Auckland Botanic Gardens *Kniphofia* trial, 2013–2016

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Introduction

Kniphofia, commonly known as red-hot poker, originate from Africa where there are about 70 naturally occurring species. *Kniphofia* are fast growing perennials that prefer full sun and well-drained soil. They have narrow, grass-like leaves and upright, brightly coloured flower spikes. Their showy flowers attract birds and last for a long time which makes them a popular plant for New Zealand gardens. Although *Kniphofia* have been placed in the family Xanthorrhoeaceae, recent treatments place them in the Asphodelaceae, along with genera including *Aloe* and *Asphodelus*.

The aim of the Auckland Botanic Gardens (ABG) trial was to identify the top performing *Kniphofia* species or cultivars for Auckland conditions. After assessing them in our trial beds, they were also added to the African Garden collection at AGB. The key objective was to identify long flowering *Kniphofia* with clean foliage that are relatively resistant to snail and thrip damage and black ink-spot.

Methods

Kniphofia were planted in our trial beds on 26th November 2013. Several additions to this trial were planted in autumn 2014. *Kniphofia* require plenty of space and were planted 40 cm apart. All twenty-one *Kniphofia* cultivars were represented by three replicates, but only one each of the five *Kniphofia* species that we trialled were planted.

Plants were grown in full sun and mulched with bark, and no fertiliser was applied at the time of planting. Management of plants during the trial included one late winter cut back of two out of three of the replicates, leaving the third plant as a comparison for their growth response following the cut back (mid-August 2014). Deadheading occurred only when seeds turned brown.

Fig. 1 Black ink-spot infecting *Kniphofia* foliage and flowering stems. Photo: Bec Stanley.

Plants were assessed quarterly during flowering for pests and diseases, specifically snail and thrip damage and black ink-spot (Fig. 1–2). Flowering was recorded weekly for development of buds, flowers and seeds. Overall size was measured across the widest part of the foliage of all three plants (for each cultivar) and then averaged. We also measured foliage height (cm) from the base of plant to the highest point of foliage, also averaging the three replicate plants. Evaluations by an independent panel were conducted in December 2014 and March 2016 on the overall performance of the plants. Independent experts have seen these plants growing in other parts of Auckland and therefore added comments about their overall performance in the region. This trial ran for two and a half years and concluded at the end of July 2016.

Each cultivar and species was given an overall rating based on both pest and disease observations at ABG. The overall rating (between 1 = poor performer and 10 = excellent performer) was used to determine the list of top performers. Cultivars that scored 8 or more were considered top performers and would be recommended based on the results of these trials (Table 1).

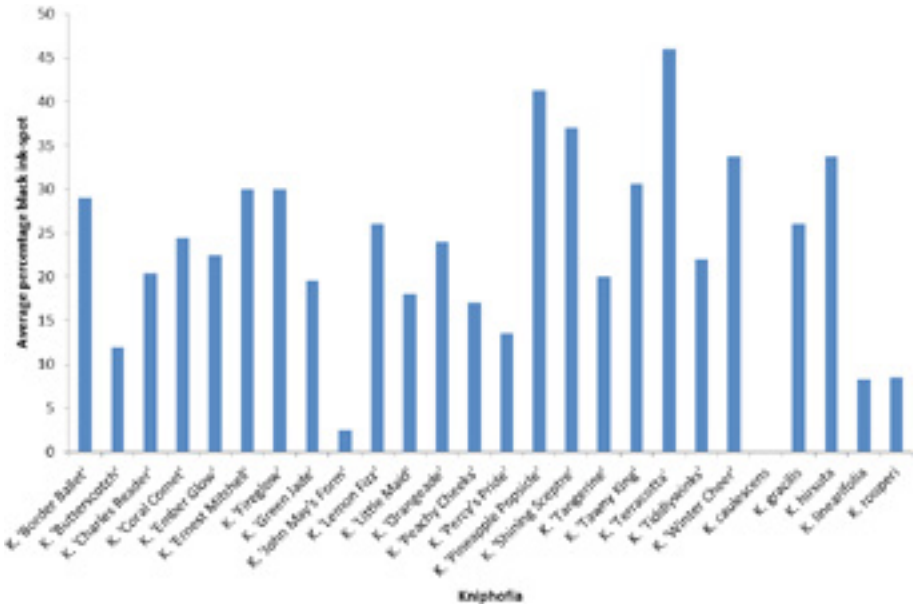

Fig. 2 Average percentages of black ink-spot (2015–2016) on *Kniphofia* in ABG trial.

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Table 1 *Kniphofia* species and cultivars summary data.

***Kniphofia* species and cultivars**	**Flowering and colour**	**Clump diameter by height (cm)**	**Habit/use**	**Overall rating**
K. 'Border Ballet'	Oct to May. Peak flowering mid-Dec. Mixed flower colours.	15 × 26	Deciduous, compact, clump forming.	6
K. 'Butterscotch' (Fig. 3)	March to June. Yellow flowers.	34 × 67	Large, tall evergreen perennial.	8 (star performer)
K. 'Charles Reader' (Fig. 4)	Mid-March to Dec. Peak flowering June. Orange/yellow flowers.	44 × 80	Suitable for a back border, very vigorous. Evergreen.	8 (star performer)
K. 'Coral Comet'	March to May. Peak flowering Dec. Deep orange flowers.	35 × 47	Tidy, evergreen perennial.	9 (star performer)
K. 'Ember Glow'	Jan to March. Orange flowers.	26 × 32	Deciduous, dwarf perennial.	6
K. 'Ernest Mitchell'	Mid-August to Dec. Yellow flowers.	33 × 58	Evergreen, robust perennial.	7
K. 'Fireglow'	Mid-Nov to May. Orange flowers.	20 × 30	Deciduous, dwarf perennial.	7
K. 'Green Jade'	Did not flower during this trial.	13 × 25	Deciduous perennial.	4 (poor performer)
K. 'John May's Form'	Very sporadic flowering and few flower stems. Orange/yellow flowers.	36 × 36	*K. caulescens* cultivar. Evergreen.	5 (poor performer)
K. 'Lemon Fizz' (Fig. 5)	Jan to April and Aug to Dec. Peak flowering Dec. Lemon yellow flowers.	37 × 52	Sparse foliage. Semi-deciduous.	7
K. 'Little Maid'	Dec to early May. Peak flowering March. Yellow flowers.	19 × 22	Very small, dwarf. Suitable for front border. Deciduous.	4
K. 'Orangeade'	Sept to June. Peak flowering late Dec. Pale orange flowers.	32 × 40	Tidy foliage. Evergreen.	6
K. 'Peachy Cheeks'	Nov to March. Peak flowering late Dec. Peach to yellow flowers.	15 × 25	Deciduous dwarf perennial with fine foliage.	5
K. 'Percy's Pride' (Fig. 6)	March to May and mid-Oct to Dec. Yellow flower.	32 × 71	Evergreen.	8 (star performer)
K. 'Pineapple Popsicle'	Nov to March. Peak flowering Dec. Yellow flowers.	27 × 47	Compact, upright clump forming evergreen perennial.	7
K. 'Shining Sceptre'	March to May and Sept to Dec. Pale orange flowers.	44 × 58	Compact, arching foliage. Evergreen.	7
K. 'Tangerine' (Fig. 7)	Sept to May. Peak flowering Nov to Dec. Vibrant orange flowers.	27 × 59	Semi-deciduous.	8 (star performer)
K. 'Tawny King'	Sept to Dec. Orange flowers.	44 × 60	Evergreen.	6
K. 'Terracotta'	Oct to Dec. Peak flowering Nov. Vibrant orange flowers.	27 × 113	Deciduous.	7
K. 'Tiddlywinks'	Jan to May and Nov to Dec. Red flowers.	26 × 38	Small. Deciduous.	6
K. 'Winter Cheer' (Fig. 8)	June. Red flowers.	45 × 60	Massive border plant. Semi-deciduous.	7 (important for cultivar conservation)
K. caulescens	No flowering data (died). Red to yellow flowers.	n/a (died)	Large, tall evergreen species.	8 (not commercially available)
K. gracilis	Aug to Dec. Gold flowers.	34 × 63	Semi-deciduous.	7
K. hirsuta	Nov to Dec. Green and orange flowers.	38 × 53	Very tall evergreen species.	8 (not commercially available)
K. linearifolia	March to April. Orange to yellow flowers.	27 × 45	Evergreen.	8 (not commercially available)
K. rooperi	August. Yellow/orange flowers.	73 × 79	Large, tall evergreen species.	8 (not commercially available)

Fig. 3 *Kniphofia* 'Butterscotch'.
Photo: Jack Hobbs.

Fig. 5 *Kniphofia* 'Lemon Fizz'.
Photo: Emma Bodley.

Fig. 7 *Kniphofia* 'Tangerine'.
Photo: Emma Bodley.

Fig. 4 *Kniphofia* 'Charles Reader'.
Photo: Emma Bodley.

Fig. 6 *Kniphofia* 'Percy's Pride'.
Photo: Jack Hobbs.

Fig. 8 *Kniphofia* 'Winter Cheer'.
Photo: Emma Bodley.

Results and conclusions

From this trial, five cultivars were assessed as star performers by scoring an 8 or higher on the ABG rating system which is the threshold above which we recommend selections to Auckland gardeners (Table 1). These had long flowering periods and were relatively pest and disease free. Species were included in this trial as a comparison with commercially available cultivars. Their performance was variable although some scored a high rating. They are excluded from our list of recommendations as they are generally not commercially available. Currently, all cultivars recommended are commercially available. Star performers and species are now displayed in the ABG African Garden. Four cultivars in this trial (*K.* 'Ernest Mitchell', *K.* 'Pineapple Popsicle', *K.* 'Shining Sceptre' and *K.* 'Winter Cheer') scored very highly in all categories but because they scored more than 25% for black ink-spot infection their overall rating dropped.

The single *Kniphofia caulescens* plant died early on in this trial, therefore no flowering records and plant size data is reported here. Our external panel of experts has scored it highly as they know of this species performing well elsewhere in Auckland. *K.* 'Peachy Cheeks' supplied might not have been correctly named as flowers were yellow rather than peach. Plants of *K.* 'Green Jade' did not do well with two plants dying before the end of the trial and not flowering.

Snail damage was noticed in mid-October on almost all cultivars but all plants quickly recovered from damage. *Kniphofia* were relatively tolerant of frost (in Auckland), and many are deciduous. All *Kniphofia* in this trial had signs of black ink-spot at some stage during the trial, though most recorded less than 25% of the plant affected by the disease (Fig. 2). We attempted to get the black ink-spot disease identified but failed to locate any published literature on this presumably fungal pathogen infecting *Kniphofia*.

Kniphofia are renowned for crossing and seeding out in gardens, therefore we recommend deadheading regularly after flowering but before seeds ripen. We pruned plants back in mid-winter and they grew back well. Pruning in late winter results in reduced flowering, however this promotes healthy, clean foliage. Plants can be divided in spring to increase drifts in gardens.

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