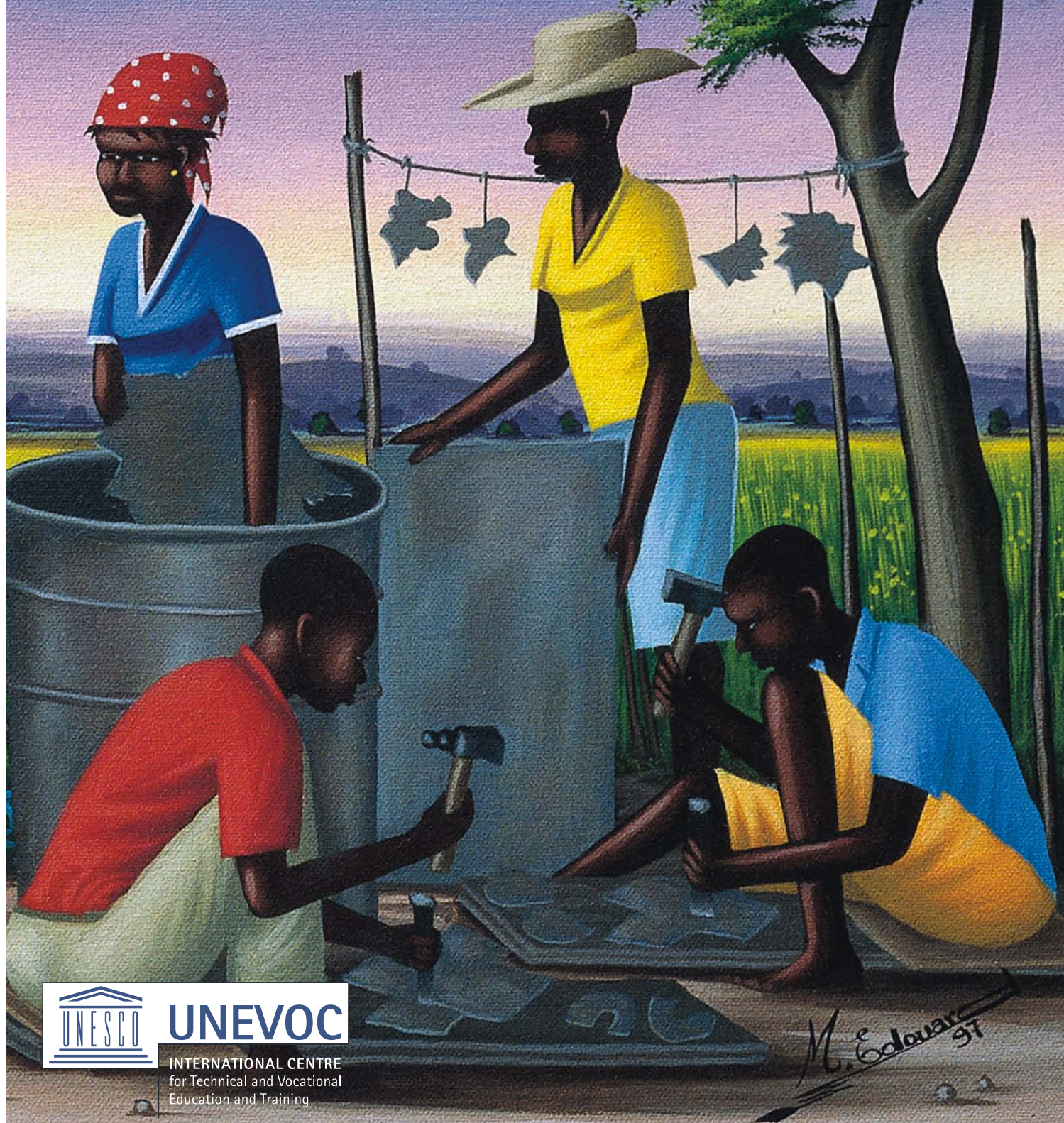


# Global Action Programme on Education for All Youth Project

## Small Machines



**UNEVOC**

INTERNATIONAL CENTRE  
for Technical and Vocational  
Education and Training

*M. E. Gboluwa  
97*



# Learning and Working

## Motivating for Skills Development: A Campaign Package

Version February 2006

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## Booklet 7.05 – SMALL MACHINES

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This booklet complements the video clip on "Small Machines" on DVD 1. It gives a short summary of the content of the video and contains illustrations followed by technical texts, which will make it easier to understand and recall the activities shown in the video. The booklet can be copied and handed out to participants, so that they can make notes on them or use them as a reference for later.

A transcript of the soundtrack of the video is included at the back of the booklet. Whenever the locally spoken language is different from the language used in the video, the facilitator may wish to use this text transcript as a basis for comments and explanations in the local language.

### Comments and Observations

This video mainly demonstrates how to use small machines for the processing of roots, nuts, grains etc. It does not focus on the actual manufacturing of the small machines themselves. The facilitator should be able to provide the participants with information on where training in making of small machines can be obtained.

### Occupational Health and Safety

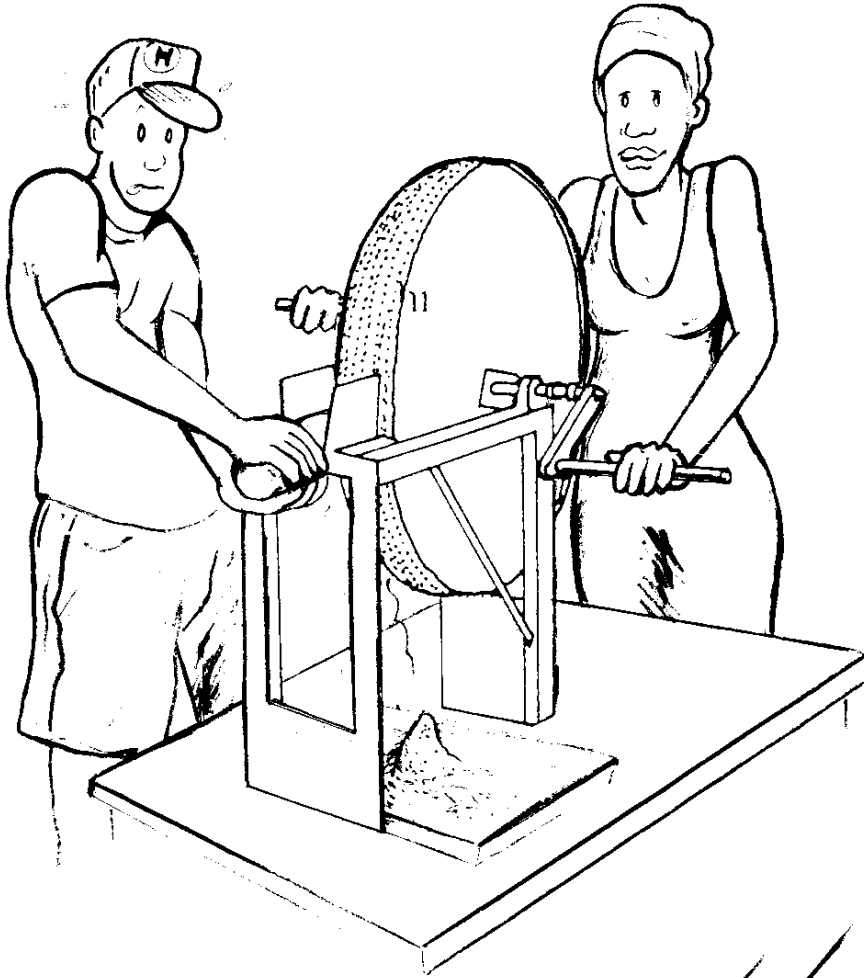
The facilitator should point out that when working with graters, shellers and mills, the worker should always protect his/her fingers and hands from being caught in the machine and injured. This could be done by using something like a ladle, scoop or tongs to feed the machines with the seeds, fruits, etc. Protective gloves are also recommended.

When handling food items, hygiene is also always an issue. It is very important to prepare food safely to avoid harmful bacteria from spreading and growing. Hands should be thoroughly washed and cleaned before handling food. The machines and other utensils that touch the food should also be kept clean.

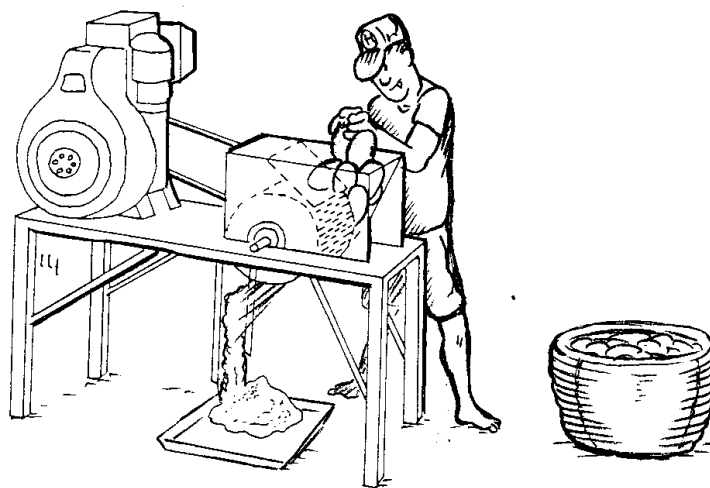
## Video SMALL MACHINES: Summary

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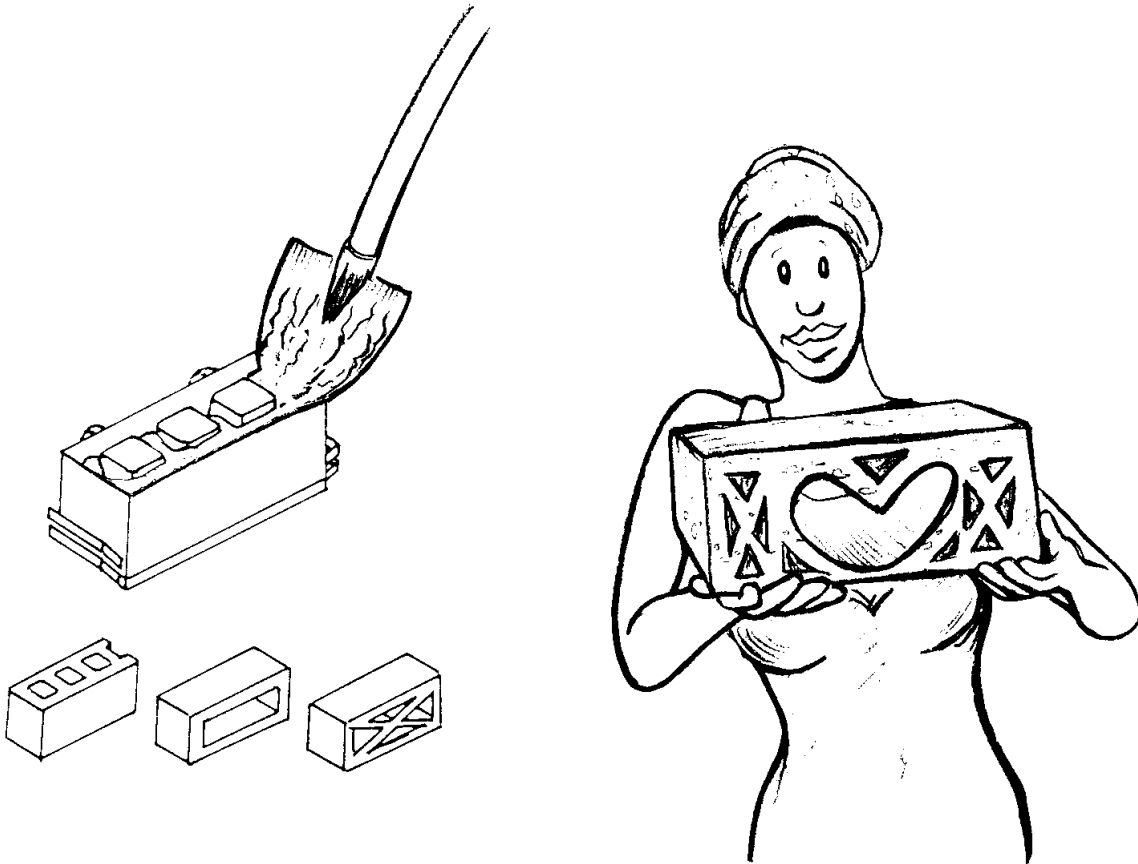
The video demonstrates the use of small machines to process and preserve agricultural products, such as manioc, corn, etc. The machines can also be used in the construction of a house. They can be beneficial to the whole community as they allow for faster work and higher productivity.



Notes:



Notes:



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## Video SMALL MACHINES: Technical Information on Machines

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### Manioc<sup>1</sup>

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#### Manual grater

- grates the manioc roots
- drum moved by a crank
- funnel to hold the roots
- rotation speed: 30 cycles per minute

#### Motor grater

- grates the manioc roots
- wooden drum with cutting blades attached
- adjustable grating fineness
- driven by combustion motor or by electric motor
- rotation speed: 1000 to 1300 cycles per minute

#### Press

- extracts cyanhydrical acid from grated manioc
- one load pressed in 40 minutes
- operated with a flywheel
- steel basket with a capacity of 50 litres
- profiled frame
- spindle diameter: 60 mm

### Pistachio

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#### Peeler

- breaks the shell of pistachios
- manual machine
- to prepare mamba

#### Mamba mill

- to prepare mamba
- capacity: 50 to 150 kg per hour
- mill-wheel mad of tempered steel
- adjustable granularity

### Corn

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#### Manual shelling device

- to shell the grains
- mobile platform with self-adjusting pressure according to size of cob
- capacity: 500 cobs per hour

#### Sheller with a handle or with a motor

- separates grains from their coatings
- adjustable to size of cobs
- capacity: 2500 cobs per hour
- inspection hatch for cleaning
- driven by crank or by motor
- recommended rotation speed: 150 to 200 cycles per minute

#### Manual corn mill<sup>2</sup>

- adjustable milling fineness
- load: 12 to 20 kg per hour
- crank driven

### Cement

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#### Block moulds

- to produce concrete blocks
- size of blocks:
  - 40 x 20 x 10 cm,
  - 40 x 20 x 15 cm,
  - 40 x 20 x 20 cm
- different shapes: normal, perforated, decorative

•••

#### Design and Information:

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Les Cayes  
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<http://www.aecp-haiti.org/>

<http://www.hulmann.org/ateliers-ecole.html>

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<sup>1</sup> Locally, the terms "Manioc" and "Cassava" might be used interchangeably.

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<sup>2</sup> This manual corn mill is used to prepare AK-100 ("akasan") and AK-1000, which are Haitian meals prepared from corn and other ingredients

## Video SMALL MASCHINES: Text of Soundtrack

In all countries of the world, and in particular in Haiti, agricultural products such as cassava need to be processed and preserved. Unfortunately, traditional means are often slow and difficult. In certain regions of Haiti, people have even had to give up preparing cassava because it is no longer profitable and requires too much effort.

But the situation is changing with the arrival of small machines. The hand grinder for example grinds up manioc roots and other crops thanks to a revolving spool driven by a handle. It allows for faster work – grating up to 500 roots an hour. Before, this task would have taken at least one day's work.

A motorised grinder can also be used to process roots. More sophisticated – it can be worked by a single person. Buying a machine like this requires a big investment. But by sharing costs with neighbours or the community everyone can benefit. This is what the inhabitants of Camp Perrin in Haiti have done. Besides, it is easier to carry out repairs when there are many people to cover costs.

A cylinder press for manioc, just like these other small machines, is made in Haiti in the Camp Perrin workshop.

The press extracts the cyanhydric acid and juice from the ground manioc. The dried flour can then be put into bags and sold to make cassava.

Other products, such as corn, can also be processed with simple and easy to use machines.

The tin plate mill is one such machine, which is popular, cheap and simple to use. Frank A. has bought three mills. With these, he and his wife

produce AK-100 for the whole neighbourhood. The corn has to be ground twice to make it. Everyone benefits from these small machines, particularly children who love this well-known and nutritious dish.

Peanuts are much in demand in Haiti and can also be made into butter or mamba, thanks to a machine.

More powerful machines are often necessary, especially for dried products. These machines are made and sold in workshops, like the training workshops at Camp Perrin. Fully equipped machines are sold here, but also spare parts, which one person alone or several, like these two young men, Dino and Juno, can assemble. They have understood that when there is trust, one can learn by working with professionals and by asking their advice.

To construct safer houses, other tools are needed. The brick mould, for example, is an indispensable tool for making concrete blocks. Moulds can also be made from recycled or scrap metal.

To do this, all you need is welding material, as here in Avel's workshop, where a group of young people are making different types of moulds with the master craftsman.

The master craftsman insists on protection for the eyes during welding. The craftsmen enjoy creating different shapes and decorations for their products. You can be both practical and creative at the same time.

And the products they make are essential for the work of others.



## Further Notes

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## Further Notes

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## The Campaign Package

This Campaign Package has been developed and provided by the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, Bonn, Germany. Its purpose is to facilitate the organisation of campaigns for mobilisation and motivation of young people, and for providing them with vocational orientation and guidance. The focus is on marginalised youth in the informal sector of least developed countries.

The package consists of eight components.

The current pilot version is being provided in English only. It will be evaluated in the field. Depending on the feedback that UNESCO-UNEVOC will receive, the package will be developed further.

The activities presented in this Campaign Package are not a guarantee of monetary success. The content is based on research, examples and advice from experts. Every attempt was made to ensure accuracy, and neither the authors nor the UNESCO-UNEVOC International Centre can be held responsible for incorrect information or changing circumstances.

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## Booklets accompanying the Video Series "Learning and Working"

The video series was filmed in Haiti. We would like to express our special gratitude to the people of Haiti.

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