

2019 National Cultivar Evaluation results Irrigation wheat production more important than ever

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At the recent annual meeting of the National Cultivar Evaluation Workgroup two cultivars, PAN 3541 and PAN 3644, were added to the list of recommended cultivars. No existing cultivars were removed from the list.

Wheat is one of the few crops that can be produced in all the production areas and production systems in South Africa. This wide adaptation makes wheat the ideal crop to produce in crop rotations under irrigation conditions. In **Table 2** the expected production (2019) of wheat under irrigation in the different provinces according to the National Crop Estimates Committee, is listed.

As can be seen, wheat is produced in all nine provinces, with the Northern Cape and Free State accounting for more than 60% of the total production under irrigation. On a national basis, wheat produced under irrigation has become more and more important over the past years. In **Graph 1** (on page 6) the split between dryland and

irrigation production is given from 2008 to 2019. In 2008 roughly 40% of wheat was produced under irrigation conditions. Over the years there has been an increase in this percentage, with 54% of wheat expected to be produced under irrigation in 2019.

It is no wonder that breeding companies are placing significant emphasis on developing cultivars for irrigation production. Currently 26 cultivars are recommended for irrigation production conditions. Each of these cultivars has different characteristics and yield potential levels and producers need to have this information available to make sound decisions on cultivar choice.

ARC-Small Grain has conducted irrigation wheat cultivar evaluation trials in 2019 in the cooler central irrigation areas, the warmer northern irrigation areas, KwaZulu-Natal and the Highveld. Yields were lower than the previous year, probably because of the effect of frost damage during the flowering stage and climatic conditions during harvesting that caused preharvest sprouting in many instances.

1 COOLER CENTRAL IRRIGATION AREA (EARLIER PLANTING). AVERAGE YIELD (T/HA) OF ENTRIES FROM 2016 - 2019.

CULTIVAR	2019		2018		2017		2016		4 YEAR AVERAGE 2016 - 2019	3 YEAR AVERAGE 2017 - 2019		2 YEAR AVERAGE 2018 - 2019		
		R		R		R		R			R		R	
DUZI	11,37	5	11,99	9	9,50	19	9,36	12	10,56	7	10,95	9	11,68	7
KOEDOES	11,00	13	12,16	4	9,19	20	-	-	-	-	10,78	-	11,58	9
KROKODIL	11,50	4	10,68	22	9,84	8	10,06	3	10,52	9	10,67	14	11,09	17
PAN 3400	10,76	17	12,64	2	9,72	13	10,12	1	10,81	2	11,04	7	11,70	6
PAN 3471	10,18	20	11,47	17	10,22	2	10,08	2	10,49	11	10,62	15	10,83	19
PAN 3497	11,18	10	12,36	3	10,19	3	9,88	4	10,90	1	11,24	1	11,77	2
PAN 3515	-	-	11,70	15	10,42	1	9,15	14	-	-	-	-	-	-
PAN 3541	11,17	11	11,82	13	-	-	-	-	-	-	-	-	11,50	12
PAN 3623	-	-	11,38	19	9,77	9	8,71	19	-	-	-	-	-	-
PAN 3644	11,28	8	11,56	16	-	-	-	-	-	-	-	-	11,42	13
RENOSTER	11,35	7	12,07	7	9,52	17	-	-	-	-	10,98	8	11,71	5
SABIE	10,81	15	11,42	18	9,56	15	9,09	16	10,22	14	10,60	16	11,12	16
SST 806	10,79	16	12,65	1	9,91	6	9,76	5	10,78	3	11,12	4	11,72	3
SST 8125	-	-	-	-	-	-	9,56	9	-	-	-	-	-	-
SST 8135	11,03	12	12,04	8	10,08	5	9,63	7	10,70	6	11,05	6	11,54	10
SST 8154	11,54	3	11,89	12	9,73	12	8,95	18	10,53	8	11,05	5	11,72	4
SST 8155	-	-	-	-	-	-	9,13	15	-	-	-	-	-	-
SST 8156	10,46	18	12,10	5	9,76	10	-	-	-	-	10,77	12	11,28	14
SST 8175	11,59	2	-	-	-	-	-	-	-	-	-	-	-	-
SST 835	10,41	19	12,10	5	9,75	11	9,57	8	10,46	12	10,75	13	11,26	15
SST 843	9,87	21	10,86	21	9,50	18	7,62	20	9,46	15	10,08	18	10,37	20
SST 866	10,87	14	11,29	20	9,57	14	9,64	6	10,34	13	10,58	17	11,08	18
SST 875	11,62	1	11,99	9	9,85	7	9,35	13	10,70	5	11,15	2	11,81	1
SST 877	-	-	-	-	-	-	9,09	17	-	-	-	-	-	-
SST 884	11,24	9	11,79	14	9,54	16	9,45	10	10,50	10	10,86	10	11,52	11
SST 895	11,36	6	11,90	11	10,14	4	9,45	10	10,71	4	11,13	3	11,63	8
MEAN	11,02	-	11,81	-	9,79	-	9,38	-	10,51	-	10,86	-	11,41	-
LSD _t (0,05)	0,54	-	0,60	-	0,49	-	0,44	-	0,26	-	0,32	-	0,42	-

R = Ranking LSD = Least significant difference

Results obtained in the 2019 season

Irrigation trials are planted at two different planting times in the irrigation areas, 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. This information is valuable when deciding on a cultivar to be planted in a specific crop sequence situation, where the planting date is determined by the crops produced before and after the wheat.

In **Tables 1 and 3 to 8** the yield results for the 2019 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, including figures on the one-year performance, as well as long-term data for all the production regions and different planting times, are available in the production guidelines published by ARC-Small Grain on an annual basis. These guidelines will be available to producers from middle March.

For any additional information, producers are welcome to contact Willem Kilian at 082 441 2306/058 307 3498 or kilianw@arc.agric.za.

2 EXPECTED PRODUCTION OF WHEAT UNDER IRRIGATION FOR THE 2019 SEASON.

PROVINCE	AREA (HA)	PRODUCTION (TON)
Northern Cape	37 500	270 000
Free State	43 500	260 000
Limpopo	16 800	120 950
North West	13 500	81 000
KwaZulu-Natal	7 500	45 750
Western Cape	8 000	32 000
Mpumalanga	4 000	25 200
Eastern Cape	2 910	15 300
Gauteng	1 310	8 130
TOTAL	135 020	858 330

Source: National Crop Estimates Committee

3 COOLER CENTRAL IRRIGATION AREA (LATER PLANTING). AVERAGE YIELD (T/HA) OF ENTRIES FROM 2016 - 2019.

CULTIVAR	2019		2018		2017		2016		4 YEAR AVERAGE 2016 - 2019		3 YEAR AVERAGE 2017 - 2019		2 YEAR AVERAGE 2018 - 2019	
	R	R	R	R	R	R	R	R	R	R	R	R	R	R
DUZI	9,67	8	10,39	11	9,67	3	9,58	3	9,83	6	9,91	8	10,03	9
KOEDOES	10,29	3	11,06	3	9,52	8	-	-	-	-	10,29	-	10,67	2
KROKODIL	9,66	9	10,24	16	9,36	13	9,51	4	9,69	9	9,76	11	9,95	12
PAN 3400	9,94	6	10,56	9	9,51	9	9,67	2	9,92	4	10,00	6	10,25	5
PAN 3471	9,36	15	10,11	18	9,49	10	9,47	5	9,61	10	9,65	13	9,74	16
PAN 3497	9,14	19	10,17	17	9,03	18	9,43	9	9,44	12	9,45	16	9,66	18
PAN 3515	-	-	10,09	19	9,47	12	9,39	11	-	-	-	-	-	-
PAN 3541	9,16	18	10,68	8	-	-	-	-	-	-	-	-	9,92	13
PAN 3623	-	-	10,93	4	9,57	7	9,45	6	-	-	-	-	-	-
PAN 3644	9,66	10	10,26	15	-	-	-	-	-	-	-	-	9,96	11
RENOSTER	9,48	14	10,91	5	9,20	15	-	-	-	-	9,86	10	10,19	6
SABIE	8,75	21	9,34	22	9,10	16	8,91	17	9,03	14	9,06	18	9,04	20
SST 806	9,50	13	10,28	14	9,35	14	9,22	14	9,59	11	9,71	12	9,89	14
SST 8125	-	-	-	-	-	-	8,85	18	-	-	-	-	-	-
SST 8135	9,98	5	10,32	12	9,48	11	9,36	12	9,79	8	9,93	7	10,15	7
SST 8154	9,57	12	11,22	2	9,74	2	9,31	13	9,96	3	10,18	4	10,40	4
SST 8155	-	-	-	-	-	-	8,85	19	-	-	-	-	-	-
SST 8156	9,26	16	10,43	10	8,98	19	-	-	-	-	9,56	14	9,85	15
SST 8175	10,32	2	-	-	-	-	-	-	-	-	-	-	-	-
SST 835	9,25	17	10,08	20	9,03	17	9,19	15	9,39	13	9,45	15	9,67	17
SST 843	8,89	20	9,70	21	8,96	20	8,49	20	9,01	15	9,18	17	9,29	19
SST 866	9,74	7	10,30	13	9,67	4	9,45	6	9,79	7	9,90	9	10,02	10
SST 875	9,59	11	10,71	7	9,74	1	9,45	8	9,87	5	10,01	5	10,15	8
SST 877	-	-	-	-	-	-	9,01	16	-	-	-	-	-	-
SST 884	10,53	1	11,23	1	9,58	6	9,42	10	10,19	1	10,45	1	10,88	1
SST 895	10,14	4	10,91	5	9,62	5	9,69	1	10,09	2	10,23	3	10,53	3
MEAN	9,61	-	10,45	-	9,40	-	9,28	-	9,68	-	9,81	-	10,01	-
LSD _(0,05)	0,55	-	0,49	-	0,44	-	0,33	-	0,22	-	0,28	-	0,37	-

R = Ranking LSD = Least significant difference

IRRIGATION WHEAT PRODUCTION...

4 WARMER NORTHERN IRRIGATION AREA (EARLIER PLANTING). AVERAGE YIELD (T/HA) OF ENTRIES FROM 2016 - 2019.

CULTIVAR	2019		2018		2017		2016		4 YEAR AVERAGE 2016 - 2019		3 YEAR AVERAGE 2017 - 2019		2 YEAR AVERAGE 2018 - 2019	
		R		R		R		R		R		R		R
DUZI	7,89	5	8,58	16	8,61	6	7,20	11	8,07	8	8,36	9	8,23	10
KOEDOES	7,92	3	9,52	6	7,85	11	-	-	-	-	8,43	-	8,72	4
KROKODIL	7,02	17	9,85	2	7,75	12	8,14	1	8,19	5	8,21	10	8,43	8
PAN 3400	7,61	9	8,86	13	8,72	2	7,29	8	8,12	7	8,40	7	8,23	9
PAN 3471	7,06	16	8,57	17	7,69	14	6,50	20	7,46	13	7,77	15	7,82	18
PAN 3497	6,77	20	7,61	22	7,55	15	6,90	15	7,21	14	7,31	17	7,19	19
PAN 3515	-	-	8,27	20	6,85	20	6,78	18	-	-	-	-	-	-
PAN 3541	7,27	15	8,80	14	-	-	-	-	-	-	-	-	8,03	13
PAN 3623	-	-	9,73	3	8,67	4	7,79	3	-	-	-	-	-	-
PAN 3644	7,91	4	9,45	8	-	-	-	-	-	-	-	-	8,68	5
RENOSTER	7,52	11	8,90	11	8,71	3	-	-	-	-	8,38	8	8,21	11
SABIE	6,40	21	7,75	21	7,40	18	6,73	19	7,07	15	7,18	18	7,08	20
SST 806	7,51	12	8,44	18	7,50	17	7,21	10	7,66	11	7,81	13	7,97	15
SST 8125	-	-	-	-	-	-	7,00	14	-	-	-	-	-	-
SST 8135	7,80	7	9,11	9	8,48	7	7,27	9	8,16	6	8,46	5	8,45	7
SST 8154	8,27	1	9,85	1	7,97	9	7,09	12	8,29	4	8,70	2	9,06	1
SST 8155	-	-	-	-	-	-	6,90	16	-	-	-	-	-	-
SST 8156	6,99	19	8,87	12	7,51	16	-	-	-	-	7,79	14	7,93	16
SST 8175	7,68	8	-	-	-	-	-	-	-	-	-	-	-	-
SST 835	7,43	14	8,34	19	7,40	19	7,04	13	7,55	12	7,73	16	7,89	17
SST 843	7,47	13	8,71	15	7,96	10	7,60	6	7,94	9	8,05	11	8,09	12
SST 866	7,01	18	9,04	10	7,75	13	7,68	4	7,87	10	7,93	12	8,02	14
SST 875	7,54	10	9,52	7	8,62	5	7,62	5	8,33	3	8,56	4	8,53	6
SST 877	-	-	-	-	-	-	6,85	17	-	-	-	-	-	-
SST 884	8,26	2	9,57	5	8,89	1	8,01	2	8,68	1	8,90	1	8,91	2
SST 895	7,82	6	9,71	4	8,26	8	7,57	7	8,34	2	8,60	3	8,77	3
MEAN	7,48	-	8,96	-	8,01	-	7,26	-	7,93	-	8,14	-	8,21	-
LSD _t (0,05)	0,35	-	0,43	-	0,44	-	0,33	-	0,19	-	0,24	-	0,27	-

R = Ranking LSD = Least significant difference

5 WARMER NORTHERN IRRIGATION AREA (LATER PLANTING). AVERAGE YIELD (T/HA) OF ENTRIES FROM 2016 - 2019.

CULTIVAR	2019		2018		2017		2016		4 YEAR AVERAGE 2016 - 2019		3 YEAR AVERAGE 2017 - 2019		2 YEAR AVERAGE 2018 - 2019	
		R		R		R		R		R		R		R
DUZI	7,67	13	8,00	6	6,84	15	7,86	4	7,59	8	7,50	10	7,84	11
KOEDOES	8,06	6	7,91	10	6,44	19	-	-	-	-	7,47	-	7,98	6
KROKODIL	7,86	10	7,75	12	6,84	16	7,45	12	7,48	10	7,49	11	7,81	12
PAN 3400	7,79	11	8,13	5	7,32	10	8,22	1	7,87	3	7,75	6	7,96	8
PAN 3471	7,37	16	7,59	16	7,02	13	7,67	8	7,41	11	7,33	15	7,48	15
PAN 3497	6,78	20	7,04	21	7,42	8	7,38	16	7,15	13	7,08	16	6,91	19
PAN 3515	-	-	7,71	15	6,76	18	7,31	17	-	-	-	-	-	-
PAN 3541	8,11	4	7,76	11	-	-	-	-	-	-	-	-	7,94	9
PAN 3623	-	-	7,99	7	7,30	11	8,00	3	-	-	-	-	-	-
PAN 3644	7,95	8	7,92	9	-	-	-	-	-	-	-	-	7,93	10
RENOSTER	7,87	9	7,24	19	7,30	12	-	-	-	-	7,47	12	7,55	13
SABIE	6,71	21	6,84	22	6,79	17	7,12	19	6,87	15	6,78	18	6,78	20

