



agriculture & environmental affairs

Department:
Agriculture
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PROVINCE OF KWAZULU-NATAL

MULTI-SEASON MAIZE CULTIVARS FOR KWAZULU-NATAL

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Introduction

New maize cultivars are developed regularly to address agronomic challenges and are subsequently introduced into the market. Performance of new cultivars may not have been tested in localities before their release to the market. The Agronomy Section, the Agricultural Research Council – Grain Crops Institute and seed companies, conducted maize cultivar evaluation trials at various sites in KwaZulu-Natal. These on-going trials form part of a national cultivar trial conducted in the major grain producing areas of South Africa.

Materials and methods

A maize field experiment consisting of fifty different cultivars was conducted at Loskop, Kokstad and Mistbelt during the 2009/10 to 2012/13 growing season to determine the best performing cultivars at these sites. The trials were planted in 0.75 m wide rows at a seeding rate of 44 444 seeds ha⁻¹. The crops were grown under dry-land conditions and were fertilized for a 10 t ha⁻¹ grain yield, based on soil analysis recommendations conducted by the Cedara Analytical Laboratory. Weeds, insects and diseases were controlled throughout the growing-season.

Results and discussion

Cultivar recommendations should be based on the three or four seasons' data, as this provides more reliable information. Only ten of the fifty cultivars were consistently evaluated in the last three to four seasons (Table 1).

Some cultivars such as PAN 6Q-308B, showed better adaptability as they performed well at all localities, while others only performed well at certain localities such as PHB 32W72B performed well at Kokstad and Mistbelt and LS 8529 performed well at Loskop.

Table 1. Mean yields of the ten highest yielding cultivars recorded at the different localities over four seasons

Kokstad*		Mistbelt^		Loskop#	
Cultivar	(t/ha)	Cultivar	(t/ha)	Cultivar	(t ha ⁻¹)
PAN 6Q-308B	9.32	PAN 6Q-445B	10.17	PAN 6P-110	9.96
PHB 32W72B	9.18	PAN 6Q-308B	9.46	PAN 6Q-445B	9.75
PAN 6Q-708BR	8.83	PAN 6Q-708BR	9.34	PAN 6Q-245	9.71
PHB 31M09	8.79	LS 8518	9.22	LS 8529	9.45
PAN 6Q-445B	8.43	PAN 6Q-508R	9.14	PAN 6Q-708BR	9.44
DKC 78-35R	8.36	PAN 6P-110	9.09	PAN 6Q-508R	9.13
PAN 6P-110	8.19	PHB 32W72B	8.83	PAN 6Q-308B	9.02
PHB 30D09BR	8.15	PHB 30D09BR	8.80	LS 8518	9.01
LS 8518	7.84	DKC 78-15B	8.73	DKC 77-85B	8.96
PAN 6Q-508R	7.74	PHB 31M09	8.63	DKC 78-35R	8.68

* Seasons 2009/10, 2011/12 and 2012/13 – representing “cool” production areas

^ Seasons 2009/10 & 2010/11 & 2011/12 (Cedara , Greytown and Mooiriver) - representing “moderate” production areas

Seasons 2010/11, 2011/12 and 2012/13 – representing “warm” production areas

Conclusion

Cultivars perform differently at different localities due to climatic and soil conditions. Correct cultivar selection according to the farmers' production area (cool, moderate or warm production area) is therefore highly recommended. The trial will be planted again in the 2013/14 at these localities. A trial will also be conducted at Dundee.

Take home message:

Successful maize production is based on:

- Fertilizing the crop based on the analysis of soil samples taken from the site.
- Planting during the optimum period
- Good land preparation.
- Cultivar selection.
- Control of weeds, insects and diseases