

Novas Cultivares

MGS Esmeralda: new large seed mungbean cultivar

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Abstract – Mungbean cultivar MGS Esmeralda was developed by Asian Vegetable Research and Development Center (Shanhua, Taiwan), as a result of crossing between the lines VC 1973A and VC 2768A. In ten trials conducted in the State of Minas Gerais, Brazil, it produced 13.5% more grains than 'Ouro Verde MG-2' (control cultivar), and its highest yield was 2,550 kg ha⁻¹. The cultivar MGS Esmeralda is more susceptible to lodging, and its pods mature more uniformly than Ouro Verde MG-2 pods. One hundred-seed mass of 'MGS Esmeralda' ranged between 5.5 and 6.8 g. Both cultivars are susceptible to powdery mildew and cercospora leaf spot.

MGS Esmeralda: nova cultivar de mungo-verde de sementes grandes

Resumo – A cultivar de mungo-verde MGS Esmeralda foi criada pelo Asian Vegetable Research and Development Center, localizado em Shanhua, Formosa. Ela é resultado do cruzamento entre as linhagens VC 1973A e VC 2768A. Em dez ensaios conduzidos em Minas Gerais, ela produziu 13,5% mais grãos do que a cultivar Ouro Verde MG-2 (testemunha), e sua produtividade mais alta foi 2.550 kg ha⁻¹. A cultivar MGS Esmeralda é mais suscetível ao acamamento do que a Ouro Verde MG-2, mas suas vagens amadurecem mais uniformemente. A massa de 100 grãos da 'MGS Esmeralda' varia de 5,5 a 6,8 g. Ambas as cultivares são suscetíveis ao oídio e à cercosporiose.

Introduction

Mungbean (*Vigna radiata* (L.) Wilczek) is a nonuniform maturation species, which seeds are used in Brazil for sprout preparation. Lately, exportation opportunities for seeds of this species have arisen, especially to Asian countries, where large seeds have the consumer preferences. The genetic mungbean improvement program of Empresa de Pesquisa Agropecuária de Minas Gerais (Epamig, Minas Gerais State, Brazil) is made in partnership with the Asian Vegetable Research and Development Center (AVRDC), located in Shanhua, Taiwan, and with Universidade Federal de Viçosa (UFV, Viçosa, Minas Gerais State, Brazil). The mungbean evaluation trials, received from AVRDC and other research institutions in Brazil, are periodically conducted in the State of Minas Gerais, mainly at Zona da Mata region. The partnership with AVRDC began in 1990. The first mungbean cultivar, named Ouro Verde (Epamig, 1998), was released in 1998, and the cultivar Ouro Verde MG-2 (Vieira et al., 2002) in 2002.

'MGS Esmeralda' (line VC 4059) was derived from crossing between the lines VC 1973A and VC 2768A, made by Chang-Soon Ahn and Hyo-Guen Park, in the middle 1980s. The female parent VC 1973A is extensively grown in East and Southeast Asia. Cross breeding was followed by selection and preliminary, intermediate, and advanced yield trials at the AVRDC headquarters.

In order to reply to farmers demand for large mungbean seeds, for exportation and also for internal trade, Epamig and UFV are releasing the line VC 4059 with the commercial name of 'MGS Esmeralda'.

Cultivar characteristics

In eight out of ten experiments, carried out in three municipalities of Zona da Mata region (Coimbra, Viçosa, and Oratórios) and in Prudente de Moraes (Metalúrgica region), the cultivar MGS Esmeralda yielded more than Ouro Verde MG-2 (control cultivar) (Table 1). The highest yield of 'MGS Esmeralda' was obtained in

Table 1. Means of 100-seed mass, lodging and grain yield of the cultivars MGS Esmeralda and Ouro Verde MG-2 (control), in ten trials (Minas Gerais State, Brazil).

Municipalities (sowing date)	Cultivar	Lodging ⁽¹⁾	100-seed mass (g)	Yield (kg ha ⁻¹)
Viçosa (Dec. 11, 1997)	Ouro Verde MG-2	1.7	5.0	1,700
	MGS Esmeralda	4.5	6.4	2,000
Prudente de Morais (Jan. 1, 1999)	Ouro Verde MG-2	1.3	4.3	2,027
	MGS Esmeralda	5.0	5.5	2,550
Coimbra (Feb. 24, 1999)	Ouro Verde MG-2	2.0	5.1	1,454
	MGS Esmeralda	2.7	6.3	1,515
Coimbra (Jan. 24, 2001)	Ouro Verde MG-2	1.0	4.6	1,488
	MGS Esmeralda	1.2	6.3	2,248
Oratórios (Jul. 24, 2002)	Ouro Verde MG-2	1.2	5.0	1,036
	MGS Esmeralda	1.7	6.1	1,100
Coimbra (Aug. 7, 2002)	Ouro Verde MG-2	-	5.0	980
	MGS Esmeralda	-	6.5	876
Coimbra (Dec. 10, 2002)	Ouro Verde MG-2	1.9	4.3	1,343
	MGS Esmeralda	2.5	6.1	1,429
Viçosa (Feb. 4, 2003)	Ouro Verde MG-2	1.7	5.2	1,863
	MGS Esmeralda	2.4	6.8	1,758
Coimbra (Feb. 25, 2003)	Ouro Verde MG-2	1.0	4.9	1,343
	MGS Esmeralda	1.7	5.9	1,683
Oratórios (Mar. 7, 2003)	Ouro Verde MG-2	1.9	4.7	1,519
	MGS Esmeralda	3.5	6.3	1,578
Mean	Ouro Verde MG-2	1.5	4.8	1,475
	MGS Esmeralda	2.8	5.7	1,674

⁽¹⁾Score from 1 to 5, in increasing order of lodging at harvest: 0, no lodging; 5, severe lodging.

Prudente de Morais: 2,550 kg ha⁻¹. In this experiment, 'Ouro Verde MG-2' yielded 2,027 kg ha⁻¹. In average, 'MGS Esmeralda' produced 13.5% more grains than 'Ouro Verde MG-2'.

When sown in the summer, flowering of the cultivar MGS Esmeralda started between 28 and 33 days after emergence (DAE) of seedlings, and the first pod ripened between 56 and 60 DAE. When sown at the end of winter, its life cycle was longer than in the summer (between 73 and 80 days). 'MGS Esmeralda' was more susceptible to lodging than 'Ouro Verde MG-2' (Table 1), but its pods (brown/black in color) matured more uniformly and were more easily separated from the peduncle, during the harvest. One hundred-seed mass of 'MGS Esmeralda' varied from 5.5 to 6.8 g, while that of 'Ouro Verde MG-2' varied from 4.3 to 5.2 g (Table 1). Larger seeds produce larger sprout (Vieira et al., 2001), which is a desirable characteristic.

Differently from the control cultivar, MGS Esmeralda has a dull tegument. Plant height

varied from 57 to 90 cm, when sown in the summer, but during winter-spring, plants were shorter. Pod length varied from 8.7 cm to 10.5 cm, while those of 'Ouro Verde MG-2' varied from 7.4 to 8.9 cm. Both Ouro Verde MG-2 and MGS Esmeralda cultivars were equally susceptible to powdery mildew (*Erysiphe polygoni*) and cercospora leaf spot (*Cercospora canescens*).

'MGS Esmeralda' is indexed in Brazilian Ministry of Agriculture, Livestock, and Supplying under the number 22096. Seeds are produced by Epamig.

References

- EPAMIG. **Nova cultivar de feijão mungo-verde**. Epamig: Belo Horizonte, 1998. 1 folder.
- VIEIRA, R.F.; OLIVEIRA, V.R.; VIEIRA, C.; PINTO, C.M.F. Ouro Verde MG-2: nova cultivar de mungo-verde para Minas Gerais. **Horticultura Brasileira**, v.20, p.119-120, 2002.
- VIEIRA, R.F.; VIEIRA, C.; VIEIRA, R.F. **Leguminosas graníferas**. Viçosa: UFV, 2001. 206p.

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