



BOSKOS

African Feed for African Animals

BOSKOS BROWSER

- High fiber feed for browsers
- With Acacia and Sickle bush
- Matching fiber fractions of browse

BOSKOS GRAZER

- High fiber feed for grazers
- With three species of African grasses
- Matching fiber fractions of grass

UNIQUE PELLETING PROCESS ALLOWING FOR COARSE PARTICLES

HIGH FIBER CONTENT WITH NATURAL FIBERS

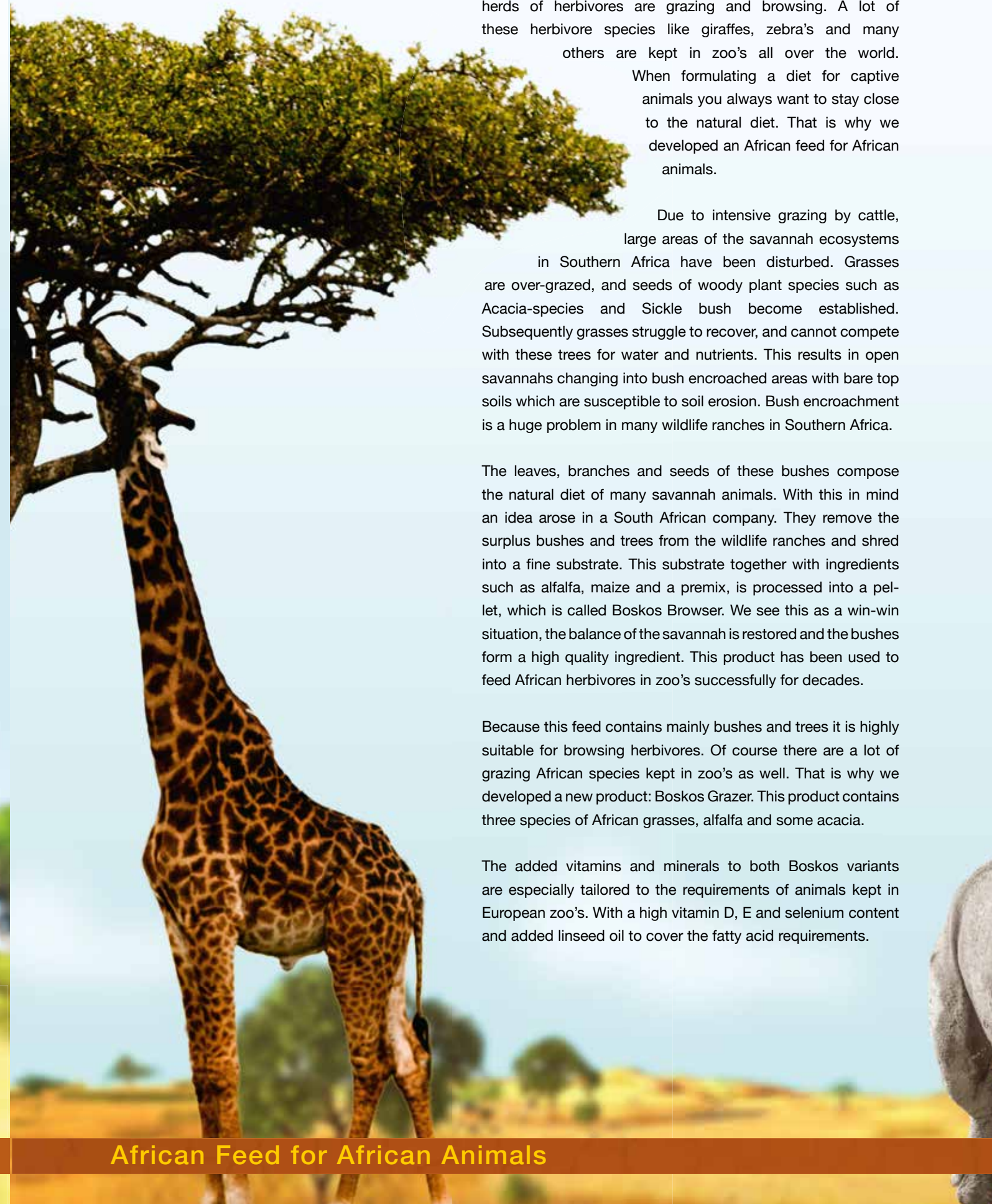
SUPPORTS A HEALTHY DIGESTIVE SYSTEM

DESIGNED FOR EXOTIC HERBIVORES KEPT IN EUROPE, WITH A HIGH VITAMIN D, VITAMIN E AND SELENIUM REQUIREMENT

WITH LINSEED OIL TO COVER FATTY ACID REQUIREMENTS



African Feed for African Animals



AFRICAN NATURE

Southern Africa has a rich diversity of wildlife. On the savannas herds of herbivores are grazing and browsing. A lot of these herbivore species like giraffes, zebra's and many others are kept in zoo's all over the world.

When formulating a diet for captive animals you always want to stay close to the natural diet. That is why we developed an African feed for African animals.

Due to intensive grazing by cattle, large areas of the savannah ecosystems in Southern Africa have been disturbed. Grasses are over-grazed, and seeds of woody plant species such as Acacia-species and Sickle bush become established. Subsequently grasses struggle to recover, and cannot compete with these trees for water and nutrients. This results in open savannahs changing into bush encroached areas with bare top soils which are susceptible to soil erosion. Bush encroachment is a huge problem in many wildlife ranches in Southern Africa.

The leaves, branches and seeds of these bushes compose the natural diet of many savannah animals. With this in mind an idea arose in a South African company. They remove the surplus bushes and trees from the wildlife ranches and shred into a fine substrate. This substrate together with ingredients such as alfalfa, maize and a premix, is processed into a pellet, which is called Boskos Browser. We see this as a win-win situation, the balance of the savannah is restored and the bushes form a high quality ingredient. This product has been used to feed African herbivores in zoo's successfully for decades.

Because this feed contains mainly bushes and trees it is highly suitable for browsing herbivores. Of course there are a lot of grazing African species kept in zoo's as well. That is why we developed a new product: Boskos Grazer. This product contains three species of African grasses, alfalfa and some acacia.

The added vitamins and minerals to both Boskos variants are especially tailored to the requirements of animals kept in European zoo's. With a high vitamin D, E and selenium content and added linseed oil to cover the fatty acid requirements.

African Feed for African Animals

BOSKOS BROWSER

NATURAL DIET: BROWSE

leaves, soft shoots and sometimes fruits of high-growing plants

Characteristics:

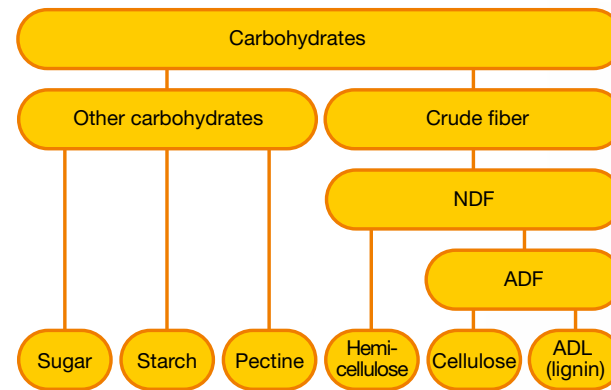
Browse is dicotyl, and grows from the tops of the plant.

Defense mechanism:

Tannins, negatively influences protein uptake and fermentation process.

Composition:

Cell wall contains lignin, a really strong cell wall which is hard to break down.



BOSKOS GRAZER

NATURAL DIET: GRASS

Characteristics:

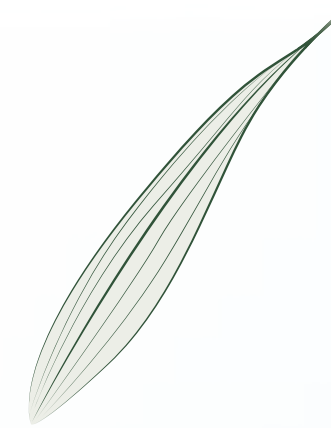
Grass is monocotyl and grows from the base of the plant.

Defense mechanism:

Abrasive silica, wear down the teeth and hence deter feeding.

Composition:

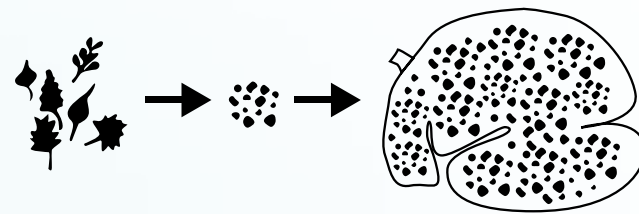
Cell wall contains cellulose and hemi-cellulose, a thick cell wall but relatively easily degradable by fermentation.



DIGESTIVE SYSTEM

Browsers have a high intake frequency, they are generally selective feeders. Their salivary glands produce proline, which reduces the effect of tannins. This makes it possible for them to eat browse without problems. Their teeth are not adapted to the consumption of silica, therefore grass is not a suitable roughage source. They have a short digestive system, with a small rumen with a lot of papillae.

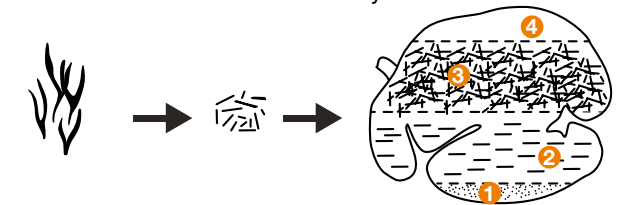
Browse breaks down into polygonal particles, does not form layers in the rumen



DIGESTIVE SYSTEM

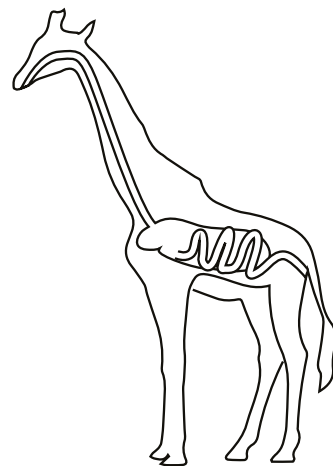
Grazers do in general have a low intake frequency. Their teeth are high crowned, which protect them from the effect of silica. This makes it possible for them to eat grass without problems. They are not adapted to the consumption of tannins, which can be a problem when large amounts of browse are consumed. They have a long digestive system with an accordingly slow transition time. Ruminating grazers have a big, muscled rumen. Typical about the rumen of grazers is the stratification. This helps them to optimally utilize the long fibers of grass. The rumen is divided into four layers:

1. Small parts at the bottom
2. Liquid
3. Food pulp for ruminating
4. Gas



BOSKOS BROWSER

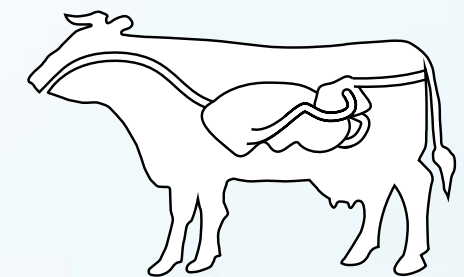
- Very suitable for (African) browsing species, for example: Giraffe, Kudu, Okapi, Indian rhino, Muntjak, Sitatunga, Nyala and Black rhino
- Boskos contains a high amount (25%) of African browse species (Acacia, Sickle bush).
- Contains linseed as a source of omega 3 fatty acids.



BOSKOS BROWSER		BOSKOS GRAZER
11%	Protein	9%
25%	Fibre	30%
55%	NDF	63%
31%	ADF	35%
8%	ADL	3%

BOSKOS GRAZER

- Especially made for (African) grazing species, for example: Zebra, Wildebeest, Blesbok, Sable antelope and White rhino.
- Boskos Grazer contains a high amount (66%) of African grass species (Eragrostis grass, Smuts finger grass, Blue buffalo grass)
- Contains linseed as a source of omega 3 fatty acids.
- Contains a small percentage (10%) African browse species (Acacia, Sickle bush).



Natural ratio between fiber fractions NDF, ADF and ADL. Supporting the specialized digestive system of browsers and grazers.

Coarse fiber structure: a unique production process ensures a large particle size of the fibers.

Vitamins and minerals adjusted to the requirements of exotic herbivores kept in Europe.

High amount of vitamin D, E and selenium



FEEDING ADVICE

To guarantee intake of effective long fibre, Boskos needs to be supplemented with a roughage suitable for the particular species. Keep plenty of fresh, clean water available to animals at all times.

Size of animal (bodyweight)	Boskos	Roughage
Small game < 25 kg	5% of bodyweight	Ad libitum
Large game > 25 kg	2% of bodyweight	Ad libitum

ROUGHAGE

Roughage is the most important part of the diet of herbivores. It is a source of energy and it stimulates the natural behavior. Fibers are necessary for healthy functioning of the digestive system. Roughage is an important source of effective long fibers. There are different sorts of roughage:

HAY

Hay is a suitable source of roughage for grazers, it contains a high amount of NDF (cellulose and hemicellulose) and a lower amount of ADL (lignin).

LUCERNE

Lucerne is suitable for grazers and browsers. Considering the fiber fractions it can be categorized in between hay and browse. However, when lucerne is contaminated with sand it is not suitable for browsers.

BROWSE

For browsers is browse the most suitable roughage source. The higher ADL content is consistent with the natural diet of these animals.

AVAILABILITY BROWSE

It is not possible for many zoos to feed browse to all their browsers. Especially during the winter the availability of browse is low. There are several ways to store browse during the summer, to form a stock for the winter. Methods used are: freezing, silaging and drying. Because this costs a lot of time and space, it is often not possible to organize this in large quantities in zoos.

BOSKOS MULCH



Boskos mulch is dried and coarsely ground browse. It consists of two African browse species: Acacia and Sickle bush.

- Contains leaves, flowers, seeds and branches
- Due to the coarse grinding, the fiber structure is maintained
- Natural part of the diet of many African browsers such as; Giraffes, Kudu's and Black Rhino
- Easy to store due to packaging in boxes

Acacia has a fiber composition that matches the natural fiber requirements of African browsers.

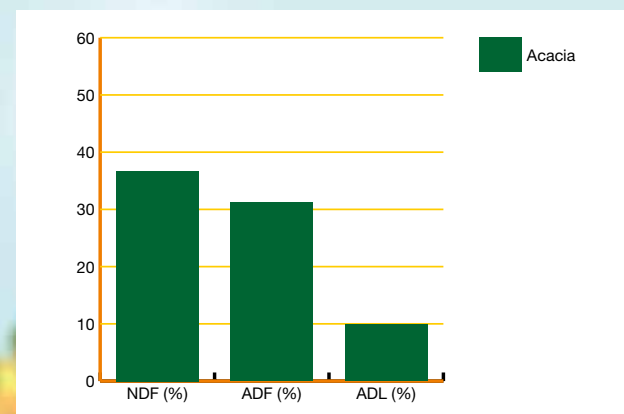
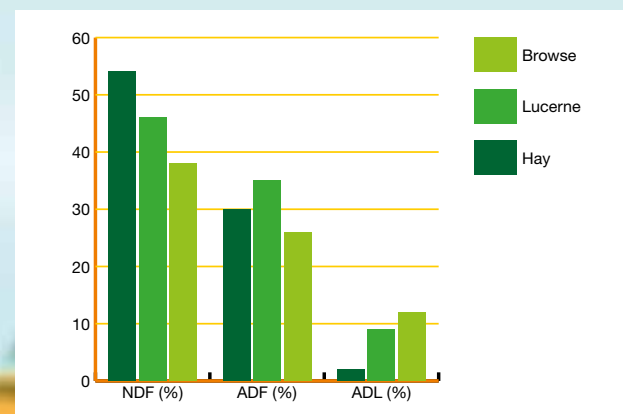
Boskos Mulch is a complementary feed, it should be combined with Boskos to supply the necessary vitamins and minerals.

LITERATURE

Clauss, M., Kienzle, E., Hatt, J.M., 2003. Feeding practice in captive wild ruminants: Peculiarities in the nutrition of browsers/concentrate selectors and intermediate feeders. A review. Zoo Animal Nutrition Vol. II. Fürth: Filander Verlag, 27-52.

Codron, D., Lee-Thorp, J.A., Sponheimer, M., Cordon, J., Nutritional content of savanna plant foods: implications for browser/grazer models of ungulate diversification. European Journal of Wildlife Research, 53- 2, pp 100-111.

WESenterprises, producer of Boskos



KIEZEBRINK IS THE OFFICIAL EXCLUSIVE EUROPEAN IMPORTER OF BOSKOS

Hoge Eng Oost 50 ☎ +31 (0)341 35 83 38
 3882 TN Putten 🌐 www.boskos.eu
 The Netherlands ✉ info@kienzebrink.eu

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