

FABA BEANS - AN ALTERNATIVE GRAIN LEGUME FOR THE WESTERN AND SOUTHERN CAPE

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Introduction

Faba beans (*Vicia faba*) have been known to man for centuries. A large part of the low and mid-income groups in Asia, Latin America, the Nile Delta and the Mediterranean depend on faba beans as a protein-rich source of food, and generally use large seed cultivars for this purpose. In other parts of the world, faba beans are used as animal feed, with small seed cultivars generally being used.

In 1870 in Britain, about 250 000 ha were allocated to faba bean cultivation, mainly for animal feed. During 2005, the total world faba bean production was over 6 m metric tonnes grown on over 3 m ha, compared to 2.4 m ha in 2004. The most significant producer was China (1.53 m ha), followed by Australia (180 000 ha), Ethiopia (604 880 ha), Morocco (145 610 ha), Egypt (110 000 ha) and France (100 490 ha). In Australia, where most of the yield is used for human consumption, the land allocated to faba bean production increased from 500 ha in 1991 to 180 000 ha in 2005.

After the decline of the bitter lupin industry in South Africa in 1973, farmers looked for a suitable alternative legume crop for the Western and Southern Cape. The high yield of faba beans as a winter crop in Australia led to local interest in this protein source. Trials conducted since 1983 have shown that Australian cultivars are particularly well suited to large parts of the Western and Southern Cape. It also appears that a good seed yield can be obtained, as shown in Table 1.

Table 1. Average Seed Yield (kg/ha) for Faba Beans and Lupins in the Swartland and Rûens Areas (1983 – 1996)

LOCALITY	FABA BEANS	BROAD LEAF LUPINS	NARROW LEAF LUPINS
Rûens	3 271	2 818	1 366
Swartland	2 507	1 994	1 534
Average	2 889	2 406	1 450

Currently faba beans are grown in the Western and Southern Cape as cover crop in vineyards and orchards because of their ability to bind nitrogen and reduce nematode populations. Some dairy producers grow it as silage and protein-rich concentrate for dairy cows.

Faba Bean Uses

Animal Feed

A representative chemical composition of faba seed compared to sweet broad leaf lupins and bitter narrow leaf lupins is shown in Table 2.

Table 2. Chemical Composition of Faba Beans and Lupins (% on dry matter basis)

	FABA BEANS	BROAD LEAF LUPIN	NARROW LEAF LUPIN
Crude protein	24.8	37.4	31.1
Lysine	1.66	1.80	1.50
Methionine	0.21	0.27	0.22
Crude fibre	9.6	11.1	13.3
Ca	0.15	0.3	0.2
P	0.4	0.5	0.3

As with all legumes, the protein content of faba beans is influenced by environment and climate, varying between 24 and 37 % on a dry matter basis in Australia.

Balanced Growth Diets

Faba beans contain low levels of the sulphur amino acid, methionine. Some varieties of faba beans contain anti-nutritional substances such as trypsin inhibitor, tannin and haemagglutinins, and if present, these substances need to be destroyed before the beans are fed to poultry.

Research results at the Department of Agriculture (Elsenburg) have shown that the inclusion of up to 200 g faba beans/ kg feed had no harmful effect on the growth or feed efficiency of growing pigs.

Silage

It seems that faba beans are suitable for producing good quality silage which compares favourably with high quality lucerne hay. A good yield of faba beans could produce about 30 tonnes green material per ha. Self produced faba bean silage is about 30% cheaper than lucerne hay.

Harvest Rests

Faba bean rests, including the seeds that are lost during harvesting, provide good quality grazing for sheep and cattle during the dry summer months when good grazing is scarce. Local research results show that faba beans are just as good, if not better, than lupins in sheep farming.

Problems

Although faba beans are very well adapted to the Western and Southern Cape, there are a few problems that need to be resolved:-

- Locally there is no formal market for faba beans.
- Currently faba bean seeds are expensive, because farmers have to purchase imported seeds.

- Although several chemical weed killers are available for use on faba beans, no weed killers have been registered locally.

“Chocolate spot” (*Botrytis fabae*) and Ascochyta spot (*Ascochyta fabae*) are the most important fungi affecting faba beans and these could cause significant seed loss if not contained with the use of early chemical control. Cultivars with a reasonably good resistance to these fungi are available in Australia.

General

Based on its value as a protein source for animals, its ability to bind nitrogen for use by follow-up crops, and its good seed yield potential, faba beans could be developed into a full-fledged rotation crop with lupin and canola cultivation in the Western and Southern Cape.

FABABOONTJIES – ‘N NUWE GRAANPEULGEWAS VIR DIE WES- EN SUID-KAAP

Herman Agenbag

Inleiding

Fababoontjies (*Vicia faba*) is reeds lank aan die mens bekend. ‘n Groot deel van die lae- en middelinkomstegroepe in Asië, Latyns-Amerika, die Nyl-vallei en die Middellandse See is afhanklik van fababone as ‘n belangrike proteïenryke voedsel. In ander wêrelddele word fababone ook vir dierevoeding aangewend. Grootsadige kultivars word hoofsaaklik vir menslike voedsel verbou terwyl kleinsadige kultivars gewoonlik vir dierevoeding verbou word.

Gedurende 1870 was daar in Brittanje reeds ongeveer 250 000 ha onder fababoonverbouing, hoofsaaklik vir dierevoeding. Gedurende 2005 was die totale wêreldproduksie van fababone 6 099 241 metrieke ton op 3 303 630 ha teenoor 2 362 420 ha gedurende 2004. Die grootste produksies was in China (1 533 410 ha), Australië (180 000 ha), Ethiopie (604 880 ha), Marokko (145 610 ha), Egipte (110 000 ha) en Frankryk (100 490 ha). In Australië het fababoonverbouing gestyg van 500 ha in 1991 tot 180 000 ha in 2005. Die grootste persentasie van fababone word hoofsaaklik vir menslike gebruik aangewend.

Sedert die insinking in die bitterlupienbedryf gedurende 1973, is daar begin soek na ‘n geskikte alternatiewe peulwisselbougewas vir die Wes- en Suid-Kaap. Dit was veral fababone se hoë saadopbrengspotensiaal as wintergewas in Australië wat plaaslike belangstelling in fababone geprikkel het. Proewe sedert 1983 het getoon dat veral Australiese kultivars baie goed aangepas is in groot dele van die Wes- en Suid-Kaap en oor ‘n goeie saadopbrengspotensiaal beskik soos aangetoon in Tabel 1.

Tabel 1:- Gemiddelde saadopbrengs (kg/ha) van fababone en lupiene in die Swartland en Rûens (1983 – 1996).

LOKALITEIT	FABABONE	BREËBLAAR-LUPIENE	SMALBLAAR-LUPIENE
Rûens	3 271	2 818	1 366
Swartland	2 507	1 994	1 534
Gemiddelde	2 889	2 406	1 450

Tans word fababone plaaslik verbou as dekgewas in wingerde en boorde vanweë sy vermoë om stikstof te bind asook om aalwurmpopulasies te verminder. Enkele suiwelprodusente verbou dit ook as kuilvoergewas en proteïenryke kragvoer vir melkbeeste.

Gebruike van fababone

Dierevoeding

‘n Verteenwoordigende chemiese samestelling van fababoonsaad in vergelyking met soet breëblaar, bitter smalblaarlupiene en mielies word in Tabel 2 aangetoon.

Tabel 2:- Chemiese samestelling van fababone en lupiene (% droëmateriaalbasis)

	FABABONE	BREËBLAAR-LUPIENE	SMALBLAAR-LUPIENE
Ru-proteïen	24.8	37.4	31.1
Lisien	1.66	1.80	1.50
Metionien	0.21	0.27	0.22
Ru-vesel	9.6	11.1	13.3
Ca	0.15	0.3	0.2
P	0.4	0.5	0.3

Die proteïeninhoud van fababone word beïnvloed deur omgewing en klimaat en in Australië varieer die proteïeninhoud vanaf 24 tot 37% op 'n droëmateriaalbasis.

Gebalanseerde groeidiëte

Fababone bevat min van die swaelaminosuur metionien. Sommige varieteite fababone bevat antivoedingstowwe soos tripsieninhibeerder, tanniene en *haemaglutinine*. Indien fababone in pluimveerantsoene gebruik word sal dit nodig wees om die antivoedingstowwe te vernietig.

Navorsingsresultate van die Departement van Landbou (Elsenburg) het getoon dat die groei in voeromsetting van varke dieselfde gebly het op rantsoene met verskillende insluitingsvlakke van fababone tot en met 20%.

Kuilvoer

Dit blyk dat fababone geskik is vir die maak van goeie gehalte kuilvoer wat goed vergelyk met hoë kwaliteit lusernhooi. 'n Goeie stand fababone kan ongeveer 30 ton groenmateriaal per hektaar produseer. Indien self geproduseer is fababoonskuilvoer ongeveer 30 % goedkoper as lusernhooi.

Oesreste

Fababoonesreste asook die saad wat tydens oes uitval, verskaf goeie gehalte weiding vir skape en beeste gedurende die droë somermaande wanneer weiding uiters skaars is. Plaaslike navorsingsresultate toon dat fababone net so goed, en selfs beter, as lupiene deur skape benut kan word.

Knelpunte

Hoewel fababone goed aangepas is in die Wes- en Suid-Kaap is daar nog enkele knelpunte wat aandag sal moet kry soos:-

- Plaaslik is daar nog geen formele mark vir fababone nie.
- Fababoonsaad is tans nog baie duur aangesien daar tans van ingevoerde saad gebruik gemaak word.
- Hoewel daar verskeie chemiese onkruidodders beskikbaar is vir gebruik by fababone is daar plaaslik nog geen onkruidodders geregistreer nie.

“Chocolate spot”(*Botrytis fabae*) en *ascochyta* vlek (*Ascochyta fabae*) is die belangrikste swamsiektes by fababone wat groot saadverliese kan veroorsaak indien dit nie vroegtydig chemiese beheer word nie. Kultivars met redelike goeie weerstand teen die siektes is egter reeds beskikbaar in Australië.

Algemeen

As gevolg van fababone se proteïenwaarde vir veevoer, vermoë om stikstof te bind vir gebruik deur opvolggewasse asook goeie saadopbrengspotensiaal, kan dit as ‘n volwaardige alternatiewe wisselbougewas ontwikkel. Fababone behoort baie goed in te skakel saam met lupiene en kanola in die saaiboerderystelsels van die Wes- en Suid-Kaap.

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