Table 2. Marketable yields of 'Blesbok' and 'Bosbok' at four harvest times at Pretoria, 1988.^a

Harvest time (days from planting)	Yield (t·ha ⁻¹)	
	Blesbok	Bosbok
90	30.8	14.1
119	43.1	29.3
155	51.5	35.0
183	72.7	44.2

^aCultivar × harvest time interaction significant at $P = 0.05$. Interaction $LSD_T = 14.8$.

Table 3. The percentage roots of 'Blesbok' in different size classes at Pretoria, 1988.

Size class (g)	Blesbok (%)	Bosbok (%)
Extra large (1000–1500)	1	0
Large (500–1000)	14	9
Medium (250–500)	45	36
Small (100–250)	40	55

Table 4. The percentage marketable roots and percentage mass loss after storage for 21 days at 10 to 15°C and 50% RH. Roots were not cured before storage. Pretoria, 1989.

	Blesbok	Bosbok
Marketable roots (%)	65	50
Mass loss (%)	30	39

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'Texas Gold Spike' Carrot, An Alternative to 'Imperator 58'

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'Texas Gold Spike' is an open-pollinated carrot (*Daucus carota* L.) developed to replace 'Imperator 58', the most commonly grown cultivar in southern Texas. 'Texas Gold Spike' is a much improved cultivar, with better tolerance to alternaria leaf blight (*Alternaria dauci*), a uniform orange interior and exterior, uniform root shape (slightly tapered and blunt at the tip), and short, less dense foliage than 'Imperator 58' that eases mechanical harvesting and disease control.

Origin

'Texas Gold Spike' (Fig. 1) was developed from a cross between 'Pioneer', a hybrid from Harris Moran Seed Co., and WI 33, a breeding line from the Univ. of Wisconsin. 'Pioneer' has a cylindrical shape and a blunt-tip root, while WI 33 is a smooth carrot with good, uniform orange color. The F_1 generation was selfed and several F_2 selections were made. Small sibling selections of four to 10 uniform roots from one F_2 selection were mass-pollinated in cages for four more generations. A large mass increase of several hundred roots followed, using field number 84110 (Fig. 2), which was retained throughout commercial testing. One additional small commercial seed increase was made and evaluated on ≈160 ha of commercial production before release. Selections

were made each year at the Texas Agricultural Experiment Station, Weslaco, which is located in the major carrot producing area of the state. All generations were screened in the field under our annual severe natural pressure for tolerance to *A. dauci* and for quality characteristics, such as uniform orange color, uniform shape, and sweet taste,

all evaluated sensorily by us. Color was measured spectrometrically. Soluble solids concentration was determined with a handheld refractometer, carotenoids by extraction and spectrometry. After each selection, carrot roots were shipped to College Station for vernalization, then planted for seed increase. Small commercial trials were undertaken in southern Texas during the 1985–87 growing seasons.

Description

'Texas Gold Spike' is a fresh-market-type carrot that produces high-quality roots and has better tolerance to *Alternaria* than 'Imperator 58' (Table 1). The short (open) foliage allows for rapid evaporation and drying of soil and foliage after rains, dew, or irrigation and aids in disease control and mechanical harvesting. 'Imperator 58' and most hybrids produce heavy dense foliage when grown in southern Texas. Crown diameter and total root length of both cultures are sim-

Table 1. Characteristics of 'Texas Gold Spike' and 'Imperator 58' carrots.

Characteristic	Cultivar	
	Texas Gold Spike	Imperator 58
Root		
Shape	Moderately tapered	Slender/tapered
Tip	Slight to moderate blunt	Slender tail, no blunt
Uniformity ^a	3.5	2.0
Length	20–25 cm	20–25 cm
Diameter (crown)	3.8 cm	3.8 cm
Smoothness ^b	4	2
Exterior color		
Visual	Orange	Orange
HLS ^c	L = 28.2, a = 21.3, b = 5.8	L = 22.2, a = 17.8, b = 5.3
Interior color		
Visual	Uniform orange	Variable, some yellow
HLS		
Stele ^w	L = 42.2, a = 29.4, b = 21.9	L = 36.9, a = 16.1, b = 17.2
Cortex ^v	L = 54.5, a = 35.6, b = 29.3	L = 51.3, a = 27.1, b = 24.7
Overall ^u	L = 50.3, a = 41.0, b = 26.1	L = 53.0, a = 32.9, b = 28.0
Carotenoids (mg·g ⁻¹ fresh wt)	165	101
Soluble solids content (%)	8.6	9.4
Foliage length	33–41 cm	46–51 cm
<i>Alternaria</i> resistance ^t	4	3

^aUniformity of roots for type, 1 = least and 5 = most uniform.

^bSmoothness of root surface, 1 = least and 5 = smoothest.

^cHunterlab Labscan Spectrocolorimeter; L = brightness, a = red, b = yellow. The higher the value for L, a, b, the greater the intensity.

^wStele (core of root) color: L, a, b color ratings, using 1-cm aperture.

^vCortex (root tissue from core outward) color: L, a, b color ratings, using 1-cm aperture.

^uOverall (complete cross section of root) color: L, a, b color ratings, using 3-cm aperture.

^t*Alternaria* resistance based on rating scale of 1 for no tolerance and 5 for excellent tolerance.

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Fig. 1. 'Texas Gold Spike' carrot.

ilar, but roots are cylindrical and blunt on 'Texas Gold Spike', as compared to tapered roots with pointed tips on 'Imperator 58'. Roots are smoother than on 'Imperator 58' and similar to those of WI 33. Compared to 'Imperator 58', 'Texas Gold Spike' is more uniformly orange through the entire cross section of the root and has a higher carotenoid content.

During its development and in small trial and commercial trial evaluations without application of chemicals, 'Texas Gold Spike' has consistently been rated more tolerant to *Alternaria* than 'Imperator 58'. It had the

third highest rating for tolerance to *Alternaria* when compared to more than 120 entries in a recent National Carrot Conference trial in southern Texas.

The cultivar was named 'Texas Gold Spike' to reflect its uniform golden orange color, tapered cylindrical root, and blunt root tip.

Availability

'Texas Gold Spike' has been submitted for Plant Variety Protection. Seed is available from the Texas Vegetable Seed Assn. (members only) and Asgrow Seed Co.

Fig. 2. Pedigree of 'Texas Gold Spike' carrot.