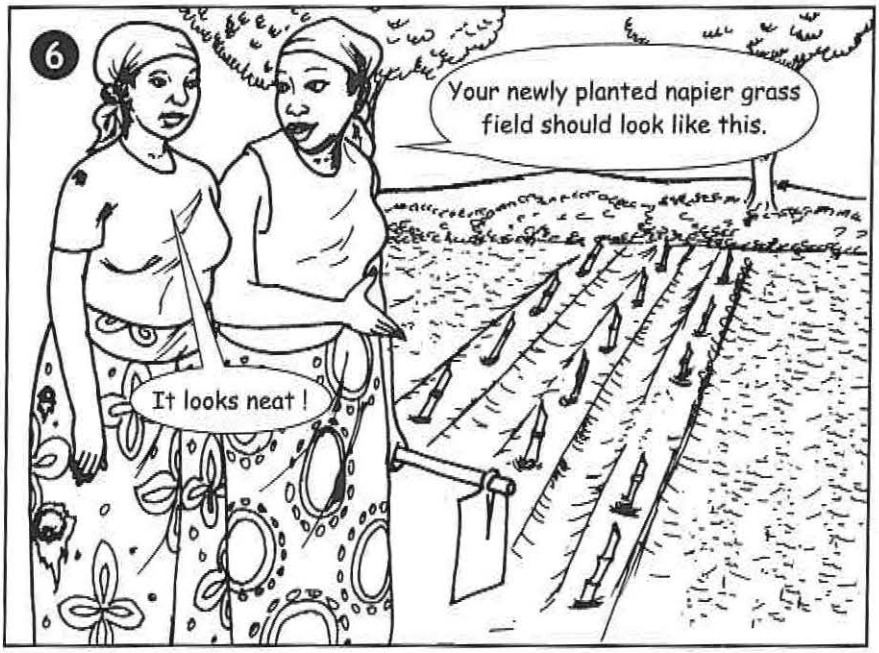
5 Repeat steps 1 to 4 for the second and third rows, ensuring that the rows are 75cm apart and 75cm between the plants within the rows.



6

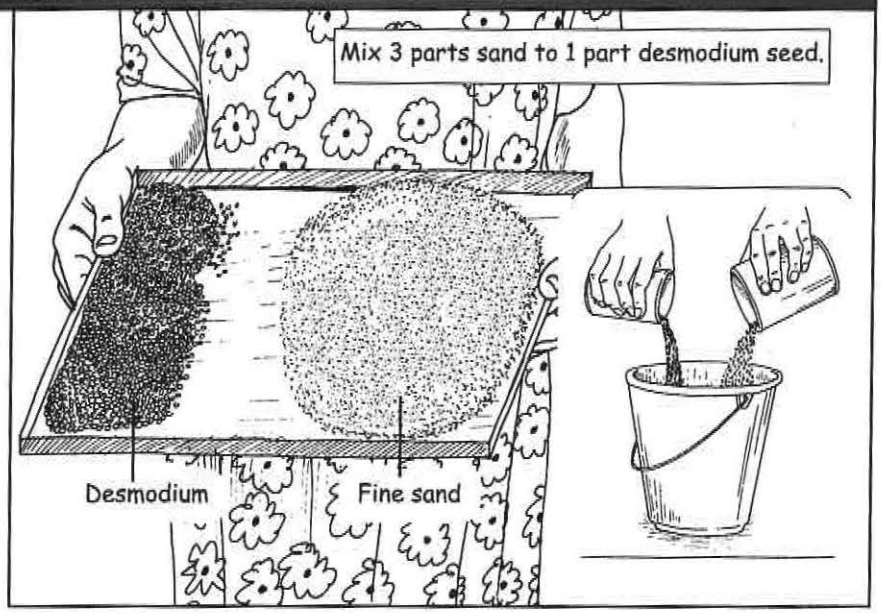
If you are using root splits, place them upright into the planting holes and cover with soil.





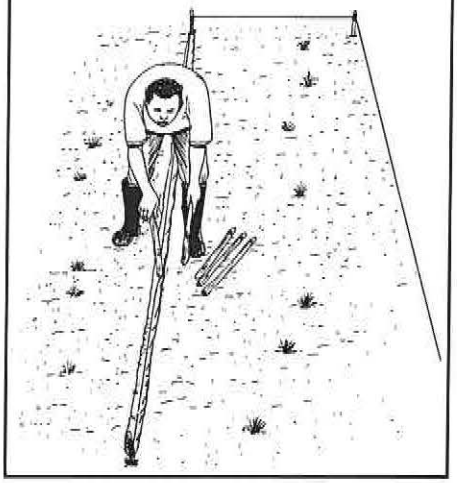
MAMA JANE CONTINUES TO EXPLAIN TO THE GROUP . . .

Next, we planted desmodium. We mixed 300g of silverleaf desmodium seed with fine sand; one part desmodium to two parts dry sand.



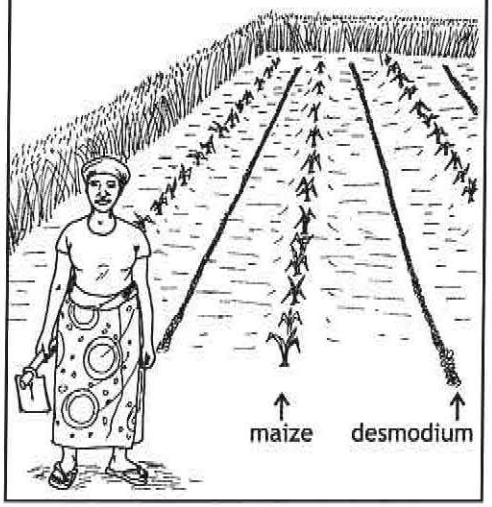
We drilled desmodium in the furrows at 75cm row-to-row distance.

Drill fertilizer or farmyard manure along furrows, mix with soil using a stick, without covering or disturbing the furrow.



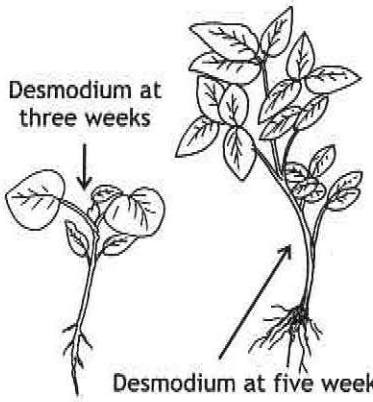
We planted maize between desmodium rows.

After one week I noticed that my maize crop was doing well.

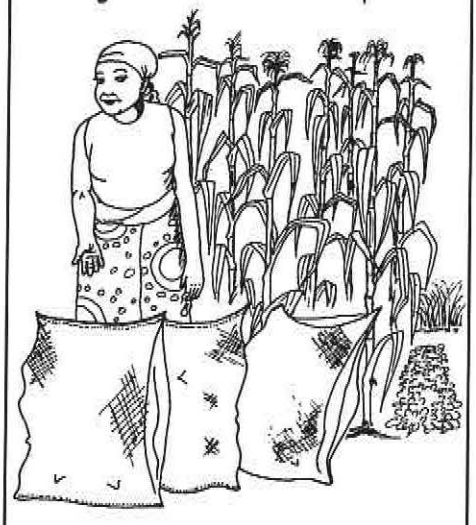


WEEDING AND CROP MANAGEMENT

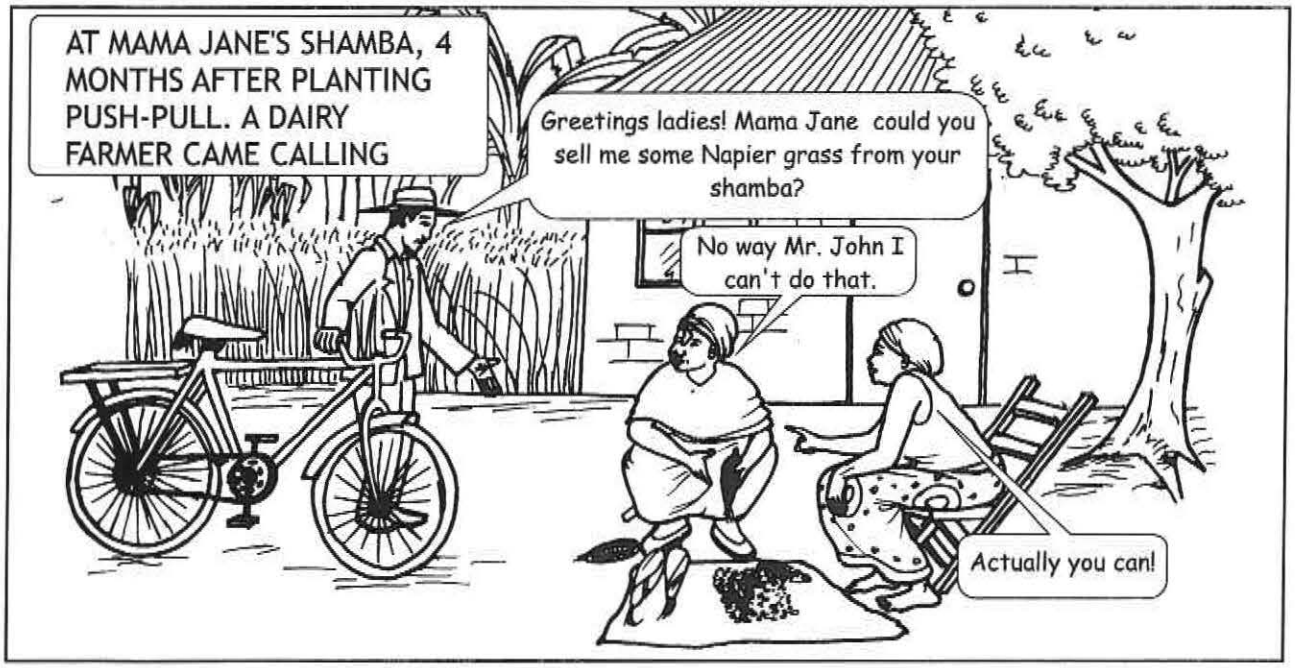
Early weeding is very important for the successful establishment of a Push-pull plot. We carried out the first weeding when maize was 3 weeks old, and second weeding when maize was 5 weeks old. It is important to distinguish between desmodium and weeds.

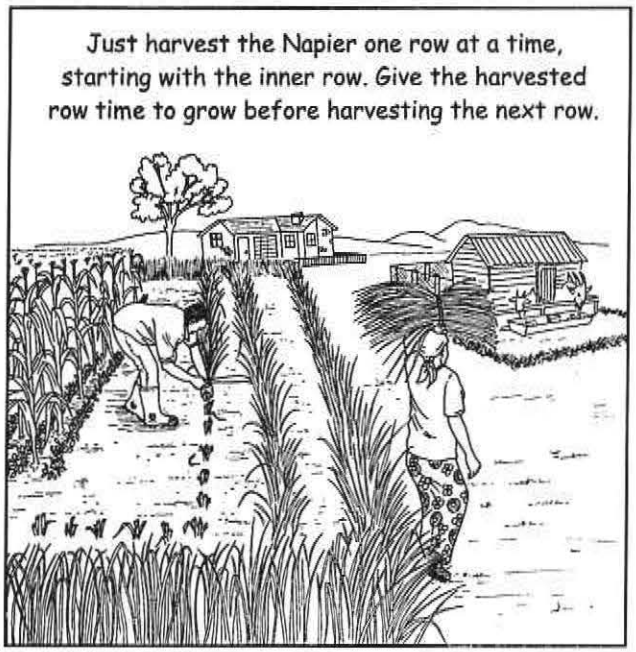


My first maize harvest was 3 bags from the 21m x 21m plot.

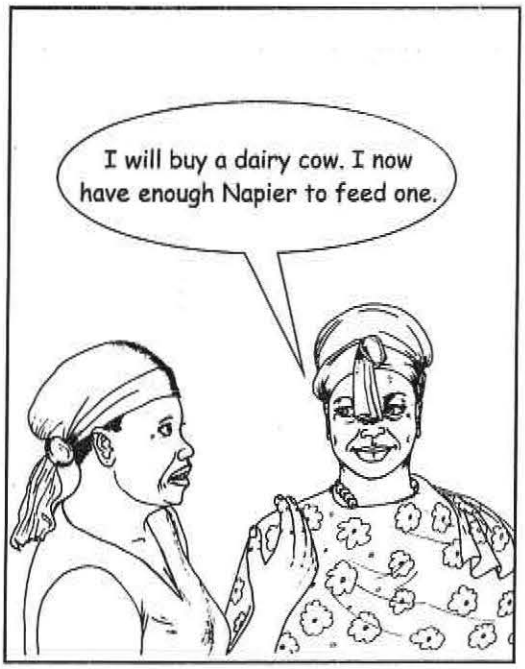


For the past three years I have harvested 12 bags each season from my half acre plot.


AT MAMA JANE'S SHAMBA, 4 MONTHS AFTER PLANTING PUSH-PULL. A DAIRY FARMER CAME CALLING
Greetings ladies! Mama Jane could you sell me some Napier grass from your shamba?
No way Mr. John I can't do that.
Actually you can!

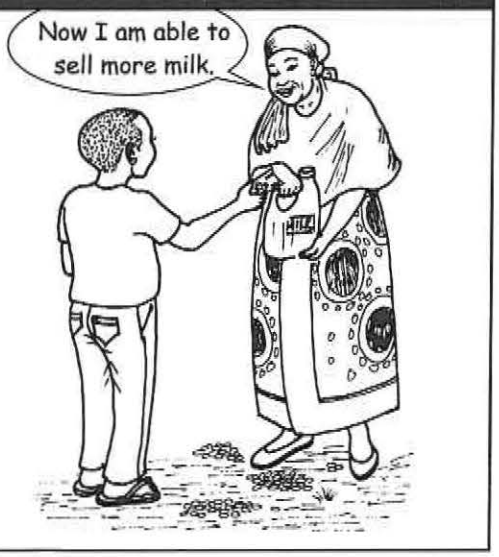

Just harvest the Napier one row at a time, starting with the inner row. Give the harvested row time to grow before harvesting the next row.


Why is Mr. John interested in the Napier?
It is to feed his dairy cow.


I will buy a dairy cow. I now have enough Napier to feed one.


When I finally bought my cow.
This is good progress! Feed it on desmodium too. It will increase milk production. Mix three buckets of Napier with one bucket of desmodium.

TWO WEEKS AFTER FEEDING THE COW ON DESMODIUM NAPIER MIX

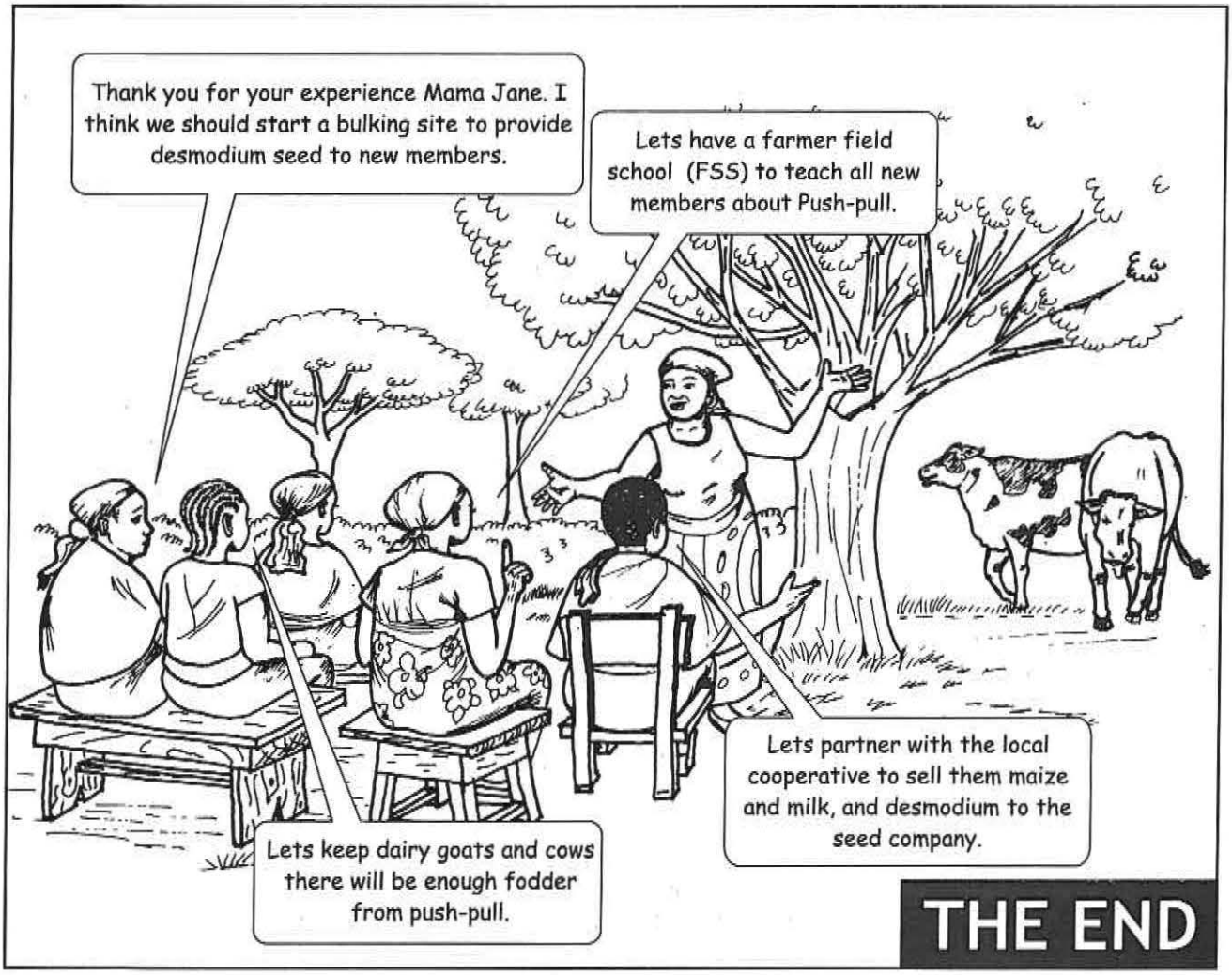


You harvest desmodium seeds for future use or for sale. Wear polythene over your clothes to prevent the pods sticking to you.

Thresh desmodium seeds on a stone using an old rubber shoe.

Winnow the threshed seeds.

Harvest desmodium after harvesting maize from the field. During the first season do not harvest desmodium until it has established well.



Icipe's mission is to help alleviate poverty, ensure food security and improve the overall health status of peoples of the tropics by developing and extending management tools and strategies for harmful and useful arthropods, while preserving the natural resource base through research and capacity building.

Correct citation

ICIPE. 2007. Push-pull Changing Lives. International Centre of Insect Physiology and Ecology, Nairobi, Kenya.

ISBN 92 9064 194 X

Editors: Z. R. Khan, J Pitchar *(icipe, Kenya)* **Storyline, Illustrations, Design and Layout:** Skyward Marketing Ltd., *Nairobi, Kenya*

For more information, contact:

Director General
International Centre of Insect Physiology and Ecology (ICIPE)
P.O. Box 30072-00100 Nairobi, Kenya
Tel: +254 (20) 8632000
Fax: +254 (20) 8632001, 8632002
Email: icipe@icipe.org

or

ICIPE – Mbita
P.O. Box 30, Mbita
Suba District, Kenya
Tel:+254 (59) 22217/18/95 Fax: +254(59)22190

or

Director
Kenya Agricultural Research Institute
P.O. Box 57811 Nairobi, Kenya
Tel:+254 (20)4183301-20
Fax:+254(20)4183344
Email: resourcecentre@kari.org

or

Centre Director
Kenya Agricultural Research Institute
P.O. Box 450
Kitale, Kenya
Tel:+254 (54) 20108

or

District Agricultural Officers

or

Scientific Director,
Rothamsted Centre for Sustainable Pest and Disease Management
Rothamsted Research,
Harpenden, Herts., AL5 2JQ,
United Kingdom
Tel: +44 (0) 1582 763133 x2320
Fax +44 (0) 1582 762595

The production of this comic was made possible by the kind donations of Kilimo Trust, Uganda and Biovision, Switzerland