

FABACEAE

VIGNA KOKII, A NEW SPECIES FROM SOUTHERN AFRICA

Vigna kokii B.J. Pienaar, sp. nov. (Sect. *Microspermae*—Papilionoideae), *V. mudeniae* B.J. Pienaar facie caulibus pedunculis distincte costatis alatis similis; *V. richardsiae* Verdc. (Sect. *Microspermae*) stipulis reflexis auriculis lateraliter libris caule connatis similis; a *V. monophylla* Taub. (Sect. *Haydoniae*) glandibus basalibus verticillo interiore antherarum absentiis differt; styli extensio 'tumore' in textura reducta ubi versus stigma laterale flexa (non ut in *V. mudenia* extensione 'digito primo' et in *V. monophylla* tota absentia); reticulum extinae granorum pollinis vix manifestum.

TYPE.—Transvaal, 2530 (Lydenburg): Schagen, woodland 0.8 km from Crocodile Hotel on road to Rosehaugh, Pienaar 1364 (PRE, holo.; K, P, iso.).

Rootstock carrot-shaped, at length woody. *Stem* erect in youth, twining at length, somewhat ridged to alate, scarcely strigose to patent with light hairs. *Leaflets* oblong with apex and base rounded in juvenile stage, $\pm 25\text{--}58 \times 0.8\text{--}30.0$ mm, surface smooth to touch, adnately strigose, thickest along dorsal nerves and lamina margin, rhomboid to sublobular with rounded lobes at maturity, $\pm 80 \times 60\text{--}70$ mm at broadest point, apices abruptly narrowed, obtuse, apiculate, base cuneate to obtuse, papyraceous, strigose. *Stipules* with cordate base, laterally auriculate at maturity, lanceolate, reflexed, $\pm 6.0 \times 1.5$ mm, acuminate, margins ciliate; in youth base more or less elongated, truncate (cf. *V. mudenia* B.J. Pienaar 1991).

Inflorescence contracted, peduncles alate, bearing at apex one pair of yellowish green flowers, flushed violet, with vertical row of extrafloral nectary glands between them (Figure 3B). *Calyx* campanulate, lobes, ± 2 mm, acute with broad bases, $\pm$ as long as tube or shorter, tube up to 3.25 mm long, upper pair of lobes connate for $\frac{1}{3}$ to $\frac{1}{2}$ their length, strigose. *Standard* ovate to oblate, emarginate, $\pm 10\text{--}14$ mm long, spur straight with inferior callosities divergent, auricular, superior callosities divergent, narrow (vestigial). *Wings* narrowly ovate, $\pm 10.0 \times 5.5$ mm, auricle slender with raised cell sculpturing (almost papillate). *Keel* ± 11 mm long, obtuse, slightly upturned. *Filament tube* ± 10 mm long, free filaments in two whorls, 3 or 4 mm long, anterior filament geniculate at base, ± 13 mm long; anthers oblate, glands at base absent. *Ovary* pubescent, $\pm 9\text{--}10$ mm long, style broadened and flattened as it curves upward, pollen brush on anterior face, apically twisted at maturity, accentuated protuberance of style prolongation absent but stylar tissue swollen as it bends toward stigmatic papillae at somewhat more than 90° . *Pollen* grains scarcely reticulate, muri low, rounded. *Legumes* beaked, ± 68 mm long, scabrid with long, stiff hairs along margin, 18-seeded. *Seeds* 3.4 mm long, yellowish brown to dark brown, black mottled around hilum, hilum scarcely eccentric, aril scarcely developed or absent. Figure 4.

NAMIBIA.—1724 (Katima Mulilo): 20 km SW of Katima Mulilo, (—CA), *De Winter* 9180 (PRE). 1821 (Andara): Caprivi side of river, near Andara Mission Station. (—AB), *De Winter & Marais* 4812 (PRE); Dico, Andara, (—AB), *Giess* 15572 (WIND).



FIGURE 3.—*Vigna kokii*, Pienaar 1364 (PRE): A, style prolongation, reduced to a swelling, $\times 33$; B, extrafloral nectaries, $\times 30$; C, pollen grain, $\times 458$.

TRANSVAAL.—2431 (Acornhoek): Nwanetzi, Kruger National Park, (—AD), Coetzee 6062 (PRE). 2527 (Rustenburg): mountainside, Saulspoort, (—AA), Germishuizen 514 (PRE). 2530 (Lydenburg): Schagen, Farm of J.J. van Niekerk, Nelspruit District, (—BD), Liebenberg 3297 (PRE); 0.8 km from Crocodile Hotel on turnoff to Rosehaugh, (—BD), Kok & Pienaar 1297 (PRE, PRU), Pienaar 1364 (PRE).

Found in dense undergrowth of dry woodland in the Transvaal and in Caprivi in northeastern Namibia. Figure 5.

In general facies *V. kokii* is very similar to *V. mudenia* B.J. Pienaar (1991), with the stems and peduncles distinctly alate and the contracted inflorescence bearing two yellow-green flowers, but the leaflets are oblong with rounded base and apex in youth, becoming rhombic or sublobular at maturity. *V. kokii* is similar to *V. richardsiae* Verdc. (Sect. *Microspermae*) in having stipules reflexed, connate with the stem but with auricles laterally free; it differs from *V. monophylla* Taub. (Sect. *Haydonia*) in the absence of basal glands on the interior whorl of anthers; the style

prolongation (Figure 3A) is reduced to a 'swelling' in the tissue of the style where it bends toward the lateral stigma, as opposed to the 'finger tip' protuberance of *V. mudenia* and total absence of any prolongation in *V. monophylla*; the exine sculpture of the pollen grains (Figure 3C), appears more rounded than that of *V. mudenia* as opposed to the total loss thereof in *V. monophylla*. These characters support the decision to keep it in the same section as *V. mudenia* but to accept it as a new species. Its distribution also differs from that of *V. mudenia*.

The styler thickening (rather than a true protuberance), at the bend toward the lateral stigma, may represent an evolutionary stage more advanced than in other members of the section *Microspermae*. This trend probably reflects an incipient stage toward the loss of the styler beak, as displayed in the subgenus *Haydonia* (Pienaar 1992). The reticulation of the pollen grains has almost disappeared, a further development toward the eventual smoothness of the exine in section *Haydonia* (e.g. *V. monophylla* Taub.).

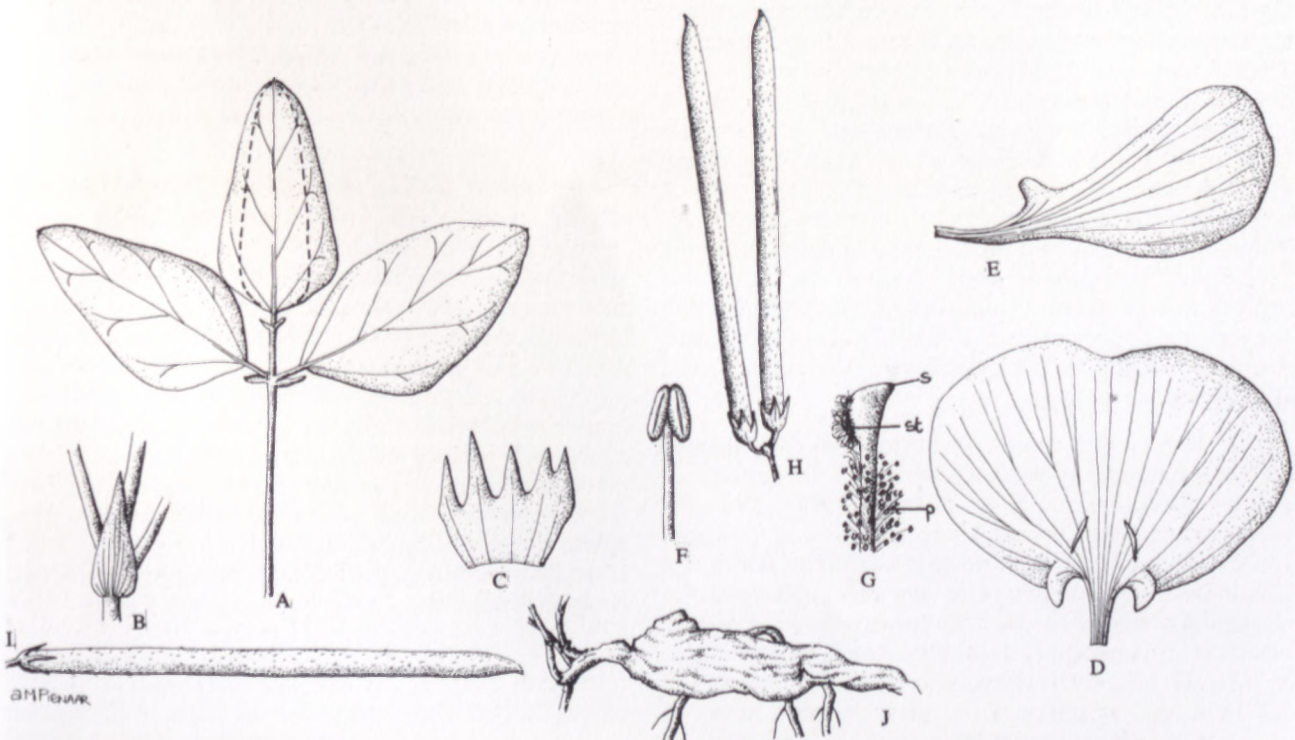


FIGURE 4.—*Vigna kokii*, Pienaar 1344 (PRE): A, leaf, $\times 1$; B, stipule, $\times 3$; C, calyx, $\times 3$; D, standard with two pairs callosities, $\times 4$; E, wing, $\times 4$; F, anther, $\times 7$; G, style prolongation (s), stigma (st), pollen brush with pollen (p), $\times 10$; H, legumes on peduncle, $\times 1$; I, legumes, $\times 1$; J, underground tuber, vertical, $\times 0.25$.

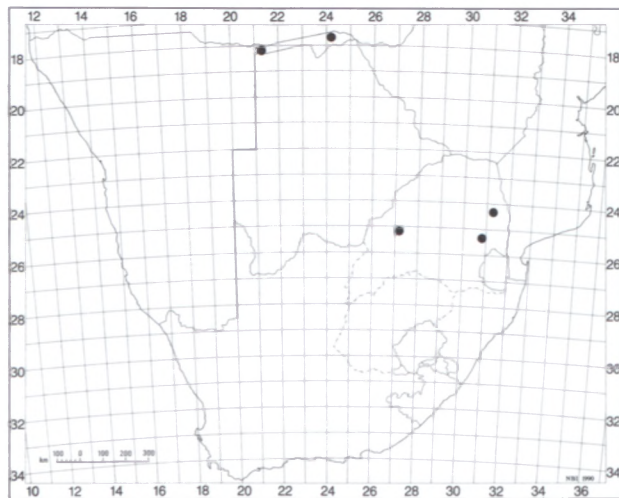


FIGURE 5.—Known distribution of *Vigna kokii* in southern Africa.

It gives me great pleasure to name this new species after Prof. P.D.F. Kok, under whose guidance my taxonomic work on the genus *Vigna* was initiated. One of the first collections (in 1934) of the new species is *Liebenberg 3297* (PRE), from a farm in the Schagen District. Prof. Kok

accompanied me on the first field trip to the Schagen area in search of more material of the new species. He searched as hard as I did until an immature plant was found in the thickets and I was able to return to the locality a season later. He also financed the trip.

ACKNOWLEDGEMENTS

I wish to thank Prof. A.E. van Wyk for his academic assistance, the University of Pretoria and the National Botanical Institute for putting their amenities at my disposal, Mrs S. Perold for the SEM micrographs and Mrs A. Romanowski for her photographic skills, Dr D.J.B. Killick for the Latin diagnosis and Miss A. Pienaar for the line drawings.

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 MS. received: 1992-08-17.