

2021 National Cultivar Evaluation results

Record yields in the cooler central irrigation areas

La Niña brought exceptionally wet conditions during the latter part of the 2021 wheat season. Above normal rainfall was received during the months of November and December in most irrigation wheat production regions.

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The results of the 2021 National Cultivar Evaluation Programme suggest that the wetter than usual conditions had a positive impact on the yield in the cooler central irrigation areas. The earlier planted wheat cultivars in the region produced the highest yield in the past four seasons, with an average of 11,5 t/ha. On the other hand, the rain caused damage for some producers through lodging and sprouting, resulting in severe reductions in wheat quality.

ARC-Small Grain conducted another successful cultivar

evaluation programme in the different irrigation regions in 2021, despite the challenging conditions. Seven of the 20 trials planted had to be excluded because of either rain or hail damage, caused by the exceptionally wet season. Of the 19 cultivars included in the field trials, two were new entries.

Data from the 13 trials harvested successfully was included in the project report and submitted to the National Cultivar Evaluation Workgroup.

Results obtained in the 2021 season

The irrigation wheat production area of the country can be divided into four main geographic regions, namely the cooler central irrigation region in the Northern Cape, the warmer

**Table 1: Cooler central irrigation area (earlier planting).
Average yield (t/ha) of entries from 2018 – 2021.**

Cultivar	2021		2020		2019		2018		Four-year average 2018-2021		Three-year average 2019-2021		Two-year average 2020-2021	
	R		R		R		R		R		R		R	
Duzi	11,88	2	7,39	12	7,89	5	8,58	16	8,93	7	9,05	5	9,64	7
Koedoes	11,51	11	7,84	7	7,92	3	9,52	6	9,20	4	9,09	4	9,67	6
Krokodil	11,55	10	7,27	15	7,02	17	9,85	2	8,92	8	8,61	13	9,41	12
PAN 3400	11,75	5	7,69	10	7,61	9	8,86	13	8,98	6	9,02	6	9,72	5
PAN 3453	11,22	17	7,17	17									9,19	17
PAN 3471					7,06	16	8,57	17						
PAN3497	11,64	7	7,12	18	6,77	20	7,61	22	8,28	13	8,51	14	9,38	13
PAN 3515							8,27	20						
PAN 3541	11,43	13	7,17	16	7,27	15	8,80	14	8,67	12	8,62	12	9,30	15
PAN 3555			7,82	8										
PAN 3623							9,73	3						
PAN 3644	10,69	20	8,22	3	7,91	4	9,45	8	9,07	5	8,94	8	9,45	11
Renoster			7,30	14	7,52	11	8,90	11						
Sabie					6,40	21	7,75	21						
Selons	11,35	15												
SST 806	11,43	14	7,77	9	7,51	12	8,44	18	8,79	10	8,90	9	9,60	9
SST 8135	11,23	16	7,39	13	7,80	7	9,11	9	8,88	9	8,81	10	9,31	14
SST 8154	11,85	3	7,97	5	8,27	1	9,85	1	9,49	1	9,36	2	9,91	3
SST 8156	11,58	8	7,61	11	6,99	19	8,87	12	8,76	11	8,73	11	9,60	10
SST 8175	10,96	19	8,26	2	7,68	8					8,97	7	9,61	8
SST 8177	11,57	9	6,84	19									9,21	16
SST 8205	12,14	1	7,92	6									10,03	1
SST 835					7,43	14	8,34	19						
SST 843					7,47	13	8,71	15						
SST 866					7,01	18	9,04	10						
SST 875					7,54	10	9,52	8						
SST 884	11,79	4	8,18	4	8,26	2	9,57	6	9,45	2	9,41	1	9,98	2
SST 895	11,50	12	8,30	1	7,82	6	9,71	5	9,33	3	9,21	3	9,90	4
Umgeni	11,07	18												
Usutu	11,72	6												
Mean	11,49		7,64		7,48		8,96		8,98		8,94		9,58	
LSD _t (0,05)	0,80		0,26		0,35		0,43		0,30		0,34		0,43	

R = Ranking LSD = Least significant difference



northern irrigation region in the North West, Limpopo and Gauteng provinces, the Highveld region in Mpumalanga and the Free State, and lastly the KwaZulu-Natal region.

In each of these regions, trials must be planted at two different planting times, namely an “earlier” and a “later” planting, with the exact dates varying between regions. The exception is the KwaZulu-Natal area, where the planting window is too narrow for two planting dates.

Producers need this information to decide on the best cultivar according to their desired planting dates. For 2021, earlier plantings for all trials in the Highveld were unsuccessful due to rain damage.

In **Tables 1 to 6**, the yield results for the 2021 season, as well as two-, three- and four-year results for each region and planting date, are presented.

More detailed information on the performance of irrigation wheat cultivars are available in the production guidelines published by ARC-Small Grain on an annual basis. These include information on the one-year performance, as well as long-term data for all the production regions and different planting times. The guidelines are available to producers on the Agricultural Research Council (ARC) website (www.arc.agric.za).

For any additional information, producers are welcome to contact Lientjie Visser on 058 307 3400 or visserl@arc.agric.za.

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**Table 2: Cooler central irrigation area (later planting).
Average yield (t/ha) of entries from 2018 – 2021.**

Cultivar	2021		2020		2019		2018		Four-year average 2018-2021		Three-year average 2019-2021		Two-year average 2020-2021	
	R		R		R		R		R		R		R	
Duzi	9,16	12	8,36	6	9,67	8	10,39	11	9,39	7	9,06	9	8,76	8
Koedoes	9,75	2	8,76	2	10,29	3	11,06	3	9,96	2	9,60	2	9,25	1
Krokodil	9,36	8	8,13	13	9,66	9	10,24	16	9,35	10	9,05	10	8,75	11
PAN 3400	9,44	6	8,08	16	9,94	6	10,56	9	9,51	5	9,15	6	8,76	7
PAN 3453	9,62	3	7,38	19									8,50	15
PAN 3471					9,36	15	10,11	18						
PAN3497	9,13	14	8,11	14	9,14	19	10,17	17	9,14	12	8,79	13	8,62	13
PAN 3515							10,09	19						
PAN 3541	9,22	11	8,25	9	9,16	18	10,68	8	9,33	11	8,88	12	8,73	12
PAN 3555			8,57	3										
PAN 3623							10,93	4						
PAN 3644	9,37	7	8,20	11	9,66	10	10,26	15	9,37	8	9,08	7	8,78	6
Renoster			8,44	5	9,48	14	10,91	5						
Sabie					8,75	21	9,34	22						
Selons	8,60	18												
SST 806	9,47	5	8,23	10	9,50	13	10,28	14	9,37	9	9,06	8	8,85	4
SST 8135	9,36	9	8,15	12	9,98	5	10,32	12	9,45	6	9,16	5	8,75	9
SST 8154	9,50	4	8,00	17	9,57	12	11,22	2	9,57	4	9,02	11	8,75	10
SST 8156	7,95	20	8,09	15	9,26	16	10,43	10	8,93	13	8,43	14	8,02	17
SST 8175	9,34	10	8,28	8	10,32	2					9,31	4	8,81	5
SST 8177	8,55	19	7,83	18									8,19	16
SST 8205	8,77	17	8,33	7									8,55	14
SST 835					9,25	17	10,08	20						
SST 843					8,89	20	9,70	21						
SST 866					9,74	7	10,30	13						
SST 875					9,59	11	10,71	7						
SST 884	10,00	1	8,47	4	10,53	1	11,23	1	10,06	1	9,66	1	9,23	2
SST 895	8,98	15	8,94	1	10,14	4	10,91	5	9,74	3	9,35	3	8,96	3
Umgeni	9,15	13												
Usutu	8,83	16												
Mean	9,18		8,24		9,61		10,45		9,47		9,12		8,72	
LSD _t (0,05)	1,29		0,30		0,55		0,49		0,24		0,28		0,30	

R = Ranking LSD = Least significant difference

Table 3: Warmer northern irrigation area (earlier planting).
Average yield (t/ha) of entries from 2018 – 2021.

Cultivar	2021	R	2020	R	2019	R	2018	R	Four-year average 2018-2021	R	Three-year average 2019-2021	R	Two-year average 2020-2021	R
Duzi	9,24	10	7,39	12	7,89	5	8,58	16	8,27	8	8,17	6	8,32	11
Koedoes	8,73	19	7,84	7	7,92	3	9,52	6	8,50	5	8,16	8	8,29	12
Krokodil	9,75	1	7,27	15	7,02	17	9,85	2	8,47	6	8,01	11	8,51	7
PAN 3400	8,80	18	7,69	10	7,61	9	8,86	13	8,24	9	8,03	10	8,25	13
PAN 3453	9,31	6	7,17	17									8,24	14
PAN 3471					7,06	16	8,57	17						
PAN3497	8,24	20	7,12	18	6,77	20	7,61	22	7,43	13	7,37	14	7,68	17
PAN 3515							8,27	20						
PAN 3541	9,25	9	7,17	16	7,27	15	8,80	14	8,12	12	7,89	13	8,21	15
PAN 3555			7,82	8										
PAN 3623							9,73	3						
PAN 3644	8,94	17	8,22	3	7,91	4	9,45	8	8,63	4	8,35	5	8,58	5
Renoster			7,30	14	7,52	11	8,90	11						
Sabie					6,40	21	7,75	21						
Selons	8,99	15												
SST 806	8,99	15	7,77	9	7,51	12	8,44	18	8,18	10	8,09	9	8,38	9
SST 8135	9,32	3	7,39	13	7,80	7	9,11	9	8,40	7	8,17	7	8,36	10
SST 8154	9,13	14	7,97	5	8,27	1	9,85	1	8,80	2	8,45	3	8,55	6
SST 8156	9,16	13	7,61	11	6,99	19	8,87	12	8,16	11	7,92	12	8,39	8
SST 8175	9,32	4	8,26	2	7,68	8					8,42	4	8,79	2
SST 8177	9,21	12	6,84	19									8,02	16
SST 8205	9,41	2	7,92	6									8,67	4
SST 835					7,43	14	8,34	19						
SST 843					7,47	13	8,71	15						
SST 866					7,01	18	9,04	10						
SST 875					7,54	11	9,52	8						
SST 884	9,22	11	8,18	5	8,26	3	9,57	6	8,81	1	8,55	1	8,70	3
SST 895	9,32	5	8,30	2	7,82	7	9,71	5	8,79	3	8,48	2	8,81	1
Umgeni	9,29	7												
Usutu	9,28	8												
Mean	9,14		7,64		7,48		8,96		8,37		8,15		8,39	
LSD _t (0,05)	0,69		0,26		0,35		0,43		0,23		0,27		0,37	

R = Ranking LSD = Least significant difference

Table 4: Warmer northern irrigation area (later planting).
Average yield (t/ha) of entries from 2018 – 2021.

Cultivar	2021	R	2020	R	2019	R	2018	R	Four-year average 2018-2021	R	Three-year average 2019-2021	R	Two-year average 2020-2021	R
Duzi	8,73	18	8,08	5	7,67	13	8,00	6	8,12	10	8,16	10	8,40	10
Koedoes	8,99	15	8,40	1	8,06	6	7,91	10	8,34	5	8,48	4	8,69	5
Krokodil	9,43	5	7,61	14	7,86	10	7,75	12	8,16	8	8,30	8	8,52	7
PAN 3400	9,48	4	8,20	4	7,79	11	8,13	5	8,40	2	8,49	3	8,84	1
PAN 3453	8,60	19	6,71	19									7,66	17
PAN 3471					7,37	16	7,59	16						
PAN3497	9,12	11	7,35	17	6,78	20	7,04	21	7,57	13	7,75	13	8,23	16
PAN 3515							7,71	15						
PAN 3541	9,34	6	7,37	16	8,11	4	7,76	11	8,15	9	8,27	9	8,36	12
PAN 3555			7,98	8										
PAN 3623							7,99	7						
PAN 3644	9,01	14	8,02	7	7,95	8	7,92	9	8,22	6	8,32	6	8,51	8
Renoster			7,76	10	7,87	9	7,24	19						
Sabie					6,71	21	6,84	22						
Selons	9,22	9												
SST 806	9,05	13	7,65	13	7,16	18	7,58	17	7,86	12	7,95	12	8,35	13
SST 8135	9,18	10	8,37	2	8,05	7	7,92	8	8,38	3	8,53	2	8,78	3
SST 8154	8,98	16	7,78	9	8,21	3	7,75	13	8,18	7	8,32	7	8,38	11
SST 8156	9,48	3	7,09	18	7,34	17	7,73	14	7,91	11	7,97	11	8,29	14
SST 8175	9,50	2	7,73	11	7,54	14							8,62	6
SST 8177	9,06	12	7,51	15									8,29	15
SST 8205	9,24	7	8,30	3									8,77	4
SST 835					7,48	15	7,08	20						
SST 843					7,13	19	7,44	18						
SST 866					8,09	5	8,17	4						
SST 875					7,77	12	8,22	3						
SST 884	9,55	1	8,07	6	8,38	1	8,40	1	8,60	1	8,67	1	8,81	2
SST 895	9,24	8	7,65	12	8,36	2	8,25	2	8,38	4	8,42	5	8,45	9
Umgeni	7,69	20												
Usutu	8,89	17												
Mean	9,09		7,77		7,70		7,75		8,17		8,28		8,47	
LSD _t (0,05)	1,31		0,27		0,40		0,40		0,21		0,24		0,30	

R = Ranking LSD = Least significant difference



**Table 5: Highveld irrigation area (later planting).
Average yield (t/ha) of entries from 2018 – 2021.**

Cultivar	2021	R	2020	R	2019	R	2018	R	Four-year average 2018-2021	R	Three-year average 2019-2021	R	Two-year average 2020-2021	R
Duzi	7,02	12	8,69	4	8,09	13	8,31	18	8,03	8	7,93	6	7,85	6
Koedoes	7,27	2	8,67	5	8,21	7	9,38	3	8,38	3	8,05	2	7,97	2
Krokodil	7,08	10	7,65	17	8,80	1	8,44	16	7,99	10	7,84	8	7,36	14
PAN 3400	6,86	14	7,94	14	8,43	4	8,82	11	8,01	9	7,75	10	7,40	12
PAN 3453	6,78	16	7,85	15									7,32	15
PAN 3471					7,83	19	8,12	21						
PAN3497	6,56	18	6,95	19	7,73	20	8,22	19	7,36	13	7,08	14	6,75	17
PAN 3515							8,12	20						
PAN 3541	6,98	13	8,08	11	8,14	11	9,20	5	8,10	6	7,74	11	7,53	10
PAN 3555			8,54	6										
PAN 3623							8,80	12						
PAN 3644	6,80	15	8,52	7	8,13	12	8,47	15	7,98	11	7,82	9	7,66	8
Renoster			7,72	16	8,73	2	9,12	7						
Sabie					7,37	21	7,23	22						
Selons	5,75	20												
SST 806	7,04	11	8,02	12	7,94	17	9,34	4	8,09	7	7,67	12	7,53	11
SST 8135	7,17	5	7,96	13	8,43	5	8,97	9	8,13	5	7,85	7	7,56	9
SST 8154	7,19	4	8,73	2	8,19	9	8,87	10	8,24	4	8,03	4	7,96	3
SST 8156	7,13	8	7,62	18	7,94	18	9,15	6	7,96	12	7,56	13	7,37	13
SST 8175	7,25	3	8,36	9	8,31	6					7,97	5	7,80	7
SST 8177	6,22	19	8,11	10									7,17	16
SST 8205	7,14	7	8,72	3									7,93	5
SST 835					7,97	15	8,48	14						
SST 843					7,95	16	9,05	8						
SST 866					8,04	14	8,53	13						
SST 875					8,20	8	8,40	17						
SST 884	7,42	1	8,46	8	8,54	3	9,72	1	8,54	1	8,14	1	7,94	4
SST 895	7,15	6	8,79	1	8,17	10	9,59	2	8,43	2	8,04	3	7,97	1
Umgeni	6,72	17												
Usutu	7,10	9												
Mean	6,93		8,18		8,15		8,74		8,10		7,82		7,59	
LSD _t (0,05)	0,49		0,28		0,58		0,41		0,24		0,26		0,27	

R = Ranking LSD = Least significant difference

**Table 6: KwaZulu-Natal irrigation area.
Average yield (t/ha) of entries from 2018 – 2021.**

Cultivar	2021	R	2020	R	2019	R	2018	R	Four-year average 2018-2021	R	Three-year average 2019-2021	R	Two-year average 2020-2021	R
Duzi	4,11	20	6,72	12	7,31	13	7,01	16	6,29	11	6,05	13	5,42	17
Koedoes	4,26	19	6,93	3	6,87	18	6,54	20	6,15	13	6,02	14	5,59	16
Krokodil	5,80	11	6,79	10	7,49	6	7,88	1	6,99	2	6,69	6	6,30	7
PAN 3400	6,08	6	6,91	7	7,32	11	6,70	19	6,75	7	6,77	4	6,49	5
PAN 3453	5,97	8	6,22	18									6,09	12
PAN 3471					6,96	16	7,20	10						
PAN3497	5,76	13	6,07	19	6,54	20	6,43	21	6,20	12	6,12	11	5,92	14
PAN 3515							7,04	13						
PAN 3541	6,49	2	6,84	8	7,61	3	7,33		7,06	1	6,98	1	6,66	2
PAN 3555			7,02	2										
PAN 3623							7,31	8						
PAN 3644	4,97	17	6,34	16	6,89	17	7,41		6,40	10	6,07	12	5,66	15
Renoster			6,56	14	7,32	12	7,24	9						
Sabie					6,52	21	6,05	22						
Selons	4,50	18												
SST 806	5,58	14	6,74	11	7,66	2	6,82	18	6,70	9	6,66	8	6,16	10
SST 8135	6,06	7	6,36	15	7,77	1	7,59	3	6,94	3	6,73	5	6,21	8
SST 8154	5,56	15	6,82	9	7,36	8	7,43	4	6,79	5	6,58	9	6,19	9
SST 8156	6,38	3	6,68	13	7,41	7	7,19	11	6,91	4	6,82	3	6,53	4
SST 8175	6,23	4	6,93	3	7,50	5					6,89	2	6,58	3
SST 8177	5,88	10	6,25	17									6,07	13
SST 8205	6,21	5	7,14	1									6,67	1
SST 835					7,28	14	6,83	17						
SST 843					6,86	19	7,04	14						
SST 866					7,55	4	7,10	12						
SST 875					7,23	15	7,63	2						
SST 884	5,32	16	6,93	3	7,34	9	7,39	6	6,75	8	6,53	10	6,12	11
SST 895	5,77	12	6,92	6	7,34	9	7,03	15	6,76	6	6,68	7	6,35	6
Umgeni	5,95	9												
Usutu	6,90	1												
Mean	5,69		6,69		7,24		7,10		6,67		6,54		6,18	
LSD _t (0,05)	0,65		0,24		0,25		0,23		0,17		0,22		0,32	

R = Ranking LSD = Least significant difference