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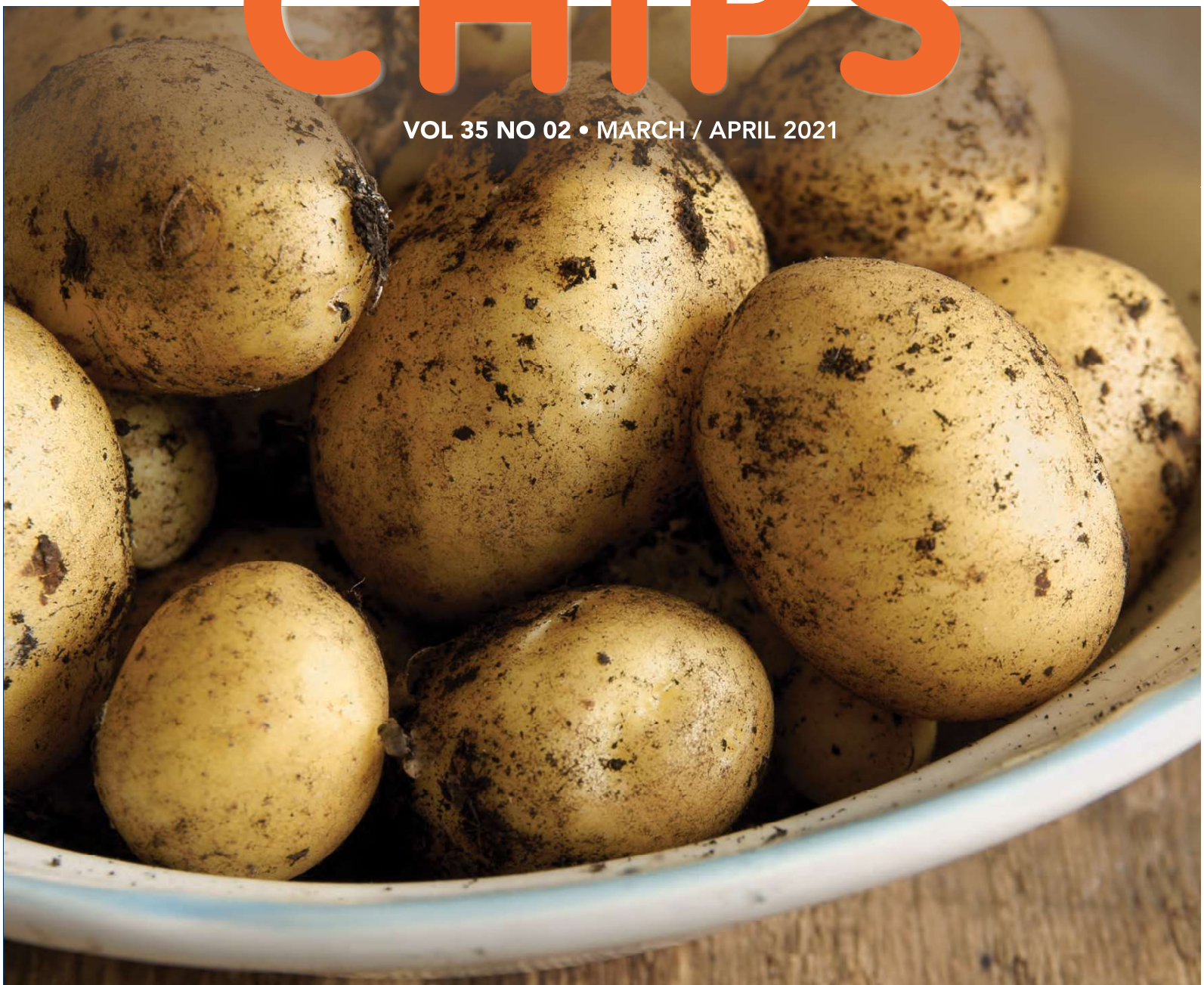
CHIPS

VOL 35 NO 02 • MARCH / APRIL 2021



BASELINE AND MARKET DYNAMICS FOR THE COMING SEASON

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The effect of dry conditions at planting on potato emergence and yield

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Smallholder farmers in KwaZulu-Natal are often advised to plant potatoes in August and September. This planting period is suitable for areas where irrigation is available and where heavy, late frost does not occur. In recent years, spring rain has either arrived late or has been insufficient for good emergence of the crop under dryland conditions.

Dryland versus irrigated trial

A potato cultivar trial was planted at the Cedara Research Station of the KwaZulu-Natal Department of Agriculture and Rural Development on 19 September 2019 and grown under dryland conditions. No effective rainfall was received from the beginning of September and therefore the soil was extremely dry at planting.

From planting until the end of October, only a total of 43 mm of rain was received. For 15 days during that period, the maximum temperature was above 30°C. Due to these harsh conditions,

Table 1: Plant population and yield in the dryland and irrigated trials for the 18 cultivars.

Cultivar	Plant population		Yield	
	Dryland	Irrigated	Dryland	Irrigated
	(number/ha)		(t/ha)	
Electra	37 407 a*	37 037 a	72.41 a	75.61 a
Valor	37 037 a	36 674 a	67.61 a	59.88 bc
Fandango	37 407 a	36 674 a	66.80 a	62.26 b
Essenza	37 778 a	37 037 a	66.05 a	47.90 d-f
Taisiya	37 037 a	37 037 a	53.14 b	53.07 c-e
Mondeo	37 778 a	37 037 a	53.05 b	49.61 ef
Lanorma	37 037 a	37 037 a	51.84 b	53.64 ef
El Mundo	37 778 a	37 037 a	51.32 bc	52.70 c-e
Allison	37 407 a	37 037 a	49.38 bc	54.27 b-e
Mondial	37 407 a	37 037 a	48.08 b-d	52.11 c-f
Sababa	37 778 a	37 037 a	47.01 b-d	58.24 b-d
Bikini	35 556 a	37 037 a	46.72 b-d	55.93 b-e
Tyson	37 778 a	36 674 a	44.87 b-e	48.95 ef
Panamera	37 037 a	36 674 a	42.39 c-f	53.99 b-e
Labadia	31 111 b	37 037 a	39.27 d-f	47.97 ef
Jelly	31 111 b	31 227 b	35.56 ef	51.88 c-f
Sifra	30 556 bc	37 037 a	34.66 f	58.36 b-d
Georgina	27 778 c	35 948 a	23.46 g	44.08 f
Mean	**35 710**	**36 573**	**49.65**	**54.47**
LSD (P < 0.05)	3 141.3	1 172.1	9.388	8.272
CV%	5.3	1.9	11.4	9.1

** Figures in each column that have the same alphabetic letter, do not differ significantly.*

A lack of rainfall before and after planting delayed emergence of potato cultivars in a dryland trial (foreground). An irrigated trial planted one day earlier emerged well, as can be seen in the background.

the 18 cultivars took 39 to 61 days from planting to reach 75% emergence, as can be seen in the photograph.

Labadia, Jelly, and Georgina took the longest to reach 75% emergence, indicating that the viability of their tubers was low. In a similar trial planted a day earlier and irrigated frequently, the same 18 cultivars took 17 to 21 days to reach 75% emergence.

Reduced viability of cultivars

In the dryland trial, the poor viability of Labadia, Jelly, Sifra, and Georgina resulted in significantly lower plant stands and yields than the majority of the other cultivars (*Table 1*), indicating that the tubers could not tolerate the harsh conditions and ultimately rotted. It is possible that the tubers of these cultivars may have been lifted earlier or were stored differently compared with the other cultivars, and therefore the viability was reduced. Jelly also had a significantly lower plant stand than the other cultivars in the irrigated trial. In general, this result indicates the strong resilience of potatoes under harsh conditions after planting.

Despite the dry conditions experienced early in the season, good rainfall received from mid-November onwards resulted in the production of overall high yields. In fact, some cultivars produced similar or higher yields compared with the irrigated trial (*Table 1*). This could possibly be due to the more favourable microclimate present for the development of late blight in the irrigated trial.

Although the results in *Table 1* were obtained from a season with exceptionally dry conditions before and after planting, this will not always be the case. However, as insufficient rainfall could be expected from August to October in future seasons, smallholder farmers without irrigation should be advised to delay planting until good rain has been received. In addition, they should plant large (200 to 250 count) fresh tubers to avoid crop losses if the rainfall is insufficient for a long period after planting.

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