

Spotlight on Agriculture

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Ministry of Agriculture,
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Directorate of Agriculture Research and Training
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Wild Silk

pest & opportunity



THE PEST

Numerous cattle, sheep and even game are lost annually in Namibia due to the ingestion of *Gonometa postica* cocoons. *G. postica* is commonly known as the hairy worm or Molopo worm. This "worm" is the caterpillar stage of the *G. postica* or Molopo moth and lives on Acacia species, predominantly on *A. erioloba* (Camelthorn) and *A. mellifera* (Blackthorn) on which they depend as host trees. Thus, problems occur usually in acacia veld and are concentrated in the dry south-easterly parts of Namibia.

Cattle ingest substantial numbers of the cocoons out of inquisitiveness, pica (mineral deficiency), hunger or while browsing. Cocoons unravel in the rumen and together with the ingesta, form a thick mat (bezoar) in the rumen, causing a mechanical impaction, resulting in death. "Problem cocoons" are old cocoons which have accumulated under trees. Fresh cocoons, larvae and caterpillars are not dangerous. No remedy is available to dissolve the fibres. At present the only practical solution is surgical removal of bezoars, which is effective but expensive. Mild "infestation" can be survived, but results in production losses.

Molopo moths are regarded as a pest which should be brought under control.



Degummed cocoons, ready for opening. Single cocoons can still be distinguished.



Gonometa postica or Molopo worm.

Gonometa postica cocoon.



ECOLOGY AND LIFE-CYCLE

At the beginning of the wet season moths, in diapause, emerge from the cocoons.

The adult female lays 200 - 250 eggs in their short life of 3 - 5 days. Caterpillars hatch after approx. 10 days. They need substantial amounts of feed to multiply their live mass from 3mg to 10g, moulting about 5 times in this period. The fully grown caterpillar spins a cocoon around itself which it pupates. Some moths start a smaller second generation during February - these pupae enter diapause and will only emerge in the next wet season. Thus "live" and spent cocoons are present simultaneously.

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Silk yarn. Left - pure silk, right a blended yarn - 20% silk, 80% wool. Note the colour and shine.

SILK

Silk fibres are formed by two glands and consists of an inner fibroin filament and a sticky outer sericin layer. Coming into contact with air sericin bonds with adjacent fibres and hardens to protect the caterpillar. Silk is obtained by boiling off the sericin layer (degumming)(photo on front page). The fibroin thread can then be reeled off, combed, spun (top photo), dyed and woven (photo below). Silk fabrics are commonly known for wearing comfort (light and smooth) and good isolation properties. Not only are luxurious garments made from silk, but even car seat covers and some industrial protective clothes. Silk articles are very valuable. Silk lends itself for blending with wool, mohair or cotton, giving these textile a pleasant shine.

THE OPPORTUNITY

The Ministry of Agriculture, Water and Rural Development, in co-operation with NGOs investigates the possibility to start a silk industry for rural communities in the "infested" areas to earn an extra income and to limit livestock losses. After training people on environmental and conservational aspects and harvesting techniques, a licence will be issued. Harvesters may then sell the cocoons to buyers who will process the cocoons further.

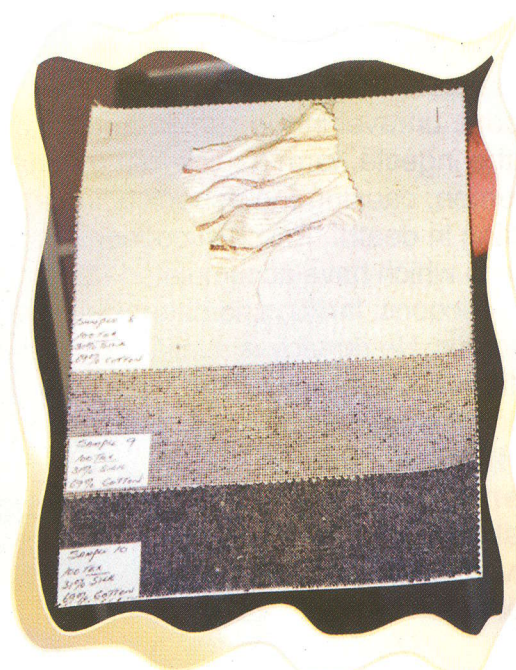
For the first stage, the cocoons will be harvested and then sold to South Africa. Once the project proves feasible, local degumming might be considered, but this requires expensive equipment. Should sufficient amounts be available, a small textile industry can be considered, possibly focusing on the tourism market.

CONSERVATION

To prevent the destruction of the *G. postica* population, it is obvious that only spent cocoons should be harvested. Spent cocoons can be distinguished by the hole, through which the moth emerged.

As mentioned above, the aim of this project is the elimination of livestock losses. After some time cocoons fall from trees and can be collected from the ground without adverse effects on the population. Only these "problem cocoons" pose the largest risk to cattle.

The Molopo moth, which is generally regarded as a pest can be controlled through sustainable harvesting practices, thus solving a big problem and simultaneously serve as an ongoing source of income.



Various fabrics woven from silk and silk blends. Very soft, but tough and long lasting