

**SOJABOON
KULTIVARAANBEVELINGS VIR
2006/2007**

GP de Beer & H Fourie

LNR Instituut vir Graangewasse
Potchefstroom

Hoewel sojabone 'n gewas is wat bykans wêreldwyd verbou word, het individuele kultivars 'n beperkte gebiedsaanpassing. Gevolglik sal die sojaboonkultivar wat die beste aangepas is vir 'n gegewe plaas of boerdery, dié een wees wat oor 'n aantal jare die hoogste opbrengs en saadkwaliteit lewer vir dié spesifieke plaas. Normaalweg is die aangewese lengte van die groeiseisoen vir 'n kultivar wat goed aangepas is, in die omgewing van 120 dae van plant tot oesryp. In die keuse van 'n kultivar is dit dus van groot belang om te kyk na kultivarproefresultate vir vergelykbare toestande en aan die hand van sulke proewe alle kultivars uit te soek met die ideale groeiseisoen. Die Nasionale Sojaboonkultivarproewe van die LNR-Instituut vir Graangewasse lewer in die opsig waardevolle inligting.

**BELANGRIKE INLIGTING VIR
KULTIVARKEUSE**

Die belangrikste inligting waarna gekyk moet word vir kultivarkeuse by sojabone, is **lengte van groeiseisoen**. Anders as by die meeste algemeen verbonde gewasse, is sojabone gevoelig vir daglengte (fotoperiode) en sal 'n gegewe kultivar al hoe later ryp word hoe verder suid dit in Suider Afrika geplant word. Vir dieselfde rede sal plantdatum ook die lengte

**SOYBEAN CULTIVAR
RECOMMENDATIONS FOR
2006/2007**

GP de Beer & H Fourie
ARC-Grain Crops Institute,
Potchefstroom

In contrast to the fact that soybeans as a crop is grown world wide, individual cultivars or genotypes demonstrate a very limited adaptation due to it's sensitivity to photoperiod as affected by latitude and planting date. The best-adapted cultivar is therefore the one that will give, over the long term, the best yield and quality for a specific site. The National Soybean Cultivar Trials conducted by the ARC-Grain Crops Institute render a valuable service in identifying such cultivars for different growing areas in South Africa.

**IMPORTANT CHARACTERISTICS
FOR CULTIVAR CHOICE**

The **length of the growing season** is the most important characteristic for soybeans to take into consideration for cultivar choice for soybeans. Unlike the other most commonly cultivated crops, soybeans are sensitive to day length (photo period) and a given cultivar will ripen later and demonstrate a lengthening growing season the further south it is planted in Southern Africa. Planting dates will therefore also affect the length of the growing season and a given cultivar will flower much earlier should it be planted at a later planting date. Prevailing temperature also has an affect and soybeans grow much slower on the Highveld compared to the warmer Lowveld. Table 1

van die groeiseisoen beïnvloed en sal 'n gegewe kultivar heelwat gouer blom by 'n later plantdatum. Heersende temperatuur (veral nagtemperatuur) het ook 'n invloed en sojabone groei heelwat stadiger op die hoëveld, vergeleke met die warmer laeveld. Tabel 1 illustreer die lengte van groeiseisoen tussen kultivars en ook vir 'n spesifieke kultivar oor verbouingsgebiede. Dit is belangrik om te onthou dat vroeë en later plantdatums binne dieselfde gebied ook die groeiseisoenlengte van 'n kultivar affekteer.

Vir sojaboonprodusente met ondervinding kan die gevoeligheid vir daglengte en die genetiese variasie vir relatiewe lengte van groeiseisoen, met vrug gebruik word vir byvoorbeeld hooiproduksie (gebruik van lang groeiseisoen kultivars), stroopskedulering (plant kultivars met verskillende rypword-datums) en vir droogte-ontwyking of noodaanplantings (kultivars met 'n relatief kort groeiseisoen). Vir produsente wat nie ondervinding het van sojaboonproduksie nie kan dié eienskap ook by wyse van verkeerde kultivarkeuse tot gevolg hê dat die sojabone a) nie wil ryp word nie waar 'n kultivar met 'n te lang groeiseisoen vir 'n gebied aangeplant is, b) reeds oesgereed is terwyl reën en hoë temperature stroop bemoeilik en kwaliteit benadeel waar 'n kultivar met 'n te kort groeiseisoen vir 'n gebied gekies is en c) onstroopbaar is as gevolg van 'n te lae peulhoogte.

Prosedure vir kultivarkeuse op grond van groeiseisoenlengte is dan as volg: Die lokaliteite waar die sojaboonkultivarproewe uitgevoer is is groepeer om warm-, matig- en koel gebiede aan te dui (Tabel 2).

illustrates the dramatic variances for length of growing season between cultivars as well as different production areas.

Producers well experienced in soybean cultivation can utilize the photo-period sensitivity of soybeans, along with the genetic variances for relative length of the growing season with great success, for example, for hay production (a cultivar with a long growing season can be used), for scheduling of harvest (planting cultivars with differing ripening dates of) and for drought avoidance or emergency planting (using cultivars with relatively short growing seasons). For producers with little or no experience in soybean cultivation, this characteristic could prove to be hazardous when the wrong cultivar choice is made and the yield is not realised because it a) does not ripen (a too long grower has been planted for the area), b) is ready for harvesting while rain and high temperatures hamper harvesting and impairs quality (a too short grower has been planted for the area), and c) is unable to be harvested because of a too low pod height (possibly a good cultivar planted too far to the north).

Cultivar choice using length of growing season – Localities where soybean trials were conducted during the past season were divided into warm-, moderate- and cool production areas (Table 2). It is important for a soybean producer to determine whether the area that will be used for soybean production is similar to the grouping of localities indicated by the warm-, moderate- and cool production areas. It is generally accepted that cultivars with a longer growing

Dit is belangrik dat u moet bepaal of die gebied waar u sojabone produseer 'n klimaat soortgelyk aan die warm, matig of koel groepering van lokaliteite het. As algemene reël word aanvaar dat kultivars met 'n langer groeiseisoen die beste sal doen in gebiede met 'n warmer klimaat, medium groeiseisoen kultivars die beste sal vaar in gebiede met 'n gematigde klimaat en korter groeiseisoen kultivars die beste sal vaar in gebiede met 'n koeler klimaat. Dit is egter belangrik om te onthou dat daar ook uitsonderings op die reël is en daarom word aanbeveel dat die opbrengs en aanpassingsvermoë van kultivars soos aangedui in Tabela 4 tot 12 saam met groeiseisoenlengte gebruik sal word om 'n kultivarkeuse te maak.

Plantdatum beïnvloed sojabone se aanpassing en gevolglik kultivarkeuse. Die optimale plantdatum is normaalweg November. In warmer gebiede kan egter tot die eerste week in Januarie nog geplant word, maar dan sal nouer rywydte, hoër plantpopulasie en 'n vinniger kultivar aanbeveel word. Waar grond- en lugtemperatuur aanvaarbare vlakke vroeg in die seisoen bereik, is 'n Oktober-plantdatum, veral op die hoërliggende gebiede aan te beveel. Dit is belangrik om te onthou dat 'n vroeër of 'n later plantdatum in 'n gebied kultivarkeuse kan beïnvloed.

Peul- en planthoogte beïnvloed die stroopbaarheid en die staanvermoë van 'n sojaboonaanplanting en is faktore wat in ag geneem moet word by kultivarkeuse. Oor die algemeen is daar 'n verband tussen peul- en

season will perform better in the warmer growing areas, cultivars with a medium growing season will perform better in the moderate growing areas and cultivars with a shorter growing season perform better in the cooler production areas. There are however exceptions to the rule and it is therefore recommended to also use yield performance and adaptation presented in Tables 4 to 12 with length of growing season in cultivar selection for a specific area.

Planting date influences soybean's adaptation and therefore cultivar choice. The optimum planting date is usually in November. In warmer areas though, soybeans can be planted until the first week of January. With later planting dates narrow rows, higher plant populations and cultivars with shorter growing seasons are recommended. A planting date in October, especially on the higher lying areas, will be recommended where soil and air temperatures reach acceptable levels early in the growing season. Planting at an earlier or later planting date will affect cultivar choice.

Pod- and plant height have an impact on the ability to harvest the crop, and are characteristics that should be taken into account with cultivar choice. A relationship exists between pod- and plant height and relative length of the growing season. Cultivars with a shorter growing season tend to have lower plant- and pod heights compared to longer growing season cultivars under similar growing conditions.

Both characteristics are also affected by production practices.

planthoogte en relatiewe lengte van die groeiseisoen. Relatief kort groeiseisoenkultivars het gewoonlik 'n laer peul- en planthoogte as langgroeiseisoenkultivars onder vergelykbare toestande. Beide eienskappe word egter ook deur produksiepraktyke beïnvloed. 'n Nouer tussenry- en binneryspasiëring sal peulhoogte betekenisvol verhoog. In die Nasionale Kultivarproewe word onder gestandaardiseerde toestande geëvalueer vir peulhoogte en kan kultivars met aanvaarbare peulhoogtes gekies word. Peulhoogte word aangedui in Tabel 3.

Staanvermoë kan beïnvloed word deur 'n aantal bewolkte dae. Dit kan tot gevolg hê dat kultivars wat normaalweg goed staan hoër groei en dus die risiko van omval verhoog.

Groeiwyse onderskei tussen bepaald en onbepaald. Kultivars met 'n bepaalde groeiwyse word verkieslik onder besproeiing geplant, terwyl kultivars met 'n onbepaalde groeiwyse (wat nie lengtegroei staak tydens blom nie) verkies word onder droëland- en koelweergroei-toestande. Die groeiwyse van geregistreerde kultivars word aangedui in Tabel 3.

Genetiese **weerstand teen siektes en insekte** kan goed gebruik word waar die siektes en insekte die oes kan verlaag. Kultivars met weerstand teen sojaboon mosaïekvirus is PAN 565 en Ibis, teen "frogeye" is Roan, en teen paranocheta is SCS 1. Inligting oor vatbaarheid van kultivars vir aalwurms word aangedui in Tabel 3.

More narrow inter- and intra row spacing will increase pod height significantly. Pod clearance is reported in Table 3.

Standability is affected by the number of overcast days. Plant height tends to increase under overcast weather and could result in a higher lodging percentage lodging.

Growth habit distinguishes between determinate and indeterminate genotypes. Cultivars with a determinate growth habit are preferably planted under irrigation conditions, while indeterminate cultivars (that do not cease vertical growth during flowering) are preferred under dry land and cool weather growing conditions. Growth habit for registered cultivars is indicated in Table 3.

Genetic resistance against diseases and pests are characteristics that are relevant where the probability of such risks increases. Cultivars with known resistance against soybean mosaic virus are PAN 565 and Ibis, against frogeye and against paranocheta SCS1. Root knot nematode sensitivity is reported in Table 3.

Row width will also affects cultivar selection as a significant relation exists between cultivars and row width. Cultivars producing more side branches and leaves are better adapted to wider rows and cultivars with less side branches and leaves are better adapted to more narrow rows.

Rywydte kan ook kultivarkeuse beïnvloed aangesien daar 'n betekenisvolle interaksie bestaan. Kultivars wat geneig is tot sytakvorming en 'n digte blaredak, is beter aangepas in wye rye, terwyl kultivars met 'n oop blaredak en min sytakke, beter aangepas is by relatief nouer rywydtes.

Weerstand teen oopspring kan 'n belangrike rol speel tydens ongunstige oestoestande. Volgens inligting uit die Nasionale Kultivarproewe is dit duidelik dat relatief kort groeiseisoenkultivars die grootste risiko van oopspring het en relatief lang groeiseisoenkultivars die minste. Dit was egter nog nie moontlik om 'n aanduiding van genetiese weerstand tussen kultivars van dieselfde groeiseisoenlengte te kry nie. Kultivars word evalueer op 'n skaal van 1 (goed) tot 5 (swak) en die resultate word aangebied in Tabel 3.

Gevoeligheid vir onkruidodder kan in sommige gevalle kultivarkeuse beïnvloed. Geen sojaboonkultivar is bestand teen die atrazine-tipe onkruidodders nie en die volle wagperiode moet nagekom word voordat die plant van sojabone oorweeg word. Sommige kultivars soos Dumela, Ibis, Komatie en Edgar is besonder gevoelig vir metribusin. In alle gevalle moet seker gemaak word dat aanwysings op die etiket voorsiening maak vir die kultivar wat aangeplant gaan word.

Saadgrootte, hilumkleur, proteïengehalte en GMO-status is eienskappe wat 'n premieprys kan beding. Saadgrootte is geneties, maar word sterk beïnvloed deur omgewing.

Resistance against seed shattering can play an important role during unfavourable harvesting conditions. Information from the National Soybean Cultivar Trials indicates that cultivars with a relative short growing season tend to shatter more than cultivars with a longer growing season. Rating of cultivars on a scale from 1 (good) to 5 (poor) is presented in Table 3.

Sensitivity to herbicides can, in some cases, influence the choice of a cultivar. No soybean is resistant to the atrazine type herbicides and the full waiting period will have to be maintained before soybeans can be considered. Some cultivars, such as Dumela, Ibis, Komatie and Edgar, are extremely sensitive to metribusin and this should under no circumstances be used with the aforementioned cultivars.

Seed size, hilum colour, protein qualities and GMO status are characteristics that can negotiate a premium price. Seed size is genetically regulated, but is greatly influenced by the environment. Favourable conditions during the seed filling period will positively influence seed size. The protein content of the seed is also genetically regulated and can adversely be affected by the environment (rainfall, temperature, stress) and crops management (poor or no nodulating, acidic soil and low soil fertility). Protein contents below 36 % are unsatisfactory and above 40%, on a moisture free basis, excellent.

Seed yield indicates the genetic adaptation and the suitability of a cultivar to be planted in a specific area. In the 2005/2006 season 27

Gunstige toestande tydens saadvulperiode sal saadgrootte positief beïnvloed. Proteïeninhoud van die saad is ook geneties maar kan nadelig beïnvloed word deur omgewing (reënval, temperatuur en stress) en bestuur (swak of geen nodulering, suur grond en lae grondvrugbaarheid).

Proteïeninhoud (vogvrye basis) onder 36% is onbevredigend en bokant 40% is uitstekend.

Saadopbrengs gee 'n aanduiding van 'n kultivar se genetiese aanpassing en geskiktheid vir 'n bepaalde omgewing. Vir die 2005/2006 seisoen is 27 cultivars aangeplant en was die data van 27 proewe aanvaarbaar vir statistiese analises. Die oeskerheidswaardes van die 27 cultivars vir die drie verbouingsgebiede (warm, matig en koud) word aangebied in Tabelle 4-6, 7-9 en 10-12. Tabelle 4, 7 en 10; 5, 8 en 11 en 6, 9 en 12 bevat inligting oor cultivars wat vir onederskeidelik drie, twee en een jaar in die proewe ingesluit was. Dit is belangrik dat u die verdeling van lokaliteite in Tabel 2 gebruik om te bepaal in watter gebied u plaas sal val. Vergelyk dan die cultivars in die oeskerheidstabel wat u gekies het met mekaar by die realistiese opbrengsmikpunt vir u plaas.

VERDERE INLIGTING

Volledige inligting oor die Nasionale Sojaboon Kultivarproewe en twee nuttige bronne van inligting oor sojaboonproduksie nl Jou Gids tot Suksesvolle Sojaboonproduksie en Sojaboonsiektes en -plae is beskikbaar by:

cultivars were included in the National Soybean Cultivar Trials and data of 27 localities were acceptable for statistical analyses. The yield reliability values of the 27 cultivars for the three production areas (warm, moderate and cool) are presented in Tables 4-6, 7-9 and 10-12. It is also important to use the information in Table 2 to determine whether the area to be planted corresponds with the warm, moderate or cool localities. Use selected the yield reliability table (warm, moderate or cool) to select cultivars for the yield potential of the specific field/farm.

FURTHER INFORMATION

Information on the National Soybean Cultivar Trials and two useful guides: Your Guide to Successful Soybean Production and Soybean Diseases and Pests, are available at:

ARC-Grain Crops Institute
P/Bag X1251
Potchefstroom

Tel.: (018) 299 6100
Fax: (018) 294 7146

*** The cultivars in this report are the only cultivars tested and recommended by the ARC.**

ACKNOWLEDGEMENT

The execution of the trials were made possible through the financial support of the Agricultural Research Council, Protein Research Foundation, Seed Companies and a large number of co-operators who conducted trials.

LNR-Instituut vir Graangewasse
Privaatsak X1251
Potchefstroom

Tel.: (018) 299 6100
Faks: (018) 294 7146

*** Cultivars wat in die verslag opgeneem is, is die enigste cultivars wat deur die LNR getoets en aanbeveel word.**

ERKENNING

Die uitvoer van die proewe is moontlik gemaak deur die finansiële ondersteuning van die Landbounavorsingsraad, Proteïennavorsingstigting, Saadmaatskappye en 'n groot aantal medewerkers wat proewe uitgevoer het.

Tabel 1 Gemiddelde aantal dae tot 50% blom en oesryp vir warm, matig en koue gebiede 2005/06
 Table 1 Average number of days to 50 % flower and harvest for warm, moderate and cool areas 2005/06

Kultivar/ Cultivar	Dae tot 50% blom/Days to 50% flower			Dae tot oesryp/Days to harvest		
	Warm/Warm ¹	Matig/Moderate ²	Koud/Cool ³	Warm/Warm ⁴	Matig/Moderate ⁵	Koel/Cool ⁶
PAN 421 R	46	54	63	137	134	144
Wenner	48	60	77	136	137	172
Sonop	51	65	77	137	141	172
SNK 440	51	67	82	133	141	172
LS 555	50	64	78	134	140	172
PAN 535 R	52	68	81	136	140	172
PAN 520 R	50	67	79	136	138	172
A 5409 RG	53	66	81	135	140	172
Higveld Top	51	66	81	132	138	172
Knap	53	67	80	137	141	181
LS 666	53	66	77	135	148	181
LS 677	54	67	80	139	144	181
LS 678	53	75	86	138	150	181
PAN 660	52	65	77	136	139	172
PAN 626	54	71	86	135	141	172
PAN 538 R	55	70	85	140	145	181
Marula	54	67	81	136	144	172
Tamboti	55	66	79	134	143	172
SNK 500	55	71	87	135	140	172
AG 5601	53	67	83	140	145	181
PHB 95 B 33	51	65	77	137	141	172
PHB 95 B 53	55	69	84	138	142	172
PHB 96 B 01	54	69	82	139	146	181
Mukwa	57	75	90	140	151	181
PAN 737 R	52	68	78	138	146	181
PAN 522 R	57	75	86	147	155	181
PAN 809	55	70	86	139	149	181

- ¹ - Gemiddeld van 5 lokaliteite, average of 5 localities ² - Gemiddeld van 5 lokaliteite, average of 5 localities
³ - Gemiddeld van 2 lokaliteit, average of 2 locality ⁴ - Gemiddeld van 3 lokaliteite, average of 3 localities
⁵ - Gemiddeld van 3 lokaliteite, average of 3 localities ⁶ - Gemiddeld van 1 lokaliteit, average of 1 locality

Tabel 2 Groepering van lokaliteite volgens warm, matig en koue gebiede 2005/06
 Table 2 Grouping of localities according to warm, moderate and cool areas 2005/06

Warm/Warm	Matig/Moderate	Koud/Cool
Atlanta (B/I)	Bronkhorstspuit (D)	Bethlehem (D)
Brits (B/I)	Cedara (D)	Cornelia (D)
Groblersdal Bespr (B/I)	Dundee (D)	Delmas Pannar (D)
Koedoeskop (B/I)	George (D)	Dirkiesdorp (D)
Naboonspruit (B/I)	Glen Besproeiing (B/I)	Ficksburg (D)
Rustenburg (B/I)	Greytown (D)	Kinross (D)
Vaalharts (B/I)	Greytown Kranskop (D)	Kokstad (B/I)
Warmbad (D)	Lichtenburg (D)	Reitz (D)
	Newcastle (D)	
	Potchefstroom B90 (B/I)	
	Potchefstroom D90 (D)	
	Umtata (B/I)	
	Vryheid (D)	

B - Besproeing/I - Irrigation D - Droëland/Dry land

Tabel 3 Algemene inligting van sojaboonkultivars 2005/06
Table 3 General information on soybean cultivars 2005/06

Kultivar/ Cultivar	Groei- wyse/ Growth habit ¹	Hilum- kleur/ Hilum colour ²	Oliepersen- tasie/ Oil percentage	Proteïenpe- rsentasie/ Protein percentage	Aalwurm gasheerstatus/ Nematode host status ³		Peul- hoogte /Pod height ⁴	Opspring/ Shatter ⁵	Verskaffer/ Supplier
					<i>M Incognita</i>	<i>M Javanica</i>			
PAN 421 R	I	LB	16.97	45.11	S	-	9	1.69	Pannar
Wenner	D	B	15.65	45.14	S	S	8	1.77	GJ Bohrmann
Sonop	I	B	16.79	43.65	S	S	14	1.77	GW Bührmann
SNK 440	D	B	15.91	44.80	-	-	13	1.77	Afgri
LS 555	D	LB	16.90	44.11	S	-	10	1.92	Link Seed
PAN 535 R	D	B	15.61	44.61	-	-	11	1.31	Pannar
PAN 520 R	I	LB	15.94	44.04	S	-	11	1.77	Pannar
A 5409 RG	I	LB	15.83	44.13	S	S	13	1.31	Pannar
Higveld Top	I	BL	16.39	43.98	S	S	13	2.15	GW Bührmann
Knap	I	B	16.10	44.05	S	S	12	1.77	GW Bührmann
LS 666	D	IB	16.30	43.99	S	S	12	1.85	Link Seed
LS 677	D	LB	15.02	44.80	S	S	14	1.62	Link Seed
LS 678	D	LB	16.12	43.68	S	-	11	1.38	Link Seed
PAN 660	D	BL	16.16	43.82	R	S	11	1.31	Pannar
PAN 626	I	KL	15.66	43.57	S	-	13	1.31	Pannar
PAN 538 R	I	KL	16.50	42.90	-	-	17	1.38	Pannar
Marula	I	BL	15.52	44.66	S	S	15	1.77	GW Bührmann
Tamboti	D	S	15.60	44.17	-	-	14	1.46	Newcrop
SNK 500	D	LB	15.59	45.03	S	R	12	1.46	Sensako
AG 5601	D	LB	16.10	43.71	S	S	11	1.38	Pannar
PHB 95 B 33	D	IB	15.87	45.65	-	-	11	1.77	Pioneer
PHB 95 B 53	D	BL	15.58	44.77	-	-	12	1.23	Pioneer
PHB 96 B 01	D	LB	15.90	44.19	-	-	13	1.31	Pioneer
Mukwa	D	IB	14.97	44.87	-	-	15	1.38	Newcrop
PAN 737 R	D	LB	16.27	43.74	-	-	14	1.85	Pannar
PAN 522 R	D	BL	15.01	43.65	S	-	14	1.31	Pannar
PAN 809	D	LB	15.81	43.77	S	S	12	1.38	Pannar

¹ D - Bepaald/determinate

I - Onbepaald/Indeterminate

² BL - Swart/Black

IB - Onvolledig swart/Imperfect black

B - Bruin/Brown

LB - Ligbruin/buff

G - Grys/Grey

KL - Kleurloos/buff

³ R - Nie vatbaar vir die spesifieke knopwortel aalwurm spesie en/of ras

Resistant to the specific root-knot nematode species and/or race

S - Vatbaar vir die spesifieke knopwortel aalwurm spesie en/of ras

Susceptible to the specific root-knot nematode species and/or race

⁴ Peulhoogte in cm/Pod height in cm

⁵ Geneigdheid tot oopspring evalueer op 'n skaal van 1-5 waar 1 = goed en 5 = swak

Tendency to shatter evaluated on a scale from 1-5 where 1 = good and 5 = poor

Tabel 4 Oessekerheid by die verskillende opbrengsmikpunte vir die koeler produksiegebiede, 2003/04, 2004/05, 2005/06

Table 4 Yield reliability at different yield targets for the cooler production areas, 2003/04, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM MEAN	B-KOEFF B-COEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
Wenner**	0.24	0.75	1.26	1.77	2.28	2.78	3.29	2.62	1.0165	0.3062
Sonop	0.00	0.48	0.99	1.50	2.01	2.52	3.04	2.46	1.0225	0.3868
LS 555	0.19	0.74	1.29	1.84	2.39	2.94	3.49*	2.48	1.1006	0.1552
A 5409 RG	0.27	0.82	1.36	1.91	2.45*	3.00*	3.54*	2.60	1.0916	0.1906
Knap	0.34	0.95*	1.55*	2.16*	2.77*	3.37*	3.98*	2.74	1.2127	0.1226
LS 666	0.52*	1.04*	1.55*	2.07*	2.59*	3.10*	3.62*	2.82	1.0339	0.2264
LS 677***	0.34	0.86	1.38	1.90	2.42	2.94	3.46	2.66	1.0421	0.2371
LS 678	0.35	0.88	1.41*	1.94*	2.48*	3.01*	3.54*	2.74	1.0647	0.2586
PAN 660	0.50*	0.98*	1.47*	1.96*	2.44*	2.93	3.42	2.58	0.9731	0.1525
PAN 626	0.77*	1.12*	1.46*	1.80	2.15	2.49	2.83	2.39	0.6866	0.1442
Marula	0.34	0.82	1.31	1.79	2.28	2.76	3.24	2.43	0.9684	0.1625
SNK 500	0.13	0.65	1.16	1.67	2.19	2.70	3.22	2.49	1.0280	0.2711
AG 5601	0.31	0.76	1.22	1.67	2.13	2.58	3.03	2.55	0.9087	0.3272
PAN 809****	0.30	0.73	1.15	1.58	2.00	2.43	2.85	2.44	0.8505	0.3239

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher

Verwysingscultivars/Reference cultivars

** Kort groeiseisoen/Short growing season

*** Medium groeiseisoen/Medium growing season

**** Lang groeiseisoen/Long growing season

Tabel 5 Oessekerheid by die verskillende opbrengsmikpunte van die koeler produksiegebiede, 2004/05, 2005/06
 Table 5 Yield reliability at different yield targets of the cooler production areas, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM	B-KOEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	MEAN	B-COEFF	
Wenner**	0.00	0.48	0.97	1.46	1.94	2.43	2.92	2.44	0.9738	0.3555
Sonop	0.00	0.00	0.53	1.06	1.59	2.12	2.65	2.31	1.0638	0.5941
LS 555	0.00	0.51	1.11	1.71	2.30	2.90*	3.50*	2.51	1.1960	0.2181
A 5409 RG	0.20	0.72	1.24	1.76	2.28	2.80	3.32	2.41	1.0385	0.1398
Knap	0.06	0.70	1.34	1.97*	2.61*	3.25*	3.89*	2.78	1.2767	0.2116
LS 666	0.71*	1.15*	1.59*	2.03*	2.47*	2.91*	3.35	2.68	0.8779	0.1446
LS 677***	0.82*	1.27*	1.72*	2.16*	2.61*	3.06*	3.51*	2.82	0.8951	0.1493
LS 678	0.29	0.89*	1.49*	2.08*	2.68*	3.28*	3.87*	2.89	1.1925	0.2181
PAN 660	0.49*	0.99*	1.50*	2.00*	2.50*	3.00*	3.50*	2.81	1.0048	0.2326
PAN 626	0.50*	0.91*	1.32	1.73	2.14	2.55	2.96	2.59	0.8179	0.2774
Marula	0.17	0.65	1.13	1.61	2.09	2.57	3.05	2.54	0.9596	0.3170
SNK 500	0.53*	0.94*	1.35	1.75	2.16	2.57	2.98	2.50	0.8193	0.2002
AG 5601	0.00	0.39	0.85	1.32	1.78	2.24	2.70	2.48	0.9263	0.5275
PAN 809****	0.06	0.54	1.02	1.50	1.98	2.45	2.93	2.50	0.9577	0.3746

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season

Tabel 6 Oessekerheid by die verskillende opbrengsmikpunte vir die koeler produksiegebiede, 2005/06
 Table 6 Yield reliability at different yield targets for the cooler production areas, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM	B-KOEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	MEAN	B-COEFF	
PAN 421 R	0.25	0.65	1.05	1.45	1.85	2.25	2.64	2.94	0.7993	0.5884
Wenner**	0.94*	1.39*	1.84*	2.28*	2.73*	3.18*	3.62*	2.96	0.8941	0.0630
Sonop	0.73*	1.23*	1.73*	2.22*	2.72*	3.21*	3.71*	2.86	0.9919	0.0458
SNK 440	0.82*	1.24*	1.66*	2.08*	2.50	2.92	3.34	2.85	0.8416	0.0989
LS 555	0.32	0.91	1.50	2.09*	2.67*	3.26*	3.85*	2.94	1.1797	0.0957
PAN 535 R	0.23	0.86	1.49	2.12*	2.75*	3.38*	4.01*	2.88	1.2611	0.0555
PAN 520 R	0.33	0.88	1.43	1.98	2.53*	3.08*	3.63*	2.80	1.1007	0.0922
A 5409 RG	0.50	1.03*	1.56*	2.08*	2.61*	3.14*	3.66*	2.84	1.0543	0.0735
Higveld Top	0.73*	1.21*	1.69*	2.17*	2.65*	3.12*	3.60*	3.05	0.9562	0.1337
Knap	0.75*	1.02*	1.29	1.55	1.82	2.09	2.36	2.44	0.5389	0.1965
LS 666	0.61*	1.07*	1.52*	1.98	2.44	2.89	3.35	2.92	0.9119	0.1656
LS 677***	0.00	0.08	0.69	1.30	1.92	2.53	3.14	2.82	1.2256	0.4947
LS 678	0.18	0.77	1.36	1.95	2.53*	3.12*	3.71*	3.01	1.1779	0.1916
PAN 660	0.00	0.25	0.88	1.51	2.14	2.76	3.39	3.35	1.2579	0.8060
PAN 626	0.87*	1.41*	1.95*	2.50*	3.04*	3.58*	4.12*	3.25	1.0845	0.0719
PAN 538 R	0.56*	0.96	1.36	1.77	2.17	2.58	2.98	2.70	0.8075	0.1773
Marula	0.52	0.96	1.41	1.85	2.30	2.74	3.19	2.64	0.8898	0.1018
Tamboti	0.08	0.60	1.13	1.65	2.18	2.71	3.23	2.58	1.0513	0.1406
SNK 500	0.54*	1.05*	1.56*	2.08*	2.59*	3.10*	3.62*	2.74	1.0259	0.0478
AG 5601	0.05	0.64	1.23	1.83	2.42	3.01	3.60*	2.65	1.1851	0.0859
PHB 95 B 33	0.00	0.29	0.70	1.10	1.51	1.91	2.32	2.64	0.8096	0.6246
PHB 95 B 53	0.57*	1.05*	1.52*	2.00*	2.48	2.96	3.44	2.75	0.9559	0.0816
PHB 96 B 01	0.07	0.57	1.07	1.57	2.07	2.56	3.06	2.54	0.9959	0.1720
Mukwa	0.03	0.57	1.10	1.64	2.18	2.71	3.25	2.44	1.0748	0.0890
PAN 737 R	0.21	0.74	1.28	1.81	2.34	2.87	3.40	2.90	1.0640	0.2282
PAN 522 R	0.35	0.80	1.25	1.70	2.15	2.60	3.05	2.36	0.8977	0.0594
PAN 809****	0.00	0.35	0.83	1.32	1.80	2.28	2.77	2.50	0.9666	0.3011

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season

Tabel 7 Oessekerheid by die verskillende opbrengsmikpunte vir die matige produksiegebiede, 2003/04, 2004/05, 2005/06

Table 7 Yield reliability at different yield targets for the moderate production areas, 2003/04, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM	B-KOEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	MEAN	B-COEFF	
Wenner**	0.13	0.64	1.15	1.65	2.16	2.66	3.17	2.61	1.0123	0.3441
Sonop	0.15	0.64	1.12	1.60	2.09	2.57	3.06	2.59	0.9688	0.3768
LS 555	0.22	0.68	1.15	1.62	2.09	2.56	3.03	2.51	0.9381	0.3014
A 5409 RG	0.37	0.87	1.38	1.88	2.38	2.88	3.38	2.75	1.0026	0.2748
Knap	0.33	0.84	1.35	1.87	2.38	2.90*	3.41*	2.66	1.0270	0.2137
LS 666	0.55*	1.06*	1.57*	2.09*	2.60*	3.11*	3.62*	2.79	1.0249	0.1580
LS 677***	0.58*	1.07*	1.56*	2.05*	2.54*	3.03*	3.52*	2.80	0.9784	0.1929
LS 678	0.51*	1.02*	1.52*	2.03*	2.54*	3.04*	3.55*	2.82	1.0131	0.2155
PAN 660	0.30	0.82	1.34	1.86	2.38	2.91*	3.43*	2.72	1.0419	0.2613
PAN 626	0.37	0.85	1.33	1.82	2.30	2.78	3.26	2.63	0.9640	0.2390
Marula	0.04	0.54	1.04	1.54	2.04	2.53	3.03	2.57	0.9988	0.4202
SNK 500	0.23	0.75	1.27	1.78	2.30	2.81	3.33	2.62	1.0307	0.2521
AG 5601	0.39	0.86	1.34	1.81	2.29	2.76	3.24	2.67	0.9512	0.2691
PAN 809****	0.01	0.53	1.06	1.58	2.10	2.63	3.15	2.59	1.0481	0.3859

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher

Verwysingscultivars/Reference cultivars

** Kort groeiseisoen/Short growing season

*** Medium groeiseisoen/Medium growing season

**** Lang groeiseisoen/Long growing season

Tabel 8 Oessekerheid by die verskillende opbrengsmikpunte vir die matige produksiegebiede, 2004/05, 2005/06

Table 8 Yield reliability at different yield targets for the moderate production areas, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM	B-KOEFF	D
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	MEAN	B-COEFF	
Wenner**	0.32	0.83	1.33	1.84	2.35	2.86	3.36	2.74	1.0155	0.2592
Sonop	0.19	0.66	1.14	1.62	2.09	2.57	3.05	2.62	0.9534	0.3560
LS 555	0.46*	0.92*	1.38*	1.83	2.29	2.75	3.21	2.65	0.9194	0.2164
A 5409 RG	0.30	0.87	1.44*	2.01*	2.58*	3.15*	3.72*	2.79	1.1411	0.1680
Knap	0.25	0.74	1.24	1.73	2.22	2.72	3.21	2.66	0.9869	0.2865
LS 666	0.39*	0.92*	1.46*	1.99*	2.53*	3.07*	3.60*	2.79	1.0714	0.1826
LS 677***	0.62*	1.06*	1.50*	1.94*	2.38*	2.82	3.27	2.75	0.8833	0.2187
LS 678	0.54*	1.02*	1.50*	1.98*	2.46*	2.94*	3.42*	2.85	0.9611	0.2489
PAN 660	0.28	0.79	1.30	1.80	2.31	2.82	3.33	2.75	1.0141	0.2961
PAN 626	0.32	0.79	1.26	1.74	2.21	2.68	3.15	2.61	0.9451	0.2531
Marula	0.03	0.54	1.05	1.56	2.07	2.58	3.09	2.65	1.0196	0.4212
SNK 500	0.23	0.71	1.19	1.67	2.15	2.63	3.11	2.55	0.9600	0.2509
AG 5601	0.03	0.57	1.10	1.64	2.18	2.72	3.26	2.69	1.0761	0.3739
PAN 809****	0.04	0.57	1.09	1.62	2.15	2.67	3.20	2.63	1.0532	0.3492

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher

Verwysingscultivars/Reference cultivars

** Kort groeiseisoen/Short growing season

*** Medium groeiseisoen/Medium growing season

**** Lang groeiseisoen/Long growing season

Tabel 9 Oesekerheid by die verskillende opbrengsmikpunte vir matige produksiegebiede, 2005/06
 Table 9 Yield reliability at different yield targets for moderate production areas, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM MEAN	B-KOEFF B-COEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
PAN 421 R	0.00	0.32	0.84	1.36	1.87	2.39	2.91	2.74	1.0347	0.4655
Wenner**	0.13	0.70	1.28	1.85	2.42	2.99	3.56	2.73	1.1440	0.1034
Sonop	0.70*	1.21*	1.72*	2.24*	2.75*	3.26*	3.78*	2.94	1.0260	0.0530
SNK 440	0.74*	1.23*	1.71*	2.20*	2.69*	3.18	3.67	3.06	0.9778	0.1161
LS 555	0.50	1.10	1.70*	2.30*	2.90*	3.50*	4.10*	3.07	1.2019	0.0520
PAN 535 R	0.44	0.99	1.53	2.07	2.61	3.16	3.70	2.93	1.0846	0.1002
PAN 520 R	0.56	1.07	1.57	2.08	2.58	3.09	3.59	2.93	1.0106	0.1119
A 5409 RG	0.57	1.08	1.58	2.09	2.60	3.11	3.62	2.86	1.0165	0.0746
Higveld Top	0.55	1.10	1.64	2.19*	2.73*	3.27*	3.82*	3.09	1.0868	0.1228
Knap	0.27	0.75	1.22	1.70	2.18	2.65	3.13	2.51	0.9525	0.1003
LS 666	1.07*	1.42*	1.76*	2.11	2.46	2.81	3.15	3.00	0.6948	0.1868
LS 677***	0.56	1.13	1.69*	2.26*	2.83*	3.39*	3.96*	2.99	1.1329	0.0477
LS 678	0.65	1.24*	1.82*	2.40*	2.98*	3.56*	4.15*	3.21	1.1647	0.0703
PAN 660	0.39	0.98	1.57	2.15	2.74*	3.33*	3.92*	3.01	1.1752	0.0868
PAN 626	1.22*	1.65*	2.09*	2.53*	2.97*	3.41*	3.85*	3.16	0.8781	0.0448
PAN 538 R	0.39	0.93	1.47	2.01	2.55	3.09	3.62	2.72	1.0785	0.0489
Marula	0.72*	1.20*	1.67*	2.15	2.62	3.09	3.57	2.91	0.9493	0.0814
Tamboti	0.88*	1.33*	1.78*	2.23*	2.67*	3.12	3.57	2.78	0.8986	0.0247
SNK 500	0.51	1.04	1.57	2.10	2.63	3.16	3.69	2.90	1.0602	0.0806
AG 5601	0.64	1.07	1.51	1.94	2.37	2.80	3.23	2.65	0.8627	0.0734
PHB 95 B 33	0.00	0.48	1.01	1.54	2.07	2.60	3.13	2.55	1.0594	0.1822
PHB 95 B 53	0.43	0.90	1.37	1.84	2.30	2.77	3.24	2.60	0.9345	0.0850
PHB 96 B 01	0.43	0.88	1.33	1.78	2.23	2.68	3.13	2.61	0.8997	0.1169
Mukwa	0.70*	1.11	1.51	1.91	2.32	2.72	3.12	2.69	0.8075	0.1109
PAN 737 R	0.57	1.09	1.60	2.12	2.64	3.16	3.67	2.99	1.0351	0.1131
PAN 522 R	0.62	1.06	1.50	1.94	2.39	2.83	3.27	2.73	0.8834	0.1011
PAN 809****	0.52	1.00	1.47	1.95	2.42	2.90	3.37	2.80	0.9498	0.1201

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season

Tabel 10 Oesekerheid by die verskillende opbrengsmikpunte vir die warmer produksiegebiede, 2003/04, 2004/05, 2005/06
 Table 10 Yield reliability at different yield targets for the warmer production areas, 2003/04, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM MEAN	B-KOEFF B-COEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
Wenner**	0.54*	0.77	1.00	1.23	1.46	1.69	1.92	2.35	0.4580	0.5738
Sonop	0.31	0.74	1.16	1.59	2.01	2.44	2.86	2.41	0.8500	0.2449
LS 555	0.00	0.34	0.88	1.41	1.95	2.49	3.02	2.37	1.0730	0.3164
A 5409 RG	0.22	0.79	1.37	1.94	2.51	3.08*	3.66*	2.63	1.1449	0.1321
Knap	0.24	0.76	1.28	1.80	2.31	2.83	3.35	2.55	1.0349	0.1800
LS 666	0.37	0.87	1.37	1.87	2.38	2.88	3.38	2.79	1.0047	0.2993
LS 677***	0.11	0.72	1.33	1.94	2.55*	3.16*	3.77*	2.85	1.2183	0.2684
LS 678	0.40	0.95	1.51*	2.06*	2.61*	3.17*	3.72*	2.76	1.1068	0.1390
PAN 660	0.56*	1.06*	1.55*	2.04*	2.54*	3.03	3.53	2.64	0.9876	0.0981
PAN 626	0.73*	1.16*	1.59*	2.02*	2.46	2.89	3.32	2.66	0.8646	0.1266
Marula	0.46	0.94	1.41	1.89	2.37	2.85	3.32	2.73	0.9548	0.2450
SNK 500	0.55*	1.10*	1.65*	2.20*	2.75*	3.30*	3.85*	2.99	1.0993	0.1958
AG 5601	0.07	0.69	1.32	1.94	2.56*	3.18*	3.80*	2.77	1.2438	0.2040
PAN 809****	0.57*	1.05*	1.53*	2.01*	2.49	2.97	3.45	2.85	0.9593	0.2415

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season

Tabel 11 Oesekerheid by die verskillende opbrengsmikpunte vir die warmer produksieareas, 2004/05, 2005/06
 Table 11 Yield reliability at different yield targets for the warmer production areas, 2004/05, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM MEAN	B-KOEFF B-COEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
Wenner**	0.33	0.89*	1.46*	2.02*	2.58*	3.15*	3.71*	2.48	1.1264	0.1633
Sonop	0.28	0.65	1.02	1.39	1.76	2.13	2.50	2.15	0.7380	0.3381
LS 555	0.00	0.26	0.73	1.20	1.67	2.14	2.61	2.16	0.9392	0.5449
A 5409 RG	0.50*	0.97*	1.44*	1.91*	2.38*	2.85	3.32	2.28	0.9417	0.1080
Knap	0.00	0.48	1.03	1.58	2.13	2.68	3.24	2.25	1.1030	0.2980
LS 666	0.37	0.79	1.22	1.64	2.07	2.49	2.92	2.52	0.8502	0.4489
LS 677***	0.03	0.57	1.11	1.65	2.19	2.73	3.27	2.37	1.0814	0.3415
LS 678	0.43*	0.91*	1.40*	1.89*	2.37*	2.86	3.35	2.47	0.9724	0.2306
PAN 660	0.58*	1.05*	1.53*	2.00*	2.48*	2.95*	3.43	2.42	0.9510	0.1275
PAN 626	0.62*	1.13*	1.63*	2.13*	2.64*	3.14*	3.65*	2.53	1.0078	0.1210
Marula	0.20	0.72	1.24	1.76	2.28	2.80	3.32	2.55	1.0393	0.3959
SNK 500	0.58*	0.93*	1.29	1.64	1.99	2.35	2.70	2.46	0.7090	0.3933
AG 5601	0.00	0.59	1.22	1.86	2.49*	3.13*	3.76*	2.51	1.2705	0.2980
PAN 809****	0.00	0.22	0.85	1.49	2.12	2.76	3.39	2.39	1.2701	0.5263

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season

Tabel 12 Oesekerheid by die verskillende opbrengsmikpunte vir die warmer produksiegebiede, 2005/06
 Table 12 Yield reliability at different yield targets for the warmer production areas, 2005/06

KULTIVAR CULTIVAR	OPBRENGSMIKPUNTE/YIELD TARGETS ton/ha ⁻¹							GEM MEAN	B-KOEFF B-COEFF	D ²
	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
PAN 421 R	0.10	0.37	0.64	0.91	1.18	1.45	1.72	2.03	0.5380	0.3623
Wenner**	0.00	0.05	0.25	0.44	0.64	0.84	1.03	1.75	0.3927	0.5428
Sonop	0.42	0.83	1.24	1.65	2.06	2.47	2.88	2.37	0.8200	0.0998
SNK 440	0.00	0.31	0.92	1.54	2.15	2.76	3.38	2.71	1.2264	0.2797
LS 555	0.40	0.86	1.31	1.77	2.23	2.69	3.15	2.61	0.9186	0.1364
PAN 535 R	0.00	0.26	0.94	1.62	2.30	2.98*	3.66*	2.92	1.3599	0.3441
PAN 520 R	0.00	0.00	0.51	1.29	2.07	2.85	3.62*	2.42	1.5587	0.2102
A 5409 RG	0.00	0.49	1.18	1.86	2.55*	3.24*	3.92*	2.75	1.3727	0.1111
Higveld Top	0.00	0.15	0.79	1.43	2.07	2.72	3.36	2.49	1.2856	0.2034
Knap	0.23	0.64	1.06	1.48	1.89	2.31	2.73	2.49	0.8329	0.2437
LS 666	0.20	0.81	1.42*	2.03*	2.64*	3.25*	3.86*	3.09	1.2199	0.2165
LS 677***	0.79*	1.22*	1.66*	2.09*	2.52*	2.96	3.39	3.10	0.8690	0.2373
LS 678	0.75*	1.37*	1.99*	2.61*	3.23*	3.84*	4.46*	3.34	1.2367	0.0705
PAN 660	0.00	0.00	0.62	1.35	2.08	2.80	3.53*	2.64	1.4543	0.3252
PAN 626	0.22	0.71	1.19	1.68	2.17	2.66	3.15	2.82	0.9778	0.3005
PAN 538 R	0.51*	0.90	1.29	1.67	2.06	2.44	2.83	2.85	0.7722	0.3602
Marula	0.60*	1.09*	1.57*	2.06*	2.54*	3.03*	3.51*	2.69	0.9696	0.0590
Tamboti	1.15*	1.53*	1.90*	2.28*	2.65*	3.02*	3.40	2.86	0.7480	0.0603
SNK 500	0.24	0.64	1.05	1.45	1.86	2.26	2.67	2.81	0.8102	0.4932
AG 5601	0.82*	1.20*	1.59*	1.97*	2.36	2.74	3.13	2.89	0.7688	0.1942
PHB 95 B 33	0.00	0.00	0.35	0.89	1.43	1.97	2.51	2.32	1.0778	0.4977
PHB 95 B 53	0.15	0.62	1.10	1.58	2.05	2.53	3.01	3.11	0.9544	0.6222
PHB 96 B 01	0.68*	1.11*	1.53*	1.96*	2.39	2.82	3.25	3.02	0.8554	0.2689
Mukwa	0.39	0.90	1.41*	1.93*	2.44*	2.95	3.46	3.03	1.0240	0.2671
PAN 737 R	0.27	0.83	1.38	1.94*	2.49*	3.05*	3.60*	2.92	1.1105	0.1879
PAN 522 R	0.79*	1.16*	1.53*	1.91*	2.28	2.65	3.02	2.90	0.7421	0.2419
PAN 809****	0.08	0.63	1.18	1.74	2.29	2.84	3.39	3.12	1.1039	0.4599

* Waardes in dieselfde kolom is betekenisvol beter/Values in the same column are significantly higher
 Verwysingscultivars/Reference cultivars
 ** Kort groeiseisoen/Short growing season *** Medium groeiseisoen/Medium growing season
 **** Lang groeiseisoen/Long growing season