## SOJABOON KULTIVARAANBEVELINGS VIR 2005/2006

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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 verboude 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 2005/2006

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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 cultivarkeuse 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 Tabelle 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 lugtemperature 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 gestandardiseerde 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 koelweergroeitoestande. 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 onkruiddoder** kan in sommige gevalle kultivarkeuse beinvloed. Geen sojaboonkultivar is bestand teen die atrazine-tipe onkruiddoders 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 2004/2005 season 30

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 2004/2005 seisoen is 30 cultivars aangeplant en was die data van 31 proewe aanvaarbaar vir statistiese analises. Die oeskerheidswaardes van die 30 cultivars vir die drie verbouingsgebiede (warm, matig en koud) word aangebied in Tabelle 4-6, 7-9 en 10-12. Tabelle 4, 7 en10; 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 kultivars in die oessekerheidstabel 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 31 localities were acceptable for statistical analyses. The yield reliability values of the 30 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
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Tel.: (018) 299 6100
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*** The cultivars in this report are the only cultivars tested and recommended by the ARC.**

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*** 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 2004/05**
**Table 1 Average number of days to 50 % flower and harvest for warm, moderate and cool areas 2004/05**

| 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 RR | 50 | 51 | 59 | 118 | 126 | 128 |
| Sonop | 53 | 61 | 69 | 124 | 133 | 150 |
| Wenner | 52 | 57 | 70 | 121 | 131 | 148 |
| LS 444 | 56 | 59 | 70 | 118 | 130 | 146 |
| Prima 2000 | 55 | 63 | 70 | 128 | 133 | 148 |
| LS 555 | 53 | 62 | 74 | 126 | 133 | 148 |
| PAN 520 RR | 55 | 61 | 66 | 123 | 132 | 147 |
| PAN 522 RR | 60 | 67 | 78 | 143 | 144 | 163 |
| PAN 535 RR | 54 | 64 | 70 | 128 | 135 | 148 |
| CRN 5550 | 56 | 59 | 65 | 127 | 132 | 145 |
| A 5409 RG | 55 | 64 | 76 | 127 | 135 | 150 |
| Highveld Top | 55 | 61 | 75 | 125 | 133 | 148 |
| Knap | 58 | 62 | 68 | 128 | 139 | 150 |
| LS 580 | 59 | 66 | 79 | 133 | 139 | 151 |
| LS 666 | 62 | 64 | 72 | 135 | 139 | 152 |
| LS 677 | 60 | 63 | 70 | 137 | 140 | 156 |
| LS 678 | 58 | 68 | 77 | 133 | 142 | 158 |
| PAN 660 | 56 | 61 | 69 | 133 | 132 | 147 |
| PAN 626 | 61 | 67 | 78 | 129 | 136 | 150 |
| SNK 500 | 58 | 67 | 78 | 130 | 136 | 150 |
| AG 5601 | 62 | 64 | 73 | 133 | 141 | 155 |
| Marula | 59 | 64 | 70 | 130 | 138 | 150 |
| Dumela | 58 | 66 | 79 | 130 | 138 | 150 |
| Maruti | 59 | 67 | 79 | 034 | 139 | 155 |
| PAN 737 RR | 60 | 64 | 74 | 133 | 141 | 155 |
| AG 6106 | 61 | 67 | 81 | 139 | 141 | 161 |
| Egret | 63 | 68 | 81 | 137 | 144 | 163 |
| Stork | 61 | 70 | 85 | 140 | 144 | 165 |
| PAN 809 | 61 | 66 | 74 | 137 | 143 | 161 |
| PAN 538 RR | 62 | 68 | 76 | 139 | 141 | 161 |

[1] - Gemiddeld van 5 lokaliteite, average of 5 localities [2] - Gemiddeld van 7 lokaliteite, average of 7 localities
[3] – Gemideld van 9 lokaliteit, average of 9 locality [4] - Gemiddeld van 2 lokaliteite, average of 2 local ities
[5] - Gemiddeld van 2 lokaliteite, average of 2 localities [6] – Gemiddeld van 3 lokaliteite/Average of 3 localities

**Tabel 2 Groepering van lokaliteite volgens warm, matig en koue gebiede 2004/05**
**Table 2 Grouping of localities according to warm, moderate and cool areas 2004/05**

| Warm/Warm | Matig/Moderate | Koud/Cool |
|---|---|---|
| Beestekraal (B/I) | Aliwal Noord (D) | Bethlehem (D) |
| Brits (B/I) | Cedara (D) | Delmas Pannar (D) |
| Groblersdal Bespr (B/I) | Dundee (D) | Ficksburg (D) |
| Koedoeskop (B/I) | George (D) | Frankfort (D) |
| Naboomspruit (B/I) | Glen Besproeiing (B/I) | Kinross (D) |
| Rustenburg (B/I) | Glen Droëland (D) | Kokstad (B/I) |
| Vaalharts (B/I) | Greytown (D) | Vrede (D) |
| Warmbad (D) | Greytown Kranskop (D) | |
| | Lichtenburg (D) | |
| | Lydenburg (D) | |
| | Potchefstroom B90 (B/I) | |
| | Potchefstroom D90 (D) | |
| | Potchefstroom B45 (B/I) | |
| | Potchefstroom D45(D) | |
| | Viljoenskroon (D) | |
| | Vryheid (D) | |

B - Besproeing/I - Irrigation D - Droëland/Dry land P - Plantdatum/Planting date

**Tabel 3 Algemene inligting van sojaboonkultivars 2004/05**
**Table 3 General information on soybean cultivars 2004/05**

| Kultivar/ Cultivar | Groei-wyse/ Growth habit[1] | Hilum-kleur/ Hilum colour [2] | Oliepersentasie/ Oil percentage | Proteïenpersentasie/ Protein percentage | Aalwurm gasheerstatus/ Nematode host status[3] | | Peul-hoogte /Pod height [4] | Oopspring/ Shatter[5] | Verskaffer/ Supplier |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | *M Incognita* | *M Javanica* | | | |
| PAN 421 RR | I | LB | 17.54 | 41.40 | S | - | 9 | 1.90 | Pannar |
| Sonop | I | B | 17.59 | 40.57 | S | S | 13 | 1.98 | GW Bührmann |
| Wenner | D | B | 16.60 | 42.28 | S | S | 8 | 1.96 | GJ Bohrman |
| LS 444 | D | B | 17.89 | 39.78 | S | - | 10 | 1.77 | Link Seed |
| Prima 2000 | I | KL | 17.83 | 39.24 | S | S | 12 | 1.67 | Pannar |
| LS 555 | D | LB | 17.45 | 40.66 | S | - | 8 | 1.94 | Link Seed |
| PAN 520 RR | D | LB | 16.97 | 40.55 | S | - | 11 | 1.98 | Pannar |
| PAN 522 RR | D | BL | 15.79 | 41.05 | S | - | 13 | 1.31 | Pannar |
| PAN 535 RR | D | B | 16.77 | 40.81 | - | - | 9 | 1.44 | Pannar |
| CRN 5550 | I | BL | 17.23 | 40.91 | S | R | 11 | 1.52 | Monsanto |
| A 5409 RG | I | LB | 17.08 | 40.43 | S | S | 10 | 1.50 | Monsanto |
| Highveld Top | I | BL | 17.64 | 40.34 | S | S | 11 | 1.96 | GW Bührmann |
| Knap | I | B | 17.09 | 40.92 | S | S | 13 | 1.79 | GW Bührmann |
| LS 580 | D | KL | 17.71 | 41.30 | S | - | 9 | 1.50 | Link Seed |
| LS 666 | I | IB | 17.19 | 40.77 | S | S | 11 | 1.94 | Link Seed |
| LS 677 | I | LB | 16.51 | 40.66 | S | S | 11 | 1.83 | Link Seed |
| LS 678 | D | LB | 17.23 | 39.89 | S | - | 10 | 1.44 | Link Seed |
| PAN 660 | D | BL | 17.51 | 40.29 | R | S | 9 | 1.52 | Pannar |
| PAN 626 | I | KL | 16.50 | 40.66 | S | - | 13 | 1.38 | Pannar |
| SNK 500 | D | LB | 16.43 | 41.70 | S | R | 11 | 1.46 | Sensako |
| AG 5601 | I | LB | 16.85 | 40.67 | S | S | 10 | 1.44 | Monsanto |
| Marula | I | BL | 16.73 | 41.46 | S | S | 12 | 1.56 | GW Bührmann |
| Dumela | I | B | 16.80 | 40.36 | S | S | 11 | 1.52 | H Vreken |
| Maruti | D | BL | 16.42 | 40.39 | S | S | 11 | 1.44 | H Vreken |
| PAN 737 RR | D | LB | 17.53 | 40.03 | - | - | 11 | 1.65 | Pannar |
| AG 6101 | I | LB | 17.17 | 41.24 | S | S | 13 | 1.56 | Monsanto |
| Egret | D | KL | 15.13 | 41.84 | R | R | 13 | 1.69 | Agriocare |
| Stork | D | KL | 15.20 | 42.56 | S | - | 12 | 1.81 | Agriocare |
| PAN 809 | D | LB | 16.98 | 40.20 | S | S | 10 | 1.50 | Pannar |
| PAN 538 RR | I | KL | 17.48 | 39.73 | - | - | 15 | 1.44 | 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 namatode 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, 2002/03, 2003/04, 2004/05**
**Table 4 Yield reliability at different yield targets for the cooler production areas, 2002/03, 2003/04, 2004/05**

| 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 | | | |
| Sonop | 0.35 | 0.77 | 1.20 | 1.62 | 2.04 | 2.47 | 2.89 | 2.44 | 0.8496 | 0.4243 |
| Wenner** | 0.40* | 0.79 | 1.17 | 1.56 | 1.95 | 2.33 | 2.72 | 2.28 | 0.7731 | 0.3284 |
| Prima 2000** | 0.42* | 0.79 | 1.16 | 1.52 | 1.89 | 2.26 | 2.62 | 2.41 | 0.7326 | 0.4758 |
| LS 555 | 0.37* | 0.78 | 1.18 | 1.59 | 1.99 | 2.40 | 2.80 | 2.22 | 0.8094 | 0.2637 |
| CRN 5550 | 0.52* | 0.99* | 1.47* | 1.94* | 2.41* | 2.89* | 3.36 | 2.50 | 0.9464 | 0.2277 |
| A 5409 RG | 0.00 | 0.57 | 1.14 | 1.71 | 2.28 | 2.84 | 3.41 | 2.40 | 1.1361 | 0.3438 |
| Highveld Top | 0.21 | 0.86* | 1.51* | 2.17* | 2.82* | 3.47* | 4.12* | 2.58 | 1.3050 | 0.1635 |
| Knap | 0.00 | 0.43 | 1.02 | 1.62 | 2.21 | 2.81 | 3.40 | 2.40 | 1.1896 | 0.4234 |
| LS 666 | 0.33 | 0.92* | 1.52* | 2.12* | 2.71* | 3.31* | 3.91* | 2.52 | 1.1924 | 0.1497 |
| LS 677*** | 0.68* | 1.11* | 1.54* | 1.98* | 2.41* | 2.84 | 3.27 | 2.39 | 0.8651 | 0.1341 |
| PAN 660 | 0.36 | 0.83* | 1.31* | 1.79 | 2.27 | 2.74 | 3.22 | 2.28 | 0.9548 | 0.1807 |
| SNK 500 | 0.01 | 0.55 | 1.09 | 1.63 | 2.18 | 2.72 | 3.26 | 2.30 | 1.0831 | 0.3185 |
| AG 5601 | 0.51* | 0.93* | 1.35* | 1.78 | 2.20 | 2.62 | 3.04 | 2.37 | 0.8452 | 0.2395 |
| Marula | 0.13 | 0.67 | 1.22 | 1.77 | 2.32 | 2.86 | 3.41 | 2.48 | 1.0957 | 0.3523 |
| Dumela | 0.00 | 0.27 | 0.87 | 1.48 | 2.09 | 2.69 | 3.30 | 2.30 | 1.2125 | 0.4664 |
| AG 6101 | 0.00 | 0.19 | 0.82 | 1.46 | 2.09 | 2.72 | 3.36 | 2.33 | 1.2692 | 0.5269 |
| Egret**** | 0.00 | 0.44 | 1.03 | 1.62 | 2.20 | 2.79 | 3.38 | 2.37 | 1.1741 | 0.4011 |
| Stork | 0.24 | 0.71 | 1.18 | 1.65 | 2.12 | 2.59 | 3.06 | 2.37 | 0.9412 | 0.3473 |
| PAN 809 | 0.36 | 0.67 | 0.98 | 1.30 | 1.61 | 1.92 | 2.23 | 2.34 | 0.6250 | 0.6210 |

*** 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 vir die koeler produksiegebiede, 2003/04, 2004/05**
**Table 5 Yield reliability at different yield targets for the cooler production azeas, 2003/04, 2004/05**

| KULTIVAR/ CULTIVAR | PBRENGSMIKPUNTE/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 RR | 0.00 | 0.57 | 1.20 | 1.83 | 2.46 | 3.08 | 3.71* | 2.63 | 1.2577 | 0.2963 |
| Sonop | 0.44* | 1.02* | 1.61* | 2.20* | 2.78* | 3.37* | 3.96* | 2.68 | 1.1734 | 0.1070 |
| Wenner** | 0.10 | 0.71 | 1.32 | 1.93 | 2.54 | 3.15* | 3.76* | 2.50 | 1.2224 | 0.1526 |
| LS 444 | 0.15 | 0.78 | 1.41 | 2.04* | 2.67* | 3.29* | 3.92* | 2.68 | 1.2587 | 0.1915 |
| Prima 2000** | 0.25 | 0.89 | 1.53* | 2.16* | 2.80* | 3.44* | 4.07* | 2.68 | 1.2728 | 0.1222 |
| LS 555 | 0.39 | 0.85 | 1.32 | 1.79 | 2.25 | 2.72 | 3.19 | 2.47 | 0.9339 | 0.2131 |
| PAN 520 RR | 0.31 | 0.84 | 1.37 | 1.89 | 2.42 | 2.95 | 3.47 | 2.57 | 1.0528 | 0.2134 |
| PAN 522 RR | 0.25 | 0.81 | 1.36 | 1.91 | 2.46 | 3.01 | 3.56 | 2.81 | 1.1033 | 0.3778 |
| CRN 5550 | 0.16 | 0.69 | 1.21 | 1.74 | 2.26 | 2.79 | 3.31 | 2.30 | 1.0510 | 0.1438 |
| A 5409 RG | 0.38 | 0.91* | 1.45 | 1.98 | 2.51 | 3.05 | 3.58 | 2.67 | 1.0661 | 0.2190 |
| Highveld Top | 0.36 | 0.94* | 1.52* | 2.10* | 2.68* | 3.25* | 3.83* | 2.67 | 1.1579 | 0.1525 |
| Knap | 0.74* | 1.30* | 1.86* | 2.42* | 2.98* | 3.54* | 4.10* | 2.78 | 1.1192 | 0.0587 |
| LS 580 | 0.00 | 0.56 | 1.15 | 1.74 | 2.32 | 2.91 | 3.50 | 2.48 | 1.1767 | 0.2538 |
| LS 666 | 0.33 | 0.90 | 1.47* | 2.04* | 2.61* | 3.18* | 3.75* | 2.67 | 1.1415 | 0.1861 |
| LS 677*** | 0.54* | 1.04* | 1.53* | 2.03* | 2.53 | 3.03 | 3.53 | 2.41 | 0.9965 | 0.0668 |
| LS 678 | 0.71* | 1.11* | 1.51* | 1.92 | 2.32 | 2.72 | 3.13 | 2.37 | 0.8059 | 0.0942 |
| PAN 660 | 0.30 | 0.81 | 1.33 | 1.85 | 2.37 | 2.89 | 3.41 | 2.38 | 1.0380 | 0.1298 |
| PAN 626 | 0.24 | 0.78 | 1.33 | 1.87 | 2.41 | 2.95 | 3.49 | 2.44 | 1.0827 | 0.1537 |
| SNK 500 | 0.14 | 0.83 | 1.52* | 2.20* | 2.89* | 3.57* | 4.26* | 2.73 | 1.3711 | 0.1270 |
| AG 5601 | 0.33 | 0.87 | 1.41 | 1.95 | 2.49 | 3.03 | 3.56 | 2.70 | 1.0782 | 0.2597 |
| Marula | 0.00 | 0.18 | 0.60 | 1.02 | 1.45 | 1.87 | 2.29 | 2.04 | 0.8442 | 0.4772 |
| Dumela | 0.66* | 1.01* | 1.36 | 1.71 | 2.06 | 2.41 | 2.76 | 2.64 | 0.7010 | 0.3995 |
| AG 6101 | 0.35 | 0.65 | 0.95 | 1.25 | 1.55 | 1.85 | 2.15 | 2.32 | 0.5982 | 0.5334 |
| Egret**** | 0.40 | 0.70 | 1.00 | 1.30 | 1.61 | 1.91 | 2.21 | 2.32 | 0.6032 | 0.4845 |
| Stork | 0.00 | 0.25 | 0.56 | 0.88 | 1.20 | 1.52 | 1.83 | 2.22 | 0.6348 | 0.8344 |
| PAN 809 | 0.17 | 0.30 | 0.43 | 0.56 | 0.69 | 0.82 | 0.95 | 1.90 | 0.2587 | 0.8301 |

*** 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, 2004/05**
**Table 6 Yield reliability at different yield targets for the cooler production areas, 2004/05**

| 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 RR | 0.12 | 0.40 | 0.69 | 0.97 | 1.26 | 1.54 | 1.83 | 2.04 | 0.5713 | 0.4249 |
| Sonop | 0.62* | 1.02 | 1.42 | 1.82 | 2.22 | 2.61 | 3.01 | 2.41 | 0.7978 | 0.1313 |
| Wenner** | 0.00 | 0.26 | 0.87 | 1.47 | 2.08 | 2.68 | 3.28 | 2.52 | 1.2081 | 0.4061 |
| LS 444 | 0.37 | 0.94 | 1.50 | 2.07 | 2.63* | 3.20* | 3.76* | 2.55 | 1.1305 | 0.0874 |
| Prima 2000** | 0.36 | 0.86 | 1.36 | 1.85 | 2.35 | 2.85 | 3.35 | 2.53 | 0.9949 | 0.1708 |
| LS 555 | 0.06 | 0.63 | 1.20 | 1.77 | 2.34 | 2.91 | 3.48 | 2.44 | 1.1401 | 0.1678 |
| PAN 520 RR | 0.40 | 0.93 | 1.46 | 1.98 | 2.51 | 3.04 | 3.56 | 2.24 | 1.0524 | 0.0251 |
| PAN 522 RR | 0.17 | 0.63 | 1.09 | 1.56 | 2.02 | 2.48 | 2.95 | 2.27 | 0.9266 | 0.1920 |
| PAN 535 RR | 0.42 | 0.94 | 1.45 | 1.97 | 2.48 | 3.00 | 3.51 | 2.43 | 1.0286 | 0.0813 |
| CRN 5550 | 0.79* | 1.31* | 1.82* | 2.33* | 2.84* | 3.35* | 3.86* | 2.75 | 1.0223 | 0.0663 |
| A 5409 RG | 0.00 | 0.54 | 1.09 | 1.65 | 2.21 | 2.77 | 3.33 | 2.43 | 1.1162 | 0.2254 |
| Highveld Top | 0.56* | 1.02 | 1.48 | 1.94 | 2.40 | 2.86 | 3.32 | 2.59 | 0.9187 | 0.1566 |
| Knap | 0.50 | 1.08* | 1.65* | 2.23* | 2.80* | 3.37* | 3.95* | 2.72 | 1.1479 | 0.0944 |
| LS 580 | 0.38 | 0.94 | 1.50 | 2.06 | 2.62* | 3.19* | 3.75* | 2.46 | 1.1215 | 0.0610 |
| LS 666 | 0.89* | 1.35* | 1.82* | 2.29* | 2.75* | 3.22* | 3.69* | 2.72 | 0.9329 | 0.0706 |
| LS 677*** | 0.74* | 1.21* | 1.68* | 2.15* | 2.63* | 3.10 | 3.57 | 2.67 | 0.9410 | 0.1006 |
| LS 678 | 0.88* | 1.39* | 1.90* | 2.41* | 2.92* | 3.43* | 3.94* | 2.70 | 1.0189 | 0.0330 |
| PAN 660 | 0.50 | 0.95 | 1.40 | 1.85 | 2.30 | 2.74 | 3.19 | 2.50 | 0.8969 | 0.1586 |
| PAN 626 | 0.35 | 0.95 | 1.55 | 2.15* | 2.75* | 3.35* | 3.94* | 2.72 | 1.1969 | 0.1226 |
| SNK 500 | 0.48 | 1.11* | 1.73* | 2.36* | 2.99* | 3.62* | 4.25* | 2.70 | 1.2563 | 0.0447 |
| AG 5601 | 0.82* | 1.29* | 1.76* | 2.23* | 2.70* | 3.17* | 3.64 | 2.49 | 0.9396 | 0.0266 |
| Marula | 0.60* | 1.13* | 1.65* | 2.18* | 2.70* | 3.23* | 3.75* | 2.67 | 1.0483 | 0.0916 |
| Dumela | 0.77* | 1.19* | 1.60* | 2.01 | 2.43 | 2.84 | 3.26 | 2.44 | 0.8284 | 0.0681 |
| Maruti | 0.51 | 0.94 | 1.36 | 1.79 | 2.21 | 2.63 | 3.06 | 2.45 | 0.8479 | 0.1661 |
| PAN 737 RR | 0.54 | 1.09* | 1.65* | 2.20* | 2.76* | 3.31* | 3.87* | 2.83 | 1.1092 | 0.1491 |
| AG 6101 | 0.00 | 0.43 | 1.02 | 1.62 | 2.21 | 2.81 | 3.40 | 2.35 | 1.1890 | 0.2011 |
| Egret**** | 0.31 | 0.73 | 1.15 | 1.57 | 1.99 | 2.41 | 2.84 | 2.14 | 0.8424 | 0.1209 |
| Stork | 0.07 | 0.41 | 0.75 | 1.09 | 1.43 | 1.77 | 2.11 | 2.15 | 0.6777 | 0.4161 |
| PAN 809 | 0.44 | 0.94 | 1.45 | 1.95 | 2.46 | 2.96 | 3.47 | 2.50 | 1.0092 | 0.1113 |
| PAN 538 RR | 0.02 | 0.56 | 1.11 | 1.65 | 2.20 | 2.74 | 3.28 | 2.40 | 1.0885 | 0.2102 |

*** 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, 2002/03, 2003/04, 2004/05**
**Table 7 Yield reliability at different yield targets for the moderate production areas, 2002/03, 2003/04, 2004/05**

| 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 | | | |
| Sonop | 0.00 | 0.30 | 0.79 | 1.29 | 1.78 | 2.27 | 2.76 | 2.37 | 0.9851 | 0.8108 |
| Wenner** | 0.11 | 0.60 | 1.09 | 1.58 | 2.07 | 2.57 | 3.06 | 2.40 | 0.9842 | 0.4962 |
| Prima 2000** | 0.18 | 0.61 | 1.05 | 1.49 | 1.92 | 2.36 | 2.79 | 2.31 | 0.8722 | 0.4878 |
| LS 555 | 0.17 | 0.62 | 1.07 | 1.52 | 1.96 | 2.41 | 2.86 | 2.48 | 0.8973 | 0.6528 |
| CRN 5550 | 0.38* | 0.82* | 1.27* | 1.72* | 2.17 | 2.61 | 3.06 | 2.48 | 0.8943 | 0.4276 |
| A 5409 RG | 0.00 | 0.55 | 1.12 | 1.69 | 2.26* | 2.83* | 3.40* | 2.47 | 1.1415 | 0.4724 |
| Highveld Top | 0.03 | 0.52 | 1.02 | 1.51 | 2.00 | 2.49 | 2.98 | 2.26 | 0.9845 | 0.4261 |
| Knap | 0.12 | 0.73* | 1.33* | 1.94* | 2.54* | 3.14* | 3.75* | 2.43 | 1.2088 | 0.2312 |
| LS 666 | 0.09 | 0.69* | 1.28* | 1.87* | 2.46* | 3.05* | 3.64* | 2.43 | 1.1830 | 0.2807 |
| LS 677*** | 0.18 | 0.73* | 1.29* | 1.84* | 2.40* | 2.95* | 3.51* | 2.38 | 1.1110 | 0.2534 |
| PAN 660 | 0.10 | 0.69* | 1.28* | 1.87* | 2.45* | 3.04* | 3.63* | 2.42 | 1.1784 | 0.2759 |
| SNK 500 | 0.00 | 0.55 | 1.13 | 1.70 | 2.27* | 2.85* | 3.42* | 2.32 | 1.1486 | 0.3230 |
| AG 5601 | 0.10 | 0.65 | 1.20* | 1.75* | 2.29* | 2.84* | 3.39* | 2.30 | 1.0995 | 0.2681 |
| Marula | 0.35* | 0.83* | 1.32* | 1.81* | 2.30* | 2.78* | 3.27 | 2.45 | 0.9757 | 0.3253 |
| Dumela | 0.00 | 0.40 | 0.97 | 1.53 | 2.09 | 2.66 | 3.22 | 2.41 | 1.1287 | 0.5785 |
| AG 6101 | 0.14 | 0.59 | 1.04 | 1.48 | 1.93 | 2.38 | 2.82 | 2.31 | 0.8935 | 0.4931 |
| Egret**** | 0.00 | 0.46 | 0.93 | 1.40 | 1.87 | 2.33 | 2.80 | 2.42 | 0.9337 | 0.7277 |
| Stork | 0.10 | 0.49 | 0.88 | 1.27 | 1.65 | 2.04 | 2.43 | 2.27 | 0.7762 | 0.6797 |
| PAN 809 | 0.33* | 0.63 | 0.94 | 1.24 | 1.54 | 1.84 | 2.14 | 2.25 | 0.6038 | 0.6674 |

*** 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, 2003/04, 2004/05**
**Table 8 Yield reliability at different yield targets for the moderate production areas, 2003/04, 2004/05**

| 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 RR | 0.00 | 0.42 | 0.96 | 1.51 | 2.06 | 2.61 | 3.16 | 2.36 | 1.0985 | 0.3390 |
| Sonop | 0.03 | 0.61 | 1.18 | 1.75 | 2.33 | 2.90 | 3.48 | 2.45 | 1.1481 | 0.2198 |
| Wenner** | 0.29 | 0.83* | 1.37* | 1.91* | 2.45* | 2.99* | 3.53 | 2.57 | 1.0778 | 0.1960 |
| LS 444 | 0.15 | 0.77 | 1.39* | 2.01* | 2.63* | 3.25* | 3.87* | 2.68 | 1.2397 | 0.2013 |
| Prima 2000** | 0.11 | 0.68 | 1.25 | 1.81 | 2.38 | 2.95 | 3.52 | 2.62 | 1.1351 | 0.3051 |
| LS 555 | 0.00 | 0.52 | 1.12 | 1.72 | 2.32 | 2.92 | 3.52 | 2.52 | 1.1987 | 0.2966 |
| PAN 520 RR | 0.37* | 0.90* | 1.44* | 1.97* | 2.50* | 3.04* | 3.57* | 2.62 | 1.0661 | 0.1910 |
| PAN 522 RR | 0.13 | 0.73 | 1.34* | 1.94* | 2.54* | 3.15* | 3.75* | 2.62 | 1.2069 | 0.2071 |
| CRN 5550 | 0.00 | 0.50 | 1.05 | 1.61 | 2.17 | 2.73 | 3.28 | 2.44 | 1.1151 | 0.3185 |
| A 5409 RG | 0.41* | 0.91* | 1.41* | 1.90* | 2.40 | 2.90 | 3.39 | 2.61 | 0.9941 | 0.2329 |
| Highveld Top | 0.15 | 0.75 | 1.35* | 1.95* | 2.55* | 3.15* | 3.75* | 2.61 | 1.2007 | 0.1929 |
| Knap | 0.32 | 0.89* | 1.46* | 2.03* | 2.61* | 3.18* | 3.75* | 2.65 | 1.1411 | 0.1688 |
| LS 580 | 0.34* | 0.92* | 1.50* | 2.08* | 2.66* | 3.24* | 3.82* | 2.76 | 1.1610 | 0.2090 |
| LS 666 | 0.19 | 0.78 | 1.37* | 1.97* | 2.56* | 3.15* | 3.74* | 2.61 | 1.1840 | 0.1844 |
| LS 677*** | 0.09 | 0.70 | 1.30 | 1.91* | 2.52* | 3.12* | 3.73* | 2.64 | 1.2140 | 0.2408 |
| LS 678 | 0.58* | 1.09* | 1.60* | 2.11* | 2.62* | 3.12* | 3.63* | 2.59 | 1.0172 | 0.0999 |
| PAN 660 | 0.20 | 0.67 | 1.13 | 1.59 | 2.05 | 2.52 | 2.98 | 2.46 | 0.9255 | 0.3601 |
| PAN 626 | 0.23 | 0.72 | 1.21 | 1.69 | 2.18 | 2.66 | 3.15 | 2.51 | 0.9723 | 0.3155 |
| SNK 500 | 0.14 | 0.68 | 1.23 | 1.77 | 2.31 | 2.85 | 3.40 | 2.58 | 1.0850 | 0.3099 |
| AG 5601 | 0.15 | 0.69 | 1.22 | 1.76 | 2.30 | 2.84 | 3.38 | 2.60 | 1.0791 | 0.3306 |
| Marula | 0.19 | 0.62 | 1.05 | 1.48 | 1.91 | 2.33 | 2.76 | 2.44 | 0.8565 | 0.4532 |
| Dumela | 0.50* | 0.78 | 1.05 | 1.33 | 1.61 | 1.89 | 2.17 | 2.45 | 0.5560 | 0.6422 |
| AG 6101 | 0.41* | 0.76 | 1.10 | 1.45 | 1.79 | 2.14 | 2.49 | 2.50 | 0.6924 | 0.5563 |
| Egret**** | 0.30 | 0.64 | 0.98 | 1.32 | 1.65 | 1.99 | 2.33 | 2.50 | 0.6770 | 0.7159 |
| Stork | 0.47* | 0.75 | 1.02 | 1.30 | 1.57 | 1.85 | 2.12 | 2.50 | 0.5496 | 0.7462 |
| PAN 809 | 0.55* | 0.75 | 0.95 | 1.16 | 1.36 | 1.57 | 1.77 | 2.42 | 0.4087 | 0.8249 |

*** 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 Oessekerheid by die verskillende opbrengsmikpunte vir die matige produksiegebiede, 2004/05**
**Table 9 Yield reliability at different yield targets for the moderate production areas, 2004/05**

| 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 RR | 0.33 | 0.71 | 1.09 | 1.48 | 1.86 | 2.24 | 2.62 | 2.40 | 0.7658 | 0.3574 |
| Sonop | 0.39 | 0.92 | 1.45 | 1.99 | 2.52 | 3.05 | 3.58 | 2.60 | 1.0646 | 0.1332 |
| Wenner** | 0.64* | 1.03 | 1.42 | 1.81 | 2.20 | 2.59 | 2.98 | 2.47 | 0.7786 | 0.1696 |
| LS 444 | 0.44 | 0.94 | 1.43 | 1.92 | 2.42 | 2.91 | 3.41 | 2.59 | 0.9889 | 0.1635 |
| Prima 2000** | 0.76* | 1.22* | 1.69* | 2.15* | 2.62 | 3.08 | 3.54 | 2.61 | 0.9279 | 0.0708 |
| LS 555 | 0.56 | 0.97 | 1.38 | 1.80 | 2.21 | 2.62 | 3.03 | 2.38 | 0.8208 | 0.1289 |
| PAN 520 RR | 0.62 | 1.10 | 1.57 | 2.05 | 2.53 | 3.01 | 3.49 | 2.54 | 0.9573 | 0.0783 |
| PAN 522 RR | 0.00 | 0.50 | 1.01 | 1.52 | 2.04 | 2.55 | 3.06 | 2.33 | 1.0263 | 0.2504 |
| PAN 535 RR | 0.20 | 0.78 | 1.37 | 1.95 | 2.53 | 3.12 | 3.70* | 2.60 | 1.1673 | 0.1474 |
| CRN 5550 | 0.85* | 1.34* | 1.82* | 2.30* | 2.79* | 3.27* | 3.75* | 2.73 | 0.9653 | 0.0567 |
| A 5409 RG | 0.55 | 1.09 | 1.63* | 2.16* | 2.70* | 3.24* | 3.78* | 2.64 | 1.0772 | 0.0699 |
| Highveld Top | 0.62* | 1.15* | 1.68* | 2.21* | 2.74* | 3.27* | 3.80* | 2.63 | 1.0596 | 0.0500 |
| Knap | 0.31 | 0.80 | 1.28 | 1.77 | 2.26 | 2.74 | 3.23 | 2.44 | 0.9738 | 0.1651 |
| LS 580 | 0.55 | 1.06 | 1.57 | 2.08 | 2.59 | 3.10 | 3.60 | 2.55 | 1.0176 | 0.0718 |
| LS 666 | 0.66* | 1.20* | 1.73* | 2.27* | 2.80* | 3.34* | 3.87* | 2.75 | 1.0714 | 0.0741 |
| LS 677*** | 0.93* | 1.39* | 1.85* | 2.31* | 2.77* | 3.23* | 3.69* | 2.77 | 0.9194 | 0.0700 |
| LS 678 | 0.94* | 1.45* | 1.95* | 2.46* | 2.96* | 3.47* | 3.97* | 2.90 | 1.0093 | 0.0619 |
| PAN 660 | 0.45 | 1.05 | 1.64* | 2.24* | 2.84* | 3.44* | 4.04* | 2.85 | 1.1963 | 0.1229 |
| PAN 626 | 0.71* | 1.21* | 1.71* | 2.21* | 2.71* | 3.22* | 3.72* | 2.70 | 1.0033 | 0.0772 |
| SNK 500 | 0.26 | 0.78 | 1.29 | 1.81 | 2.33 | 2.85 | 3.36 | 2.64 | 1.0351 | 0.2643 |
| AG 5601 | 0.61 | 1.09 | 1.58 | 2.06 | 2.55 | 3.04 | 3.52 | 2.53 | 0.9720 | 0.0701 |
| Marula | 0.59 | 1.14* | 1.70* | 2.26* | 2.82* | 3.37* | 3.93* | 2.73 | 1.1149 | 0.0680 |
| Dumela | 0.38 | 0.92 | 1.46 | 2.00 | 2.54 | 3.08 | 3.62 | 2.71 | 1.0801 | 0.1845 |
| Maruti | 0.25 | 0.80 | 1.35 | 1.90 | 2.45 | 3.00 | 3.55 | 2.54 | 1.0978 | 0.1426 |
| PAN 737 RR | 0.44 | 0.98 | 1.51 | 2.05 | 2.58 | 3.12 | 3.65 | 2.62 | 1.0703 | 0.1132 |
| AG 6101 | 0.66* | 1.08 | 1.50 | 1.92 | 2.35 | 2.77 | 3.19 | 2.39 | 0.8445 | 0.0732 |
| Egret**** | 0.48 | 0.92 | 1.37 | 1.81 | 2.25 | 2.69 | 3.13 | 2.40 | 0.8841 | 0.1310 |
| Stork | 0.47 | 0.92 | 1.38 | 1.84 | 2.30 | 2.75 | 3.21 | 2.50 | 0.9140 | 0.1652 |
| PAN 809 | 0.32 | 0.89 | 1.45 | 2.02 | 2.59 | 3.16* | 3.73* | 2.61 | 1.1359 | 0.1189 |
| PAN 538 RR | 0.09 | 0.62 | 1.15 | 1.68 | 2.21 | 2.74 | 3.27 | 2.37 | 1.0607 | 0.1723 |

*** 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 Oessekerheid by die verskillende opbrengsmikpunte vir die warmer produksiegebiede, 2002/03, 2003/04, 2004/05**
**Table 10 Yield reliability at different yield targets for the warmer production areas, 2002/03, 2003/04, 2004/05**

| 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 | | | |
| Sonop | 0.72* | 0.86* | 0.99 | 1.13 | 1.27 | 1.40 | 1.54 | 2.48 | 0.2722 | 0.8284 |
| Wenner** | 0.40* | 0.74* | 1.08 | 1.42 | 1.76 | 2.09 | 2.43 | 2.74 | 0.6762 | 0.6371 |
| Prima 2000** | 0.07 | 0.52 | 0.97 | 1.42 | 1.87 | 2.32 | 2.77 | 2.86 | 0.9004 | 0.6752 |
| LS 555 | 0.17 | 0.68 | 1.19* | 1.70 | 2.21 | 2.72 | 3.23 | 2.87 | 1.0199 | 0.3651 |
| CRN 5550 | 0.29* | 0.65 | 1.00 | 1.36 | 1.72 | 2.07 | 2.43 | 2.68 | 0.7134 | 0.6165 |
| A 5409 RG | 0.03 | 0.61 | 1.18* | 1.76* | 2.33* | 2.91* | 3.48* | 3.02 | 1.1491 | 0.4062 |
| Highveld Top | 0.60* | 1.03* | 1.46* | 1.89* | 2.32* | 2.75 | 3.18 | 3.00 | 0.8586 | 0.3597 |
| Knap | 0.04 | 0.60 | 1.16 | 1.72* | 2.28* | 2.84* | 3.40* | 2.86 | 1.1210 | 0.3128 |
| LS 666 | 0.00 | 0.40 | 1.06 | 1.71* | 2.36* | 3.02* | 3.67* | 2.88 | 1.3078 | 0.2874 |
| LS 677*** | 0.00 | 0.54 | 1.11 | 1.68 | 2.24 | 2.81* | 3.38* | 2.82 | 1.1338 | 0.3116 |
| PAN 660 | 0.03 | 0.57 | 1.10 | 1.64 | 2.17 | 2.71 | 3.24 | 2.71 | 1.0715 | 0.2682 |
| SNK 500 | 0.00 | 0.52 | 1.10 | 1.67 | 2.24 | 2.81* | 3.39* | 2.84 | 1.1454 | 0.3243 |
| AG 5601 | 0.00 | 0.56 | 1.12 | 1.69 | 2.25 | 2.81 | 3.37* | 2.83 | 1.1224 | 0.3149 |
| Marula | 0.00 | 0.47 | 1.01 | 1.55 | 2.09 | 2.63 | 3.17 | 2.87 | 1.0780 | 0.4835 |
| Dumela | 0.45* | 0.91* | 1.37* | 1.83* | 2.29* | 2.75 | 3.21 | 2.85 | 0.9213 | 0.2675 |
| AG 6101 | 0.13 | 0.66 | 1.20* | 1.74* | 2.27* | 2.81 | 3.35 | 2.90 | 1.0734 | 0.3381 |
| Egret**** | 0.00 | 0.33 | 0.92 | 1.51 | 2.10 | 2.69 | 3.28 | 2.89 | 1.1796 | 0.5169 |
| Stork | 0.00 | 0.34 | 1.00 | 1.66 | 2.32* | 2.98* | 3.64* | 2.97 | 1.3200 | 0.3996 |
| PAN 809 | 0.11 | 0.58 | 1.05 | 1.52 | 1.98 | 2.45 | 2.92 | 2.74 | 0.9359 | 0.4357 |

*** 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 Oessekerheid by die verskillende opbrengsmikpunte vir die warmer produksiegebiede, 2003/04, 2004/05**
**Table 11 Yield reliability at different yield targets for the warmer production areas, 2003/04, 2004/05**

| 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 RR | 0.08 | 0.51 | 0.94 | 1.37 | 1.79 | 2.22 | 2.65 | 2.16 | 0.8541 | 0.2293 |
| Sonop | 0.06 | 0.61 | 1.16 | 1.72 | 2.27 | 2.82 | 3.37 | 2.54 | 1.1023 | 0.2268 |
| Wenner** | 0.23 | 0.68 | 1.14 | 1.59 | 2.05 | 2.50 | 2.96 | 2.36 | 0.9089 | 0.2036 |
| LS 444 | 0.00 | 0.57 | 1.15 | 1.73 | 2.31 | 2.89 | 3.47 | 2.56 | 1.1606 | 0.2303 |
| Prima 2000** | 0.51* | 0.66 | 0.81 | 0.95 | 1.10 | 1.24 | 1.39 | 2.05 | 0.2913 | 0.5500 |
| LS 555 | 0.22 | 0.70 | 1.18 | 1.66 | 2.14 | 2.62 | 3.10 | 2.54 | 0.9607 | 0.2791 |
| PAN 520 RR | 0.25 | 0.81 | 1.36 | 1.91 | 2.47 | 3.02 | 3.57 | 2.54 | 1.1059 | 0.1124 |
| PAN 522 RR | 0.26 | 0.82 | 1.37 | 1.92 | 2.48 | 3.03 | 3.59 | 2.78 | 1.1077 | 0.2465 |
| CRN 5550 | 0.41 | 0.90 | 1.38 | 1.87 | 2.36 | 2.84 | 3.33 | 2.45 | 0.9715 | 0.1008 |
| A 5409 RG | 0.59* | 1.15* | 1.70* | 2.26* | 2.81* | 3.36* | 3.92* | 2.82 | 1.1086 | 0.0870 |
| Highveld Top | 0.95* | 1.38* | 1.81* | 2.24* | 2.67* | 3.10* | 3.52 | 2.72 | 0.8574 | 0.0674 |
| Knap | 0.72* | 1.24* | 1.76* | 2.28* | 2.80* | 3.33* | 3.85* | 2.85 | 1.0424 | 0.0907 |
| LS 580 | 0.16 | 0.81 | 1.46 | 2.11* | 2.76* | 3.41* | 4.06* | 2.92 | 1.3011 | 0.2003 |
| LS 666 | 0.57* | 1.11* | 1.64* | 2.17* | 2.71* | 3.24* | 3.78* | 2.86 | 1.0680 | 0.1464 |
| LS 677*** | 0.49* | 0.97* | 1.46 | 1.95 | 2.44 | 2.93 | 3.42 | 2.69 | 0.9778 | 0.1851 |
| LS 678 | 0.48* | 0.97* | 1.46 | 1.96 | 2.45 | 2.94 | 3.43 | 2.62 | 0.9833 | 0.1422 |
| PAN 660 | 0.41 | 0.91 | 1.42 | 1.92 | 2.43 | 2.93 | 3.43 | 2.62 | 1.0083 | 0.1596 |
| PAN 626 | 0.40 | 0.96 | 1.52* | 2.08* | 2.64* | 3.21* | 3.77* | 2.68 | 1.1237 | 0.0992 |
| SNK 500 | 0.26 | 0.86 | 1.47* | 2.08* | 2.68* | 3.29* | 3.90* | 2.94 | 1.2124 | 0.2420 |
| AG 5601 | 0.09 | 0.78 | 1.47* | 2.17* | 2.86* | 3.55* | 4.25* | 2.84 | 1.3864 | 0.1205 |
| Marula | 0.15 | 0.62 | 1.09 | 1.55 | 2.02 | 2.49 | 2.96 | 2.51 | 0.9362 | 0.3420 |
| Dumela | 0.63* | 1.13* | 1.63* | 2.13* | 2.64* | 3.14* | 3.64 | 2.82 | 1.0038 | 0.1496 |
| AG 6101 | 0.36 | 0.78 | 1.20 | 1.61 | 2.03 | 2.45 | 2.87 | 2.55 | 0.8350 | 0.3392 |
| Egret**** | 0.34 | 0.83 | 1.32 | 1.81 | 2.31 | 2.80 | 3.29 | 2.83 | 0.9833 | 0.3861 |
| Stork | 0.26 | 0.65 | 1.05 | 1.44 | 1.84 | 2.23 | 2.62 | 2.71 | 0.7875 | 0.6719 |
| PAN 809 | 0.03 | 0.49 | 0.95 | 1.41 | 1.87 | 2.33 | 2.79 | 2.47 | 0.9219 | 0.4294 |

*** 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 Oessekerheid by die verskillende opbrengsmikpunte vir die warmer produksiegebiede, 2004/05**
**Table 12 Yield reliability at different yield targets for the warmer production areas, 2004/05**

| 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 RR | 0.02 | 0.46 | 0.91 | 1.35 | 1.79 | 2.23 | 2.68 | 1.94 | 0.8854 | 0.1597 |
| Sonop | 0.52 | 1.05 | 1.58* | 2.11* | 2.65* | 3.18 | 3.71 | 2.52 | 1.0634 | 0.0863 |
| Wenner** | 0.36 | 0.66 | 0.97 | 1.27 | 1.57 | 1.88 | 2.18 | 1.89 | 0.6097 | 0.1661 |
| LS 444 | 0.78* | 1.14* | 1.50 | 1.87 | 2.23 | 2.60 | 2.96 | 2.39 | 0.7279 | 0.1243 |
| Prima 2000** | 0.17 | 0.58 | 1.00 | 1.41 | 1.82 | 2.23 | 2.65 | 2.25 | 0.8248 | 0.3099 |
| LS 555 | 0.41 | 0.68 | 0.96 | 1.24 | 1.51 | 1.79 | 2.07 | 1.96 | 0.5533 | 0.2214 |
| PAN 520 RR | 0.15 | 0.65 | 1.14 | 1.64 | 2.14 | 2.63 | 3.13 | 2.37 | 0.9931 | 0.2410 |
| PAN 522 RR | 0.00 | 0.00 | 0.69 | 1.42 | 2.15 | 2.88 | 3.60 | 2.30 | 1.4541 | 0.3593 |
| PAN 535 RR | 0.83* | 1.00 | 1.18 | 1.35 | 1.52 | 1.69 | 1.86 | 2.22 | 0.3423 | 0.3126 |
| CRN 5550 | 0.15 | 0.79 | 1.43 | 2.07 | 2.72* | 3.36* | 4.00* | 2.46 | 1.2828 | 0.0828 |
| A 5409 RG | 0.46 | 0.93 | 1.41 | 1.89 | 2.37 | 2.84 | 3.32 | 2.26 | 0.9556 | 0.0706 |
| Highveld Top | 1.25* | 1.61* | 1.96* | 2.32* | 2.68* | 3.03 | 3.39 | 2.63 | 0.7139 | 0.0476 |
| Knap | 0.50 | 0.94 | 1.38 | 1.82 | 2.27 | 2.71 | 3.15 | 2.23 | 0.8848 | 0.0827 |
| LS 580 | 0.18 | 0.77 | 1.35 | 1.94 | 2.53 | 3.12 | 3.71 | 2.60 | 1.1769 | 0.2079 |
| LS 666 | 1.31* | 1.55* | 1.79* | 2.02 | 2.26 | 2.49 | 2.73 | 2.68 | 0.4704 | 0.1837 |
| LS 677*** | 0.59* | 1.19* | 1.79* | 2.39* | 2.99* | 3.58* | 4.18* | 2.76 | 1.1962 | 0.0751 |
| LS 678 | 0.47 | 1.11* | 1.75* | 2.40* | 3.04* | 3.68* | 4.32* | 2.68 | 1.2834 | 0.0496 |
| PAN 660 | 0.55 | 1.06* | 1.57* | 2.07 | 2.58 | 3.09 | 3.60 | 2.35 | 1.0143 | 0.0437 |
| PAN 626 | 0.37 | 0.91 | 1.46 | 2.01 | 2.55 | 3.10 | 3.65 | 2.54 | 1.0937 | 0.1397 |
| SNK 500 | 0.44 | 1.01 | 1.59* | 2.16* | 2.74* | 3.31* | 3.89* | 2.69 | 1.1511 | 0.1378 |
| AG 5601 | 0.55 | 0.98 | 1.41 | 1.83 | 2.26 | 2.69 | 3.11 | 2.30 | 0.8536 | 0.1032 |
| Marula | 0.38 | 0.98 | 1.58* | 2.19* | 2.79* | 3.39* | 3.99* | 2.64 | 1.2061 | 0.1060 |
| Dumela | 0.25 | 0.91 | 1.57* | 2.23* | 2.89* | 3.54* | 4.20* | 2.79 | 1.3176 | 0.1602 |
| Maruti | 0.14 | 0.69 | 1.23 | 1.77 | 2.32 | 2.86 | 3.40 | 2.49 | 1.0862 | 0.2381 |
| PAN 737 RR | 0.47 | 0.95 | 1.42 | 1.89 | 2.36 | 2.83 | 3.31 | 2.50 | 0.9447 | 0.1714 |
| AG 6101 | 0.52 | 1.08* | 1.65* | 2.22* | 2.79* | 3.35* | 3.92* | 2.43 | 1.1343 | 0.0308 |
| Egret**** | 0.42 | 1.01 | 1.61* | 2.21* | 2.81* | 3.40* | 4.00* | 2.61 | 1.1939 | 0.0852 |
| Stork | 0.51 | 1.15* | 1.79* | 2.42* | 3.06* | 3.69* | 4.33* | 2.76 | 1.2731 | 0.0674 |
| PAN 809 | 0.00 | 0.59 | 1.20 | 1.82 | 2.44 | 3.05 | 3.67 | 2.66 | 1.2320 | 0.3219 |
| PAN 538 RR | 0.18 | 0.72 | 1.26 | 1.81 | 2.35 | 2.89 | 3.43 | 2.35 | 1.0815 | 0.1434 |

*** 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**