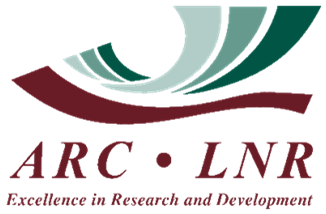
**THE NATIONAL OATS CULTIVAR EVALUATION PROGRAMME REPORT**

**2016**

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1. **WESTERN CAPE**

## **1. 1 Details of the winter rainfall field program**

Twelve oats trials were planted in the Swartland and Rûens in 2016. The Swartland trials were planted at Moorreesburg, Malmesbury, Porterville, Koringberg, Hopefield and Velddrift. The Rûens trials were planted at Riviersonderend, Caledon, Klipdale, Protem, Bredasdorp and Heidelberg. The list of co-operators, planting and harvest dates in the 2016 season is shown in the tables below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Swartland** | | | | |
| **Trial Site** | **Collaborator** | **Farm** | **Telephone number** | **GPS Coordinates** |
| Moorreesburg | Dept. Agriculture | Langgewens | 0224332370 | S 33° 09`24.8", E018° 42`45.3" |
| Porterville | Knoetzen, H. | Latboskloof | 0836562241 | S 33° 03`44.9", E018°57`21.3" |
| Koringberg | Warnich. H. | Langkloof | 0224238183 | S 33° 02`15.7", E018° 35`39.2" |
| Malmesbury | Truter, P. | Papkuilsfontein | 0836558322 | S 33° 24`16.5", E018° 47`38.3" |
| Hopefield | Slabber, O. | Enkelvlei | 0836020773 | S 33° 09`49.8”, E018° 26`55.9" |
| Velddrif | Visser, G. | Volstruiskuil | 0832308568 | S 32° 46`41.5”, E018° 16`37.9" |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rûens** | | | | |
| **Trial Site** | **Collaborator** | **Farm** | **Telephone number** | **GPS Coordinates** |
| Riviersonderend | Dept. Agriculture | Tygerhoek | 0282611392 | S 34° 09`20.4", E019°54`42.5" |
| Caledon | CRK | Roodebloem | 0282143813 | S 34° 14`20.0", E019° 31`47.8" |
| Klipdale | Eksteen, F. | Alpha | 0825727796 | S 34° 17`55.5", E019° 49`45.7" |
| Protem | Cilliers, J. | Kleinfontein | 0829483284 | S 34° 08`51.3", E020° 15`42.1" |
| Bredasdorp | Wessels, B. | Karsrivier | 0829278320 | S 34° 28`11.9", E020° 07`43.7" |
| Heidelberg | Van Papendorp, D. | Voorstekop | 0285123761 | S 34° 08`26.6", E020° 44`40.0" |

All the trials were planted with a DBS conservation planter. Seeding rate of 250 seeds/m² was used, based on the thousand kernel mass. Trial plots size was 7 m × 3 m with 7 rows. Plots were reduced to 5 m by spraying out a path of 2 m between the plots. Only 5 of the 7 rows were harvested. The entries included in the 2015 program are shown in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Entries of the 2015 oats program in the Western Cape** | | | |
| **Origin** | **Entry** | **Cultivar** | **Released** |
| Small Grain Institute | Kompasberg | Pure Line | 2001 |
| Small Grain Institute | Towerberg | Pure Line | 2011 |
| Small Grain Institute | Simonsberg | Pure Line | 2011 |
| Small Grain Institute | Piketberg | Pure Line | \_\_\_ |
| Small Grain Institute | H 013/09 | Pure Line | \_\_\_ |
| Small Grain Institute | H 013/10 | Pure Line | \_\_\_ |
| Sensako | SSH 491 | Pure Line | 2001 |
| Sensako | SSH 405 | Pure Line | 2001 |
| Sensako | SSH 421 | Pure Line | 2001 |
| Agricol | Maida | Pure Line | Unknown |
| Agricol | Pallinup | Pure Line | Unknown |
| Agricol | Matika | Pure Line | Unknown |
| Agricol | Dunnard | Pure Line | Unknown |
| Agricol | Magnifico | Pure Line | Unknown |

Nitrogen was applied at 40 kg N/ha at planting. Phosphorous and potassium were applied as per soil analysis report. Herbicide application was done at 40 days post planting. A Logran, 2.4 D Amine and MCPA herbicide mixture was applied. Duett and Prosaro were applied as fungicides at 80-100 days, depending on the specific trial site. The grain yield and hectolitre mass were determined in all trials. Nine of the twelve trials planted in 2016 were harvested, processed and analysed.

|  |  |  |
| --- | --- | --- |
| **Trials that were excluded from the 2016 results** | | |
| **Trial Site** | **CV (%)** | **Reason for exclusion** |
| Heidelberg | 21.80 | High CV |
| Kleinfontein | Not harvested | Not harvested: porcupine damage |
| Langgewens | Not Harvested | Not harvested: heavy weed infestation |
| Hopefield | Not Harvested | Not harvested: early drought conditions |
| Porteville | 27.91 | High CV |

**Planting and harvesting dates**

*Swartland*

|  |  |  |
| --- | --- | --- |
| **Locality** | **Planting date** | **Harvesting date** |
| Moorreesburg (Langgewens) | 17/05/2016 | Not harvested |
| Hopefield | 12/05/2016 | Not harvested |
| Porterville | 16/05/2016 | 31/10/2016 |
| Koringberg | 13/05/2016 | 31/10/2016 |
| Malmesbury | 17/05/2016 | 09/11/2016 |
| Velddrif | 11/05/2016 | 07/11/2016 |

*Rûens*

|  |  |  |
| --- | --- | --- |
| **Locality** | **Planting date** | **Harvesting date** |
| Riviersonderend | 06/05/2016 | 21/11/2016 |
| Caledon (Roodebloem) | 06/05/2016 | 15/11/2016 |
| Klipdale (Alpha) | 05/05/2016 | 14/11/2016 |
| Protem (Kleinfontein) | 03/05/2016 | Not harvested |
| Bredasdorp | 05/05/2016 | 02/11/2016 |
| Heidelberg | 04/05/2016 | 01/11/2016 |

## **1.2 Results**

### **1.2.1 Grain yield**

**Rûens**

The average yield for the the Rûens in 2016 was 3.41 t/ha. The locality which yielded the highest in the Rûens, was Tygerhoek (4.3 t/ha). H 13/07 (4.12 t/ha) was the cultivar which statistically performed the best over the localities in the Ruens.

**Swartland**

The average yield for the Swartland 2016 was 3.53 t/ha. The locality which yielded the highest in the Swartland, was Malmesbury ( 4.5 t/ha). Dunnad (4.44 t/ha) was the cultivar that statistically performed the best over all the localities in the Swartland

### **1.2.2 Hectolitre mass**

Hectolitre mass and grout: hull ratio is the most important quality requirements in oat production for human and animal consumption.

**Rûens**

The cultivars with the best hectolitre mass were SSH 491 (55.31 kg/hl), Matika (54.46 kg/hl) and Pallinup ( 52.77 kg/hl) The average hectolitre mass for the Rûens was 51.74 kg/hl, better than 2015 which had 49.13 kg/hl. Only 2 of the cultivars, SSH 491 and Matika, achieved the minimum requirement of 53 kg/hl.

**Swartland**

The cultivars with the best hectolitre mass were SSH 491 (56.44 kg/hl), Pallinup (55.96 kg/hl) and Matika (55.14 kg/hl). Nine of the twelve cultivars achieved the minimum requirement of 53 kg/hl.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average yield (ton/ha) of oats cultivars in the Rûens** | | | | | | | | | | | | | | | |
| **during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 3.89 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Goliath** |  |  | 2.40 | 13 |  |  |  |  |  |  |  |  |  |  |
| **H 013/07** | 4.12 | 1 | 3.61 | 6 | 2.90 | 2 |  |  |  |  | 3.25 | 4 | 3.25 | 3 |
| **H 013/09** | 3.13 | 10 | 3.81 | 4 | 2.67 | 5 |  |  |  |  | 3.24 | 5 | 3.24 | 4 |
| **H 013/10** |  |  | 3.06 | 10 | 2.63 | 6 |  |  |  |  |  |  |  |  |
| **Horsepower** |  |  | 4.21 | 2 |  |  |  |  |  |  |  |  |  |  |
| **Kompasberg** | 3.86 | 3 | 4.24 | 1 | 3.35 | 1 | 4.14 | 1 | 4.05 | 1 | 3.91 | 1 | 3.79 | 1 |
| **Majoris** |  |  | 2.98 | 11 | 1.74 | 10 |  |  |  |  |  |  |  |  |
| **Matika** | 3.30 | 9 | 3.17 | 9 |  |  |  |  |  |  |  |  | 3.17 | 5 |
| **Overberg** |  |  |  |  | 1.59 | 12 | 3.13 | 4 |  |  |  |  |  |  |
| **Pallinup** | 3.30 | 8 | 3.80 | 5 | 2.30 | 7 | 3.10 | 5 | 3.55 | 2 | 3.06 | 7 | 3.05 | 8 |
| **Piketberg** | 3.32 | 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 3.33 | 6 | 3.44 | 8 | 2.73 | 4 | 3.81 | 3 | 3.39 | 4 | 3.33 | 3 | 3.09 | 6 |
| **SSH 405** | 2.66 | 12 | 2.40 | 13 | 1.79 | 9 | 2.36 | 7 | 2.53 | 6 | 2.18 | 9 | 2.09 | 10 |
| **SSH 421** | 2.67 | 11 | 2.73 | 12 | 1.66 | 11 | 2.55 | 6 | 2.70 | 5 | 2.31 | 8 | 2.20 | 9 |
| **SSH 423** |  |  | 1.69 | 15 |  |  |  |  |  |  |  |  |  |  |
| **SSH 491** | 3.75 | 4 | 3.90 | 3 | 2.25 | 8 |  |  |  |  | 3.08 | 6 | 3.08 | 7 |
| **Towerberg** | 3.53 | 5 | 3.53 | 7 | 2.89 | 3 | 4.04 | 2 | 3.53 |  | 3.48 | 2 | 3.46 | 2 |
| **Mean** | **3.41** |  | **3.26** |  | **2.37** |  | **3.30** |  | **3.29** |  | **3.09** |  | **3.04** |  |
| **LSDt(0,05)** | **0.31** |  | **0.37** |  | **0.18** |  | **0.24** |  | **0.12** |  | **0.14** |  | **0.19** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rûens - AMMI Analysis** | | | | | | |
|  |  |  |  |  |  |  |
| **Anova of the yield of entries for the Rûens for 2016** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Source** | | **Df** | **SS** | **MS** | **F-Value** | **Pr> F** |
| Total | | 191 | 161.50 | 0.846 |  |  |
| Treatments | | 47 | 133.25 | 2.835 | 16.86 | <0,001 |
| Genotypes | | 11 | 36.56 | 3.324 | 19.77 | <0,001 |
| Environments | | 3 | 80.41 | 26.804 | 53.14 | <0,001 |
| Block | | 12 | 6.05 | 0.504 | 3.00 | <0,001 |
| Interactions | | 33 | 16.27 | 0.493 | 2.93 | <0,001 |
| IPCA | | 13 | 9.43 | 0.726 | 4.32 | <0,001 |
| IPCA | | 11 | 6.10 | 0.554 | 3.30 | <0,001 |
| Residuals | | 9 | 0.74 | 0.082 | 0.49 | 0.8816 |
| Error | | 132 | 22.20 | 0.168 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Genotype means and scores for yield (ton/ha)** | | | | | | |
|  |  |  |  |  |  |  |
| **Entry** | **Genotype** | **Yield** | **Rank** | **Score** |  |  |
| 1 | Dunnard | 3.89 | 2 | 0.06430 |  |  |
| 2 | H 13/07 | 4.12 | 1 | 0.29134 |  |  |
| 3 | H 13/09 | 3.13 | 10 | 0.14903 |  |  |
| 4 | Kompasberg | 3.86 | 3 | 0.11393 |  |  |
| 5 | Matika | 3.30 | 9 | 0.91263 |  |  |
| 6 | Pallinup | 3.30 | 8 | 0.06084 |  |  |
| 7 | Piketberg | 3.32 | 7 | -0.18376 |  |  |
| 8 | Simonsberg | 3.33 | 6 | 0.01967 |  |  |
| 9 | SSH 405 | 2.66 | 12 | -0.28281 |  |  |
| 10 | SSH 421 | 2.67 | 11 | -0.32605 |  |  |
| 11 | SSH 491 | 3.75 | 4 | -0.31184 |  |  |
| 12 | Towerberg | 3.53 | 5 | -0.50727 |  |  |
| **Mean** |  | **3.41** |  |  |  |  |
| **Coefficient of variation (%)** |  | **13.00** |  |  |  |  |
| **LSDt(0.05)** |  | **0.31** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Environment means and scores for yield (ton/ha)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Environment** | **Yield** | **Rank** | **Score** |  |  |
| 1 | Alpha | 3.78 | 2 | -0.63744 |  |  |
| 2 | Bredasdorp | 2.69 | 4 | 0.56041 |  |  |
| 3 | Roodebloem | 2.89 | 3 | -0.59884 |  |  |
| 4 | Tygerhoek | 4.30 | 1 | 0.67587 |  |  |
| **Mean** |  | **3.41** |  |  |  |  |
| **Coefficient of variation (%)** |  | **13.00** |  |  |  |  |
| **LSDt(0.05)** |  | **0.18** |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average hectolitre mass (kg/hl) of oats cultivars in the Rûens** | | | | | | | | | | | | | | | |
| **during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 50.87 | 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Goliath** |  |  | 41.86 | 15 |  |  |  |  |  |  |  |  |  |  |
| **H 013/07** | 49.69 | 12 | 49.07 | 10 | 48.86 | 11 |  |  |  |  | 48.97 | 7 | 48.97 | 9 |
| **H 013/09** | 51.68 | 5 | 51.65 | 3 | 51.45 | 2 |  |  |  |  | 51.55 | 2 | 51.55 | 3 |
| **H 013/10** |  |  | 50.40 | 7 | 51.10 | 4 |  |  |  |  |  |  |  |  |
| **Horsepower** |  |  | 48.45 | 11 |  |  |  |  |  |  |  |  |  |  |
| **Kompasberg** | 51.26 | 6 | 47.56 | 12 | 50.73 | 5 | 45.39 | 6 | 49.41 | 6 | 47.89 | 9 | 49.15 | 8 |
| **Majoris** |  |  | 46.20 | 13 | 48.24 | 12 |  |  |  |  |  |  |  |  |
| **Matika** | 54.46 | 2 | 51.65 | 3 |  |  |  |  |  |  |  |  | 51.65 | 2 |
| **Overberg** |  |  |  |  | 49.09 | 10 | 42.82 | 7 |  |  |  |  |  |  |
| **Pallinup** | 52.77 | 3 | 49.78 | 9 | 51.34 | 3 | 48.56 | 1 | 51.28 | 3 | 49.89 | 4 | 50.56 | 5 |
| **Piketberg** | 51.80 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 50.25 | 11 | 51.00 | 6 | 50.10 | 7 | 46.58 | 5 | 50.63 | 4 | 49.23 | 6 | 50.55 | 6 |
| **SSH 405** | 50.99 | 8 | 51.58 | 5 | 50.09 | 8 | 46.62 | 4 | 51.29 | 2 | 49.43 | 5 | 50.84 | 4 |
| **SSH 421** | 50.66 | 10 | 50.30 | 8 | 49.80 | 9 | 46.79 | 3 | 50.48 | 5 | 48.96 | 8 | 50.05 | 7 |
| **SSH 423** |  |  | 42.18 | 14 |  |  |  |  |  |  |  |  |  |  |
| **SSH 491** | 55.31 | 1 | 52.95 | 1 | 55.11 | 1 |  |  |  |  | 54.03 | 1 | 54.03 | 1 |
| **Towerberg** | 51.08 | 7 | 52.28 | 2 | 50.55 | 6 | 47.14 | 2 | 51.68 |  | 49.99 | 3 | 48.85 | 10 |
| **Mean** | **51.74** |  | **49.13** |  | **50.54** |  | **46.27** |  | **50.79** |  | **49.99** |  | **50.62** |  |
| **LSDt(0,05)** | **1.21** |  | **1.51** |  | **1.40** |  | **0.85** |  | **0.59** |  | **0.69** |  | **0.70** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rûens - AMMI Analysis** | | | | | | |
|  |  |  |  |  |  |  |
| **Anova of the hectolitre mass of entries for the Rûens for 2016** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Source** | | **Df** | **SS** | **MS** | **F-Value** | **Pr> F** |
| Total | | 191 | 1358.6 | 7.11 |  |  |
| Treatments | | 47 | 927.6 | 19.74 | 7.06 | <0,001 |
| Genotypes | | 11 | 490.6 | 44.60 | 15.94 | <0,001 |
| Environments | | 3 | 102.8 | 34.28 | 6.66 | <0,001 |
| Block | | 12 | 61.8 | 5.15 | 1.84 | 0.0478 |
| Interactions | | 33 | 334.2 | 10.13 | 3.62 | <0,001 |
| IPCA | | 13 | 190.2 | 14.63 | 5.23 | <0,001 |
| IPCA | | 11 | 92.5 | 8.41 | 3.01 | 0.0013 |
| Residuals | | 9 | 51.5 | 5.72 | 2.05 | 0.0389 |
| Error | | 132 | 369.3 | 2.80 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Genotype means and scores for hectolitre mass (kg/hl)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Genotype** | **Hectolitre mass** | **Rank** | **Score** |  |  |
| 1 | Dunnard | 50.87 | 9 | -1.02818 |  |  |
| 2 | H 13/07 | 49.69 | 12 | -0.44940 |  |  |
| 3 | H 13/09 | 51.68 | 5 | 0.77998 |  |  |
| 4 | Kompasberg | 51.26 | 6 | -0.63677 |  |  |
| 5 | Matika | 54.46 | 2 | -0.81638 |  |  |
| 6 | Pallinup | 52.77 | 3 | 0.10021 |  |  |
| 7 | Piketberg | 51.80 | 4 | 0.37398 |  |  |
| 8 | Simonsberg | 50.25 | 11 | 0.13162 |  |  |
| 9 | SSH 405 | 50.99 | 8 | 0.98844 |  |  |
| 10 | SSH 421 | 50.66 | 10 | 0.90571 |  |  |
| 11 | SSH 491 | 55.31 | 1 | -1.15700 |  |  |
| 12 | Towerberg | 51.08 | 7 | 0.80779 |  |  |
| **Mean** |  | **51.74** |  |  |  |  |
| **Coefficient of variation (%)** |  | **3.30** |  |  |  |  |
| **LSDt(0.05)** |  | **1.21** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Environment means and scores for hectolitre mass (kg/hl)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Environment** | **Hectolitre mass** | **Rank** | **Score** |  |  |
| 1 | Alpha | 52.72 | 1 | 0.34286 |  |  |
| 2 | Bredasdorp | 50.77 | 4 | -2.21464 |  |  |
| 3 | Roodebloem | 52.10 | 2 | 0.68974 |  |  |
| 4 | Tygerhoek | 51.35 | 3 | 1.18205 |  |  |
| **Mean** |  | **51.74** |  |  |  |  |
| **Coefficient of variation (%)** |  | **3.30** |  |  |  |  |
| **LSDt(0.05)** |  | **0.70** |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
| **Rûens** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Alpha 2016-05-05** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 4.57 | a | 2 | 9.93 | 53.09 | 5 |
| **H 13/07** | 4.71 | a | 1 | 15.59 | 50.48 | 11 |
| **H 13/09** | 3.40 | cde | 8 | 21.12 | 53.06 | 6 |
| **Kompasberg** | 4.46 | a | 3 | 11.71 | 52.04 | 9 |
| **Matika** | 2.85 | e | 12 | 14.42 | 55.42 | 1 |
| **Pallinup** | 3.30 | cde | 9 | 12.52 | 54.04 | 4 |
| **Piketberg** | 3.74 | bc | 6 | 9.30 | 52.03 | 10 |
| **Simonsberg** | 3.66 | cd | 7 | 6.68 | 48.47 | 12 |
| **SSH 405** | 2.88 | e | 11 | 7.07 | 54.24 | 3 |
| **SSH 421** | 3.10 | de | 10 | 15.49 | 52.34 | 7 |
| **SSH 491** | 4.25 | ab | 5 | 14.85 | 55.32 | 2 |
| **Towerberg** | 4.45 | a | 4 | 8.17 | 52.05 | 8 |
| **Average** | **3.78** |  |  |  | **52.72** |  |
| **Coefficient of variation (%)** | **8.15** |  |  |  | **3.56** |  |
| **LSDt(0,05)** | **0.56** |  |  |  | **3.43** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail**  **Rûens** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Bredasdorp 2016-05-05** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 3.35 | ab | 2 | 17.41 | 51.54 | 5 |
| **H 13/07** | 3.83 | a | 1 | 21.31 | 49.89 | 7 |
| **H 13/09** | 2.53 | d | 8 | 17.63 | 48.83 | 9 |
| **Kompasberg** | 3.13 | bc | 3 | 8.24 | 51.69 | 3 |
| **Matika** | 2.95 | bcd | 4 | 14.22 | 55.41 | 2 |
| **Pallinup** | 2.53 | d | 7 | 10.07 | 51.56 | 4 |
| **Piketberg** | 2.48 | d | 10 | 5.41 | 50.25 | 6 |
| **Simonsberg** | 2.74 | cd | 6 | 17.83 | 49.46 | 8 |
| **SSH 405** | 1.84 | e | 11 | 10.90 | 47.50 | 12 |
| **SSH 421** | 1.74 | e | 12 | 11.17 | 47.69 | 11 |
| **SSH 491** | 2.74 | cd | 5 | 10.33 | 57.10 | 1 |
| **Towerberg** | 2.49 | d | 9 | 10.79 | 48.27 | 10 |
| **Average** | **2.69** |  |  |  | **50.77** |  |
| **Coefficient of variation (%)** | **11.87** |  |  |  | **2.92** |  |
| **LSDt(0,05)** | **0.58** |  |  |  | **2.70** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail**  **Rûens** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Heidelberg 2016-05-04** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 2.59 | abc | 4 | 13.10 | 53.45 | 4 |
| **H 13/07** | 2.96 | ab | 3 | 21.55 | 51.15 | 8 |
| **H 13/09** | 2.22 | bcd | 6 | 22.37 | 51.91 | 7 |
| **Kompasberg** | 3.17 | a | 1 | 25.73 | 53.83 | 3 |
| **Matika** | 2.27 | bcd | 5 | 17.52 | 55.35 | 2 |
| **Pallinup** | 1.22 | ef | 10 | 23.58 | 53.28 | 5 |
| **Piketberg** | 3.14 | a | 2 | 3.52 | 52.15 | 6 |
| **Simonsberg** | 1.75 | de | 8 | 17.06 | 44.15 | 10 |
| **SSH 405** | 0.57 | f | 12 | 29.03 | 40.47 | 12 |
| **SSH 421** | 0.58 | f | 11 | 32.05 | 41.35 | 11 |
| **SSH 491** | 2.07 | cd | 7 | 28.16 | 59.63 | 1 |
| **Towerberg** | 1.57 | de | 9 | 35.13 | 45.11 | 9 |
| **Average** | **2.01** |  |  |  | **50.15** |  |
| **Coefficient of variation (%)** | **21.80** |  |  |  | **5.49** |  |
| **LSDt(0,05)** | **0.81** |  |  |  | **0.50** |  |
|  |  |  |  |  |  |  |
| **Not included in analysis** |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail**  **Rûens** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Roodebloem 2016-05-06** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 2.98 | bc | 7 | 1.02 | 51.83 | 8 |
| **H 13/07** | 3.04 | bc | 4 | 12.14 | 48.56 | 12 |
| **H 13/09** | 2.44 | e | 12 | 20.33 | 52.89 | 4 |
| **Kompasberg** | 3.00 | bc | 5 | 8.07 | 50.62 | 11 |
| **Matika** | 2.48 | e | 11 | 18.47 | 53.30 | 3 |
| **Pallinup** | 3.13 | b | 2 | 6.43 | 53.62 | 2 |
| **Piketberg** | 3.00 | bc | 6 | 15.28 | 52.22 | 6 |
| **Simonsberg** | 2.83 | cd | 8 | 9.51 | 52.11 | 7 |
| **SSH 405** | 2.67 | de | 9 | 10.58 | 50.80 | 10 |
| **SSH 421** | 2.52 | e | 10 | 13.63 | 51.64 | 9 |
| **SSH 491** | 3.51 | a | 1 | 7.23 | 54.90 | 1 |
| **Towerberg** | 3.09 | b | 3 | 11.32 | 52.74 | 5 |
| **Average** | **2.89** |  |  |  | **52.10** |  |
| **Coefficient of variation (%)** | **4.77** |  |  |  | **1.92** |  |
| **LSDt(0,05)** | **0.25** |  |  |  | **1.82** |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail**  **Rûens** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Tygerhoek 2016-05-20** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 4.74 | ab | 4 | 6.20 | 46.61 | 12 |
| **H 13/07** | 5.01 | a | 1 | 15.98 | 49.72 | 11 |
| **H 13/09** | 4.12 | bc | 8 | 8.61 | 52.08 | 5 |
| **Kompasberg** | 4.89 | ab | 3 | 12.14 | 50.55 | 10 |
| **Matika** | 4.92 | ab | 2 | 10.43 | 53.75 | 2 |
| **Pallinup** | 4.34 | ab | 6 | 14.01 | 52.14 | 4 |
| **Piketberg** | 4.09 | bc | 10 | 6.78 | 52.58 | 3 |
| **Simonsberg** | 4.10 | bc | 9 | 10.41 | 51.16 | 8 |
| **SSH 405** | 3.28 | c | 12 | 15.47 | 51.42 | 6 |
| **SSH 421** | 3.36 | c | 11 | 8.61 | 51.01 | 9 |
| **SSH 491** | 4.55 | ab | 5 | 17.20 | 53.94 | 1 |
| **Towerberg** | 4.15 | abc | 7 | 11.24 | 51.23 | 7 |
| **Average** | **4.30** |  |  |  | **51.35** |  |
| **Coefficient of variation (%)** | **11.77** |  |  |  | **3.99** |  |
| **LSDt(0,05)** | **0.88** |  |  |  | **3.56** |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average yield (ton/ha) of oats cultivars in the Swartland** | | | | | | | | | | | | | | | |
| **during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **\*2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013 - 2016** | **2014 - 2016** | **2015- 2016** |
| **Dunnard** | 4.44 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 013/07** | 3.69 | 6 | 2.92 | 6 | 2.90 | 2 |  |  |  |  | 2.91 | 5 | 2.91 | 5 |
| **H 013/09** | 3.57 | 8 | 2.77 | 8 | 2.67 | 5 |  |  |  |  | 2.72 | 8 | 2.72 | 9 |
| **H 013/10** |  |  | 3.04 | 5 | 2.63 | 6 |  |  |  |  | 2.84 | 7 | 2.84 | 7 |
| **Kompasberg** | 3.88 | 2 | 3.37 | 4 | 3.35 | 1 | 4.14 | 1 | 3.63 | 2 | 3.62 | 1 | 3.36 | 3 |
| **Majoris** |  |  |  |  | 1.74 | 10 |  |  |  |  |  |  |  |  |
| **Matika** | 3.68 | 7 | 3.75 | 1 |  |  |  |  |  |  |  |  | 3.75 | 1 |
| **Overberg** |  |  |  |  | 1.59 | 12 | 3.13 | 4 |  |  |  |  |  |  |
| **Pallinup** | 3.74 | 5 | 3.65 | 2 | 2.30 | 7 | 3.10 | 5 | 3.70 | 1 | 3.01 | 4 | 2.97 | 4 |
| **Piketberg** | 3.82 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 3.02 | 10 | 2.86 | 7 | 2.73 | 4 | 3.81 | 3 | 2.94 | 3 | 3.13 | 2 | 2.80 | 8 |
| **SSH 405** | 3.00 | 11 | 2.40 | 10 | 1.79 | 9 | 2.36 | 7 | 2.70 | 5 | 2.18 | 10 | 2.09 | 10 |
| **SSH 421** | 2.52 | 12 | 2.36 | 11 | 1.66 | 11 | 2.55 | 6 | 2.44 | 6 | 2.19 | 9 | 2.01 | 11 |
| **SSH 491** | 3.84 | 3 | 3.53 | 3 | 2.25 | 8 |  |  |  |  | 2.89 | 6 | 2.89 | 6 |
| **Towerberg** | 3.14 | 9 | 2.46 | 9 | 2.89 | 3 | 4.04 | 2 | 2.80 | 4 | 3.13 | 3 | 3.46 | 2 |
| **Mean** | **3.53** |  | **3.01** |  | **2.37** |  | **3.30** |  | **3.03** |  | **2.86** |  | **2.89** |  |
| **LSDt(0,05)** | **0.36** |  | **0.60** |  | **0.18** |  | **0.24** |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **\* Only Malmesbury data** | | |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Swartland - AMMI Analysis** | | | | | | |
|  |  |  |  |  |  |  |
| **Anova of the yield of entries for the Swartland for 2016** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Source** | | **Df** | **SS** | **MS** | **F-Value** | **Pr> F** |
| Total | | 143 | 152.51 | 1.066 |  |  |
| Treatments | | 35 | 130.42 | 3.726 | 22.17 | <0,001 |
| Genotypes | | 11 | 35.52 | 3.229 | 19.21 | <0,001 |
| Environments | | 2 | 78.51 | 39.253 | 64.81 | <0,001 |
| Block | | 9 | 5.45 | 0.606 | 3.60 | <0,001 |
| Interactions | | 22 | 16.39 | 0.745 | 4.43 | <0,001 |
| IPCA | | 12 | 11.43 | 0.952 | 5.67 | <0,001 |
| IPCA | | 10 | 4.96 | 0.496 | 2.95 | 0.0028 |
| Residuals | | 0 | 0.00 |  |  |  |
| Error | | 99 | 16.64 | 0.168 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Genotype means and scores for yield (ton/ha)** | | | | | | |
|  |  |  |  |  |  |  |
| **Entry** | **Genotype** | **Yield** | **Rank** | **Score** |  |  |
| 1 | Dunnard | 4.44 | 1 | 0.16323 |  |  |
| 2 | H 13/07 | 3.69 | 6 | -0.04700 |  |  |
| 3 | H 13/09 | 3.57 | 8 | -0.77921 |  |  |
| 4 | Kompasberg | 3.88 | 2 | 0.28421 |  |  |
| 5 | Matika | 3.68 | 7 | -0.07120 |  |  |
| 6 | Pallinup | 3.74 | 5 | 0.21261 |  |  |
| 7 | Piketberg | 3.82 | 4 | 0.06353 |  |  |
| 8 | Simonsberg | 3.02 | 10 | 0.46460 |  |  |
| 9 | SSH 405 | 3.00 | 11 | -0.65497 |  |  |
| 10 | SSH 421 | 2.52 | 12 | -0.26879 |  |  |
| 11 | SSH 491 | 3.84 | 3 | 0.34563 |  |  |
| 12 | Towerberg | 3.14 | 9 | 0.28738 |  |  |
| **Mean** |  | **3.53** |  |  |  |  |
| **Coefficient of variation (%)** |  | **12.70** |  |  |  |  |
| **LSDt(0.05)** |  | **0.36** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Environment means and scores for yield (ton/ha)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Environment** | **Yield** | **Rank** | **Score** |  |  |
| 1 | Koringberg | 2.72 | 3 | 0.09821 |  |  |
| 2 | Malmesbury | 4.50 | 1 | 0.86626 |  |  |
| 3 | Velddrift | 3.35 | 2 | -0.96447 |  |  |
| **Mean** |  | **3.53** |  |  |  |  |
| **Coefficient of variation (%)** |  | **12.70** |  |  |  |  |
| **LSDt(0.05)** |  | **0.18** |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average hectolitre mass (kg/hl) of oats cultivars in the Swartland** | | | | | | | | | | | | | | |
| **during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **\*2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013 - 2016** | **2014 - 2016** | **2015- 2016** |
| **Dunnard** | 51.52 | 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 013/07** | 51.47 | 11 | 47.65 | 10 | 48.86 | 11 |  |  |  |  | 48.26 | 8 | 48.26 | 11 |
| **H 013/09** | 54.16 | 6 | 52.30 | 2 | 51.45 | 2 |  |  |  |  | 51.88 | 2 | 51.88 | 3 |
| **H 013/10** |  |  | 50.40 | 5 | 51.10 | 4 |  |  |  |  | 50.75 | 3 | 50.75 | 5 |
| **Kompasberg** | 50.44 | 12 | 48.40 | 7 | 50.73 | 5 | 45.39 | 6 | 49.42 | 6 | 48.17 | 9 | 49.57 | 6 |
| **Majoris** |  |  |  |  | 48.24 | 12 |  |  |  |  |  |  |  |  |
| **Matika** | 55.14 | 3 | 52.05 | 3 |  |  |  |  |  |  |  |  | 52.05 | 2 |
| **Overberg** |  |  |  |  | 49.09 | 10 | 42.82 | 7 |  |  |  |  |  |  |
| **Pallinup** | 55.96 | 2 | 51.50 | 4 | 51.34 | 3 | 48.56 | 1 | 53.73 | 1 | 50.47 | 4 | 51.42 | 4 |
| **Piketberg** | 53.14 | 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 53.16 | 8 | 46.70 | 11 | 50.10 | 7 | 46.58 | 5 | 49.93 | 5 | 47.79 | 10 | 48.40 | 10 |
| **SSH 405** | 54.57 | 5 | 48.25 | 9 | 50.09 | 8 | 46.62 | 4 | 51.41 | 3 | 48.32 | 6 | 49.17 | 7 |
| **SSH 421** | 54.74 | 4 | 48.30 | 8 | 49.80 | 9 | 46.79 | 3 | 51.52 | 2 | 48.30 | 7 | 49.05 | 8 |
| **SSH 491** | 56.44 | 1 | 53.15 | 1 | 55.11 | 1 |  |  |  |  | 54.13 | 1 | 54.13 | 1 |
| **Towerberg** | 53.62 | 7 | 48.65 | 6 | 50.55 | 6 | 47.14 | 2 | 51.14 | 4 | 48.78 | 5 | 48.85 | 9 |
| **Mean** | **53.69** |  | **49.76** |  | **50.54** |  | **46.27** |  | **51.19** |  | **49.68** |  | **50.32** |  |
| **LSDt(0,05)** | **0.13** |  | **1.40** |  | **1.40** |  | **0.85** |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **\* Only Malmesbury data** | | |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Swartland - AMMI Analysis** | | | | | | |
|  |  |  |  |  |  |  |
| **Anova of the hectolitre mass of entries for the Swartland for 2016** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Source** | | **Df** | **SS** | **MS** | **F-Value** | **Pr> F** |
| Total | | 143 | 1079.4 | 7.55 |  |  |
| Treatments | | 35 | 755.4 | 21.58 | 8.11 | <0,001 |
| Genotypes | | 11 | 452.0 | 41.09 | 15.44 | <0,001 |
| Environments | | 2 | 88.9 | 44.45 | 6.61 | 0.002 |
| Block | | 9 | 60.6 | 6.73 | 2.53 | 0.0118 |
| Interactions | | 22 | 214.5 | 9.75 | 3.66 | <0,001 |
| IPCA | | 12 | 160.0 | 13.34 | 5.01 | <0,001 |
| IPCA | | 10 | 54.5 | 5.45 | 2.05 | 0.0360 |
| Residuals | | 0 | 0.0 |  |  |  |
| Error | | 99 | 263.5 | 2.66 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Genotype means and scores for hectolitre mass (kg/hl)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Genotype** | **Hectolitre mass** | **Rank** | **Score** |  |  |
| 1 | Dunnard | 51.52 | 10 | 0.30843 |  |  |
| 2 | H 13/07 | 51.47 | 11 | 0.39765 |  |  |
| 3 | H 13/09 | 54.16 | 6 | -0.36434 |  |  |
| 4 | Kompasberg | 50.44 | 12 | 0.08611 |  |  |
| 5 | Matika | 55.14 | 3 | -0.04094 |  |  |
| 6 | Pallinup | 55.96 | 2 | -1.03792 |  |  |
| 7 | Piketberg | 53.14 | 9 | -0.31927 |  |  |
| 8 | Simonsberg | 53.16 | 8 | 0.14980 |  |  |
| 9 | SSH 405 | 54.57 | 5 | 0.01897 |  |  |
| 10 | SSH 421 | 54.74 | 4 | 1.76354 |  |  |
| 11 | SSH 491 | 56.44 | 1 | -1.24103 |  |  |
| 12 | Towerberg | 53.62 | 7 | 0.27900 |  |  |
| **Mean** |  | **53.69** |  |  |  |  |
| **Coefficient of variation (%)** |  | **3.10** |  |  |  |  |
| **LSDt(0.05)** |  | **0.13** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Environment means and scores for hectolitre mass (kg/hl)** | | | | | | |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Entry** | **Environment** | **Hectolitre mass** | **Rank** | **Score** |  |  |
| 1 | Koringberg | 54.39 | 1 | 1.95960 |  |  |
| 2 | Malmesbury | 52.62 | 3 | -0.44823 |  |  |
| 3 | Velddrift | 54.06 | 2 | -1.51137 |  |  |
| **Mean** |  | **53.69** |  |  |  |  |
| **Coefficient of variation (%)** |  | **3.10** |  |  |  |  |
| **LSDt(0.05)** |  | **0.67** |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Swartland** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Koringberg 2016-05-13** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 3.62 | a | 1 | 9.27 | 53.21 | 9 |
| **H 13/07** | 2.66 | c | 7 | 12.44 | 52.81 | 11 |
| **H 13/09** | 2.60 | c | 8 | 10.26 | 54.29 | 7 |
| **Kompasberg** | 2.67 | c | 6 | 13.94 | 51.04 | 12 |
| **Matika** | 3.22 | b | 3 | 10.65 | 55.51 | 3 |
| **Pallinup** | 3.04 | b | 5 | 22.85 | 54.71 | 5 |
| **Piketberg** | 3.60 | a | 2 | 12.01 | 53.01 | 10 |
| **Simonsberg** | 2.12 | de | 10 | 19.55 | 53.76 | 8 |
| **SSH 405** | 1.92 | de | 11 | 19.89 | 55.71 | 2 |
| **SSH 421** | 1.84 | e | 12 | 16.28 | 59.20 | 1 |
| **SSH 491** | 3.12 | b | 4 | 17.90 | 54.96 | 4 |
| **Towerberg** | 2.19 | d | 9 | 17.98 | 54.48 | 6 |
| **Average** | **2.72** |  |  |  | **54.39** |  |
| **Coefficient of variation (%)** | **6.42** |  |  |  | **3.27** |  |
| **LSDt(0,05)** | **0.32** |  |  |  | **3.24** |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Swartland** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Malmesbury 2016-05-17** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 5.56 | a | 1 | 2.32 | 48.99 | 12 |
| **H 13/07** | 4.78 | cd | 5 | 8.88 | 50.85 | 10 |
| **H 13/09** | 3.92 | ef | 10 | 13.46 | 52.80 | 6 |
| **Kompasberg** | 5.34 | ab | 2 | 7.31 | 49.74 | 11 |
| **Matika** | 4.38 | de | 9 | 4.54 | 55.06 | 2 |
| **Pallinup** | 4.86 | bcd | 4 | 6.26 | 55.02 | 3 |
| **Piketberg** | 4.51 | d | 6 | 2.52 | 52.69 | 7 |
| **Simonsberg** | 4.45 | d | 8 | 6.83 | 52.92 | 5 |
| **SSH 405** | 3.53 | fg | 11 | 14.04 | 52.43 | 8 |
| **SSH 421** | 3.14 | g | 12 | 6.66 | 52.01 | 9 |
| **SSH 491** | 5.04 | bc | 3 | 9.63 | 55.20 | 1 |
| **Towerberg** | 4.46 | d | 7 | 5.57 | 53.68 | 4 |
| **Average** | **4.50** |  |  |  | **52.62** |  |
| **Coefficient of variation (%)** | **6.04** |  |  |  | **2.08** |  |
| **LSDt(0,05)** | **0.50** |  |  |  | **2.01** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Swartland** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Porterville 2016-05-16** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 2.07 | abc | 5 | 43.39 | 56.21 | 5 |
| **H 13/07** | 1.90 | abcd | 7 | 40.43 | 53.60 | 11 |
| **H 13/09** | 2.21 | ab | 4 | 12.34 | 56.82 | 3 |
| **Kompasberg** | 2.56 | a | 1 | 20.89 | 56.42 | 4 |
| **Matika** | 2.36 | ab | 2 | 8.04 | 55.79 | 6 |
| **Pallinup** | 2.00 | abc | 6 | 15.22 | 54.97 | 10 |
| **Piketberg** | 1.62 | bcde | 9 | 22.78 | 55.68 | 8 |
| **Simonsberg** | 1.06 | de | 11 | 68.48 | 52.55 | 12 |
| **SSH 405** | 1.75 | abcde | 8 | 29.99 | 59.49 | 2 |
| **SSH 421** | 1.29 | cde | 10 | 30.57 | 55.03 | 9 |
| **SSH 491** | 2.23 | ab | 3 | 59.78 | 61.26 | 1 |
| **Towerberg** | 0.97 | e | 12 | 50.55 | 55.70 | 7 |
| **Average** | **1.83** |  |  |  | **56.13** |  |
| **Coefficient of variation (%)** | **27.91** |  |  |  | **6.33** |  |
| **LSDt(0,05)** | **0.89** |  |  |  | **6.17** |  |
|  |  |  |  |  |  |  |
| **Not included in analysis** | | |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Swartland** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Velddrift 2016-05-11** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| **Dunnard** | 4.10 | ab | 2 | 20.29 | 52.37 | 10 |
| **H 13/07** | 3.61 | abc | 3 | 17.91 | 50.59 | 11 |
| **H 13/09** | 4.17 | a | 1 | 12.35 | 55.31 | 4 |
| **Kompasberg** | 3.59 | abc | 4 | 16.22 | 50.28 | 12 |
| **Matika** | 3.42 | bcd | 6 | 7.33 | 54.98 | 5 |
| **Pallinup** | 3.35 | cd | 7 | 11.64 | 58.17 | 2 |
| **Piketberg** | 3.30 | cde | 8 | 23.99 | 53.66 | 6 |
| **Simonsberg** | 2.48 | f | 12 | 14.21 | 52.79 | 8 |
| **SSH 405** | 3.56 | abc | 5 | 17.80 | 55.53 | 3 |
| **SSH 421** | 2.56 | ef | 11 | 7.16 | 53.08 | 7 |
| **SSH 491** | 3.28 | cde | 9 | 14.67 | 59.20 | 1 |
| **Towerberg** | 2.79 | def | 10 | 23.13 | 52.78 | 9 |
| **Average** | **3.35** |  |  |  | **54.06** |  |
| **Coefficient of variation (%)** | **12.76** |  |  |  | **2.30** |  |
| **LSDt(0,05)** | **0.75** |  |  |  | **2.17** |  |

1. **SUMMER RAINFALL AREA, DRYLAND AND IRRIGATION**
   1. **Details of the 2016 dryland and irrigation field trials**

The dryland oats cultivar evaluation trial for the summer rainfall area in 2016 was planted at Bethlehem. Those for irrigation were planted at Bethlehem, Riet River and Vaalharts. The list of entries for these trials are shown in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Entries of the 2016 oats program in the summer rainfall area dryland and irrigation** | | | |
| **Origin** | **Entry** | **Cultivar** | **Released** |
| Small Grain Institute | Kompasberg | Pure Line | 2001 |
| Small Grain Institute | Towerberg | Pure Line | 2011 |
| Small Grain Institute | Simonsberg | Pure Line | 2011 |
| Small Grain Institute | Piketberg | Pure Line |  |
| Small Grain Institute | Overberg | Pure Line | Unknown |
| Small Grain Institute | H 013/09 | Pure Line |  |
| Small Grain Institute | H 013/7 | Pure Line |  |
| Sensako | SSH 405 | Pure Line | 2001 |
| Sensako | SSH 421 | Pure Line | 2001 |
| Sensako | SSH 491 | Pure line | 2001 |
| Agricol | Dunnard | Pure Line | Unknown |
| Agricol | Magnifico | Pure line | Unknown |
| Agricol | Maida | Pure line | Unknown |
| Agricol | Matika | Pure line | Unknown |
| Agricol | Pallinup | Pure line | Unknown |

The cultivar adaptation trials were planted according to a lattice row by column design with 4 replicates. The trial plots at Bethlehem consisted of 8 rows of 6 m length each and an inter-row spacing of 25 cm and these at Vaalharts of 8 rows of 6 m length each and an inter-row spacing of 17 cm . Standard seeding rates were used according to breeder recommendations.

* 1. **Planting and harvesting dates**

|  |  |  |
| --- | --- | --- |
| **Location** | **Planting date** | **Harvest date** |
| Bethlehem (dryland) | 07/07/2016 | 11/01/2017 |
| Bethlehem (irrigation) | 10/07/2016 | Not harvested, wild oats problems |
| Riet River (irrigation) | 22/06/2016 | Not harvested, irrigation problems |
| Vaalharts (irrigation) | 24/06/2016 | 12/12/2016 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Yield of oat cultivars under dryland conditions at Bethlehem** | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 1.85 | 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 06/15** |  |  | 2.12 | 9 | 3.61 | 7 | 2.41 | 7 |  |  |  |  |  |  |
| **H 07/04** |  |  | 2.80 | 5 | 2.94 | 9 | 2.77 | 2 |  |  |  |  |  |  |
| **H 013/09** | 2.28 | 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 013/7** | 2.49 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| **KKSH 301** |  |  | 1.71 | 11 |  |  |  |  |  |  |  |  |  |  |
| **Kompasberg** | 1.48 | 11 | 3.19 | 3 | 3.66 | 6 | 2.66 | 5 | 2.75 | 5 | 3.17 | 3 | 3.43 | 3 |
| **Magnifico** | 1.43 | 13 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Maida** | 3.22 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Majoris** |  |  | 2.78 | 6 | 5.03 | 1 |  |  |  |  |  |  |  |  |
| **Matika** | 1.46 | 12 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Overberg** | 1.53 | 10 | 3.30 | 2 | 4.62 | 2 | 2.77 | 3 | 3.05 | 1 | 3.56 | 1 | 3.96 | 1 |
| **Pallinup** | 1.59 | 9 |  |  |  |  | 2.29 | 8 |  |  |  |  |  |  |
| **Piketberg** | 2.31 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 2.38 | 3 | 2.58 | 7 | 3.70 | 5 | 2.89 | 1 | 2.89 | 4 | 3.06 | 5 | 3.14 | 5 |
| **SSH 405** | 1.15 | 14 |  |  |  |  |  |  |  |  |  |  |  |  |
| **SSH 421** | 0.98 | 15 | 2.09 | 10 |  |  |  |  |  |  |  |  | 2.09 | 6 |
| **SSH 423** |  |  | 2.45 | 8 | 3.78 | 4 |  |  |  |  |  |  |  |  |
| **SSH 491** | 1.94 | 7 | 3.47 | 1 | 3.85 | 3 | 2.65 | 6 | 2.98 | 2 | 3.32 | 2 | 3.66 | 2 |
| **Towerberg** | 2.22 | 6 | 3.17 | 4 | 3.50 | 8 | 2.72 | 4 | 2.90 | 3 | 3.13 | 4 | 3.34 | 4 |
| **Mean** | **1.89** |  | **2.70** |  | **3.85** |  | **2.64** |  | **2.91** |  | **3.25** |  | **3.27** |  |
| **CV%** | **12.47** |  | **6.80** |  | **5.00** |  | **9.90** |  | **7.60** |  | **7.20** |  | **8.40** |  |
| **LSDt(0,05)** | **0.35** |  | **0.27** |  | **0.28** |  | **0.39** |  | **0.16** |  | **0.18** |  | **0.20** |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average yield (ton/ha) of oats cultivars under irrigation during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016 \*** | **R** | **2015** | **R** | **2014** | **R** | **2013 \*** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 5.12 | 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H06/15** |  |  |  |  | 4.37 | 5 | 4.46 | 8 |  |  |  |  |  |  |
| **H07/04** |  |  |  |  | 4.94 | 1 | 4.98 | 7 |  |  |  |  |  |  |
| **H13/09** | 5.79 | 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H13/7** | 6.17 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Kompasberg** | 6.98 | 1 | 3.85 | 2 | 4.74 | 3 | 6.31 | 1 | 5.47 | 1 | 4.97 | 1 | 4.29 | 1 |
| **Macnifico** | 4.61 | 13 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Maida** | 5.91 | 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Majoris** |  |  |  |  | 2.98 | 9 |  |  |  |  |  |  |  |  |
| **Matika** | 5.50 | 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Overberg** | 5.61 | 8 |  |  | 4.05 | 7 | 5.08 | 6 |  |  |  |  |  |  |
| **Pallinup** | 4.29 | 15 |  |  |  |  | 5.70 | 3 |  |  |  |  |  |  |
| **Piketberg** | 6.24 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 4.30 | 14 |  |  | 4.57 | 4 | 5.15 | 4 |  |  |  |  |  |  |
| **SSH 405** | 4.99 | 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| **SSH 421** | 5.93 | 4 | 2.33 | 5 |  |  |  |  |  |  |  |  | 2.33 | 4 |
| **SSH 423** |  |  | 4.00 | 1 | 3.68 | 8 |  |  |  |  |  |  |  |  |
| **SSH 491** | 5.62 | 7 | 3.13 | 4 | 4.32 | 6 | 6.14 | 2 | 4.80 | 2 | 4.53 | 2 | 3.72 | 3 |
| **Towerberg** | 4.98 | 12 | 3.26 | 3 | 4.94 | 1 | 5.10 | 5 | 4.57 | 3 | 4.43 | 3 | 4.10 | 2 |
| **Mean** | **5.47** |  | **3.31** |  | **4.29** |  | **5.37** |  | **4.95** |  | **4.64** |  | **3.61** |  |
| **LSDt(0,05)** | **0.60** |  | **0.26** |  | **0.31** |  | **0.32** |  | **0.26** |  | **0.32** |  | **0.55** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **\* Only Vaarharts data** | | | | | | | | |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hectolitre mass of oat cultivars under dryland conditions at Bethlehem** | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cultivar** | **2016** | **R** | **2015** | **R** | **2014** | **R** | **2013** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 51.78 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 06/15** |  |  | 51.60 | 6 | 48.37 | 8 | 49.82 | 7 |  |  |  |  |  |  |
| **H 07/04** |  |  | 50.73 | 8 | 48.75 | 7 | 49.60 | 8 |  |  |  |  |  |  |
| **H 013/09** | 46.33 | 15 |  |  |  |  |  |  |  |  |  |  |  |  |
| **H 013/7** | 46.75 | 14 |  |  |  |  |  |  |  |  |  |  |  |  |
| **KKSH 301** |  |  | 52.49 | 2 |  |  |  |  |  |  |  |  |  |  |
| **Kompasberg** | 51.73 | 3 | 50.98 | 7 | 48.97 | 5 | 50.20 | 5 | 50.47 | 3 | 50.05 | 5 | 49.98 | 6 |
| **Magnifico** | 47.98 | 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Maida** | 51.5 | 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Majoris** |  |  | 46.58 | 11 | 50.25 | 2 |  |  |  |  |  |  |  |  |
| **Matika** | 47.28 | 13 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Overberg** | 51.25 | 6 | 51.80 | 4 | 50.02 | 3 | 50.57 | 4 | 50.91 | 2 | 50.80 | 2 | 50.91 | 2 |
| **Pallinup** | 51.53 | 4 |  |  |  |  | 50.02 | 6 |  |  |  |  |  |  |
| **Piketberg** | 47.58 | 12 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Simonsberg** | 48.15 | 10 | 51.90 | 3 | 49.05 | 4 | 51.10 | 2 | 50.05 | 4 | 50.68 | 3 | 50.48 | 4 |
| **SSH 405** | 49.15 | 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| **SSH 421** | 50.88 | 7 | 50.63 | 9 |  |  |  |  |  |  |  |  | 50.63 | 3 |
| **SSH 423** |  |  | 48.73 | 10 | 47.85 | 9 |  |  |  |  |  |  |  |  |
| **SSH 491** | 56.55 | 1 | 58.45 | 1 | 52.92 | 1 | 55.30 | 1 | 55.81 | 1 | 55.56 | 1 | 55.69 | 1 |
| **Towerberg** | 48.55 | 9 | 51.73 | 5 | 48.82 | 6 | 50.77 | 3 | 49.97 | 5 | 50.44 | 4 | 50.28 | 5 |
| **Mean** | **49.80** |  | **51.42** |  | **49.44** |  | **50.92** |  | **51.44** |  | **51.51** |  | **51.33** |  |
| **CV%** | **3.45** |  | **1.50** |  | **2.00** |  | **1.80** |  | **2.10** |  | **2.30** |  | **1.90** |  |
| **LSD Cultivar** | **2.55** |  | **1.12** |  | **1.47** |  | **1.35** |  | **0.76** |  | **0.96** |  | **1.01** |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average hectolitre mass (kg/hl) of oats cultivars under irrigation during the full or partial period from 2013 - 2016** | | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Cultivar** | **2016 \*** | **R** | **2015** | **R** | **2014** | **R** | **2013 \*** | **R** | **4 year average** | **R** | **3 year average** | **R** | **2 year average** | **R** | |
| **2013-2016** | **2014-2016** | **2015-2016** |
| **Dunnard** | 48.30 | 7 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **H06/15** |  |  |  |  | 46.10 | 3 | 48.70 | 4 |  |  |  |  |  |  | |
| **H07/04** |  |  |  |  | 45.50 | 6 | 45.75 | 8 |  |  |  |  |  |  | |
| **H13/09** | 49.50 | 4 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **H13/7** | 46.95 | 13 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Kompasberg** | 49.65 | 3 | 50.09 | 4 | 45.57 | 5 | 47.70 | 7 | 48.25 | 3 | 47.79 | 3 | 47.83 | 4 | |
| **Magnifico** | 45.30 | 14 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Maida** | 50.70 | 1 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Majoris** |  |  |  |  | 42.00 | 9 |  |  |  |  |  |  |  |  | |
| **Matika** | 49.35 | 5 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Overberg** | 47.80 | 9 |  |  | 45.40 | 7 | 48.10 | 6 |  |  |  |  |  |  | |
| **Pallinup** | 44.00 | 15 |  |  |  |  | 49.75 | 2 |  |  |  |  |  |  | |
| **Piketberg** | 47.40 | 11 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **Simonsberg** | 48.25 | 8 |  |  | 47.52 | 2 | 48.60 | 5 |  |  |  |  |  |  | |
| **SSH 405** | 47.30 | 12 |  |  |  |  |  |  |  |  |  |  |  |  | |
| **SSH 421** | 47.65 | 10 | 51.45 | 3 |  |  |  |  |  |  |  |  | 51.45 | 2 | |
| **SSH 423** |  |  | 48.60 | 5 | 42.75 | 8 |  |  |  |  |  |  |  |  | |
| **SSH 491** | 49.00 | 6 | 54.25 | 1 | 48.82 | 1 | 50.85 | 1 | 50.73 | 1 | 51.31 | 1 | 51.54 | 1 | |
| **Towerberg** | 49.80 | 2 | 51.58 | 2 | 45.92 | 4 | 49.00 | 3 | 49.08 | 2 | 48.83 | 2 | 48.75 | 3 | |
| **Mean** | **48.06** |  | **51.19** |  | **45.51** |  | **48.56** |  | **49.35** |  | **49.31** |  | **49.89** |  | |
| **LSDt(0,05)** | **3.09** |  | **1.71** |  | **2.04** |  | **0.86** |  | **1.09** |  | **1.34** |  | **2.44** |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| **\* Only Vaarharts data** | | | | | | | | | |  | | --- | |  | |  |  |  |  | |  | |

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| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Dryland** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Bethlehem 2016-06-07** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| Dunnard | 1.85 | de | 8 | 10.32 | 51.78 | 2 |
| H 013/09 | 2.28 | bc | 5 | 5.24 | 46.33 | 15 |
| H 013/7 | 2.49 | b | 2 | 13.96 | 46.75 | 14 |
| Kompasberg | 1.48 | fg | 11 | 17.91 | 51.73 | 3 |
| Magnifico | 1.43 | fg | 13 | 12.94 | 47.98 | 11 |
| Maida | 3.22 | a | 1 | 13.95 | 51.5 | 5 |
| Matika | 1.46 | fg | 12 | 15.11 | 47.28 | 13 |
| Overberg | 1.53 | ef | 10 | 9.55 | 51.25 | 6 |
| Pallinup | 1.59 | def | 9 | 10.74 | 51.53 | 4 |
| Piketberg | 2.31 | b | 4 | 8.13 | 47.58 | 12 |
| Simonsberg | 2.38 | b | 3 | 8.12 | 48.15 | 10 |
| SSH 405 | 1.15 | gh | 14 | 15.23 | 49.15 | 8 |
| SSH 421 | 0.98 | h | 15 | 13.27 | 50.88 | 7 |
| SSH 491 | 1.94 | cd | 7 | 7.36 | 56.55 | 1 |
| Towerberg | 2.22 | bc | 6 | 11.01 | 48.55 | 9 |
| **Average** | **1.89** |  |  |  | **49.80** |  |
| **Coefficient of variation (%)** | **12.47** |  |  |  | **3.45** |  |
| **LSDt(0,05)** | **0.35** |  |  |  | **2.55** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2016 Oats cultivar adaptation trail** | | | | | | |
|  |  |  |  |  |  |  |
| **Irrigation** | | | | | | |
|  |  |  |  |  |  |  |
| **Cultivar** | **Vaalharts 2016-06-24** | | | | | |
| **Yield** | | **Rank** | **C.V.** | **Hectolitre mass** | **Rank** |
| Dunnard | 5.12 | efg | 10 | 9.607 | 48.30 | 7 |
| H 013/09 | 5.79 | bcd | 6 | 6.017 | 49.50 | 4 |
| H 013/7 | 6.17 | bc | 3 | 9.388 | 46.95 | 13 |
| Kompasberg | 6.98 | a | 1 | 6.231 | 49.65 | 3 |
| Magnifico | 4.61 | gh | 13 | 2.433 | 45.30 | 14 |
| Maida | 5.91 | bcd | 5 | 9.133 | 50.70 | 1 |
| Matika | 5.50 | def | 9 | 7.958 | 49.35 | 5 |
| Overberg | 5.61 | cde | 8 | 8.652 | 47.80 | 9 |
| Pallinup | 4.29 | h | 15 | 7.65 | 44.00 | 15 |
| Piketberg | 6.24 | b | 2 | 3.918 | 47.40 | 11 |
| Simonsberg | 4.30 | h | 14 | 9.008 | 48.25 | 8 |
| SSH 405 | 4.99 | fg | 11 | 5.028 | 47.30 | 12 |
| SSH 421 | 5.93 | bcd | 4 | 6.803 | 47.65 | 10 |
| SSH 491 | 5.62 | cde | 7 | 11.34 | 49.00 | 6 |
| Towerberg | 4.98 | fg | 12 | 13.33 | 49.80 | 2 |
| **Average** | **5.47** |  |  |  | **48.06** |  |
| **Coefficient of variation (%)** | **7.43** |  |  |  | **4.33** |  |
| **LSDt(0,05)** | **0.60** |  |  |  | **3.09** |  |