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NASSELLA AND *ORYZOPSIS* (POACEAE) IN NEW SOUTH WALES

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ABSTRACT

Vickery, Joyce W. and S. W. L. Jacobs (Royal Botanic Gardens, Sydney, Australia) 1980. Nassella *and* Oryzopsis *(Poaceae) in New South Wales. Telopea 2 (1): 17–23.*—The generic placement of *Nassella trichotoma* is discussed, particularly in relation to *Stipa*. A synoptic key is presented to distinguish the closely related genera throughout the world and a key included to distinguish the genera in New South Wales, followed by a taxonomic treatment for New South Wales of *Nassella* and *Oryzopsis* and a note on *Piptochaetium*.

INTRODUCTION

The genera *Stipa*, *Oryzopsis*, *Piptochaetium* and *Nassella* form a group of closely related genera in the tribe Stipeae (Clifford & Watson 1977). *Stipa* is a large genus with probably over 300 species in the temperate, rarely tropical, regions of the world, *Oryzopsis* a genus of about 24 species in the temperate and subtropical regions of the northern hemisphere, *Nassella* a South American genus of about 10 species and *Piptochaetium* a temperate South American genus of about 20 species. Although the generic limits within the group have always been somewhat ill-defined and there have been transfers from one genus to another, the genera *Oryzopsis* and *Piptochaetium* seem to be accepted by recent workers with little disagreement, (e.g., Rosengurtt et al. 1970; Gould 1975); the distinguishing characters are given in the key below. There is some disagreement about the generic distinctions between the genera *Stipa* and *Nassella; N. trichotoma* being one of the central species in the problem. *Stipa* is a very large and cosmopolitan genus whose limits are indeed difficult to define, especially in South America.

N. trichotoma certainly does not belong to either of the genera *Oryzopsis* or *Piptochaetium*, from both of which it differs in its very asymmetric gibbous lemma with tardily deciduous excentric awn, and from *Piptochaetium* it differs further in its nerveless palea shorter than the lemma and the lack of a corona on the lemma.

Generic placement of *Nassella trichotoma*

Some South American authors, such as Parodi (1944, 1947), Duren & Rosengurtt (1956) and Caro (1966) have rejected *N. trichotoma* from the South American genus *Nassella* and treated it (sometimes tentatively) as a species of *Stipa*. However, *N. trichotoma* would be a very aberrant species of *Stipa*, if placed in that genus, whereas it has many strong resemblances to other species of *Nassella* (cf. Parodi 1947). Its difference from the majority of species of *Stipa* was recognized by Corti (1951, see Caro 1966), who created the separate section *Nassellopsis* in *Stipa* in order to accommodate it.

Parodi (1947) lists laterally compressed spikelets, overlapping lemma margins, rudimentary paleas, easily deciduous awns, several-noded culms and sheaths shorter than the internodes as characteristics of *Nassella*. *N. trichotoma* differs in having few-noded culms and, supposedly, sheaths longer than the internodes. The immature inflorescence of *N. trichotoma* (the ones usually present on herbarium specimens) do have the sheaths longer than the internodes but on mature panicles the sheaths are shorter than the upper internodes. *N. trichotoma* has few (2–4) noded culms but Parodi describes *N. pubiflora* with 2–4 nodes and *N. fuscescens* with 3–5 nodes.

† Died 29 May 1979

In tentatively excluding *N. trichotoma* from *Nassella*, Parodi also lists the persistent awn and long setaceous leaves as being not characteristic of *Nassella* and suggests they are more characteristic of *Stipa*. The awn of *N. trichotoma* is perhaps more tardily deciduous than the awns of some other species of *Nassella* but it is still readily deciduous and quite different from the awns of at least the Australian species of *Stipa*. Long setaceous leaves do appear to be uncommon in *Nassella* but *N. juncea* is described as having "junciform" convolute leaves, up to 8 cm long and 1.5 mm wide; shorter than but not dissimilar to the leaves of *N. trichotoma*.

N. trichotoma clearly falls within the concept of *Nassella* as expressed by Henrard (1929) in his key to the genera of the Stipeae.

Although desirable, it is not always necessary to have absolute character discontinuity before a genus can be segregated, and it is important to look at the assemblages of characters as well as the individual characters. In this particular example, we consider that the characteristics *N. trichotoma* shares with other species of *Nassella* are more important than the differences, which appear to be specialized trends with intermediate states in other species of *Nassella*. Our reasons for retaining *N. trichotoma* in *Nassella* may be assessed from the following comparative summary (Table 1) of some characters of the two genera and of *N. trichotoma*.

Synoptic Key to the genera *Stipa*, *Nassella*, *Oryzopsis* and *Piptochaetium*

1. *Lemma* usually several times longer than broad, cylindrical, fusiform, pyriform or turbinate, rarely slightly gibbous, tapering at the tip or rarely slightly 2-lobed, convolute and totally enclosing the palea. *Awn* from the apex of the lemma or from between its lobes, ± persistent or tardily deciduous, twisted in the lower part, generally once or twice geniculate. *Callus* longer than the width of the lemma, very oblique, sharp-pointed and bearded, rarely obtuse. *Corona* present or absent. *Palea* hyaline, 2-nerved and 1-keeled, flat or rudimentary or absent. *Lodicules* 3, rarely 2, hyaline, elongate, tapering to an obtuse tip. *Stamens 3*, the anthers often hairy at the tips. *Grain* fusiform-terete. *Hilum* linear, nearly as long as the grain. *Embryo* basal, about one-fifth the length of the grain ..... *Stipa*

1.* *Lemma* short and broad, or sometimes narrow and cylindrical in *Piptochaetium* but then not fully enclosing the palea and a corona usually present. *Awn* slender, deciduous. ..... 2.

2. *Lemma* elliptical-oblong or fusiform or ovate, not gibbous at the top. *Awn* terminal and central from the minutely lobed apex, straight, very readily deciduous. *Corona* reduced or absent. *Callus* short and obtuse. *Palea* shorter than to subequal to the lemma, embraced by but not totally enclosed by its margins, 2-nerved. *Grain* readily separable from lemma and palea, oblong, sub-terete. *Stamens* 3. *Lodicules* 2, rarely 3, hyaline. ..... *Oryzopsis*

2.* *Lemma* asymmetric, gibbous at the summit, obliquely obovate, or narrow and cylindrical in species of *Piptochaetium* but then with a distinct *corona*. *Awn* excentrically attached, readily deciduous. ..... 3.

3. *Palea* short, hyaline, without nerves or keels. *Lemma* obliquely obovate, asymmetric, gibbous at the summit, entirely enclosing the palea, rigid. *Corona* absent. *Callus* short, not as long as the width of the lemma, not strongly oblique, not long-pointed. *Lodicules* 2, obtriangular, truncate. ..... *Nassella*

3.* *Palea* rigid, crustaceous or coriaceous, 2-keeled with a median furrow between the keels, exposed between the margins of the lemma and the tip projecting beyond the lemma. *Lemma* obliquely obovate or pyriform, asymmetric and gibbous or cylindrical and not conspicuously gibbous, the apex acute or obtuse, not enclosing the palea and having a sulcus on the palea side. *Corona* usually present. *Awn* persistent or caducous, centric or excentric, often bigeniculate. *Lodicules* 3, lanceolate. ..... *Piptochaetium*

Key to *Stipa*, *Nassella* and *Oryzopsis* in New South Wales

1. Awn excentric, readily to tardily deciduous. Inflorescence disarticulating as a unit, old inflorescence stalks not left on plant. ..... *Nassella*

1.* Awn terminal and central, persistent or deciduous. Spikelets disarticulating individually from the inflorescence and old inflorescence stalks persistent. ..... 2.

2. Lemma ovoid with a terminal deciduous awn; callus shorter than the width of the lemma. ..... *Oryzopsis*

2.* Lemma cylindrical, rarely gibbous, with a terminal persistent awn; callus usually longer than the width of the lemma. ..... *Stipa*

TABLE 1.

Summary of characters of *Stipa*, *Nassella* and *Nassella trichotoma*

Character	Nassella	N. trichotoma	Stipa
Culms ..	slender to firm, usually not persistent.	very slender to capillary, absent from old tussocks.	firm, persistent and recognizable in old tussocks.
Panicle ..	persistent or deciduous.	deciduous and usually removed before the florets have fallen from the glumes.	persistent, with the florets falling *in situ* from the glumes.
Spikelets ..	rather small.	rather small.	large to rather small.
Lemma ..	ovoid or asymmetrically elliptical, not more than twice as long as broad, 1–3 mm long, usually more or less strongly gibbous, without a corona.	ovoid, asymmetrical, very strongly gibbous, without a corona, 2 mm long and 1 mm wide.	cylindrical or very narrowly ellipsoid, several times as long as broad, more than 3 mm long including the callus, not or only slightly gibbous, with or without a corona.
Awn ..	excentric, filiform, straight or flexuose, slightly twisted in the lower part, glabrous, inconspicuously articulate and tardily to readily deciduous.	excentric, filiform, straight or flexuose, only slightly twisted in the lower part, glabrous, inconspicuously articulate and tardily deciduous.	terminal and centric, usually rather strong, manifestly articulate with the lemma, persistent or tardily deciduous, usually differentiated into a more or less strongly twisted column and a straight or curved bristle, often geniculate, glabrous, plumose or variously hairy scabrous.
Callus ..	short (shorter than the diameter of the lemma), slightly oblique, obtuse or minutely acute.	short (shorter than the diameter of the lemma), obtuse or minutely acute, very slightly oblique.	long (longer than the diameter of the lemma), very oblique, usually pungent-pointed (? rarely obtuse).
Palea ..	nerveless.	nerveless.	2-nerved, rarely rudimentary or absent.
Lodicules ..	2, obtriangular, truncate.	2, obtriangular, truncate.	usually 3, rarely 2, elongate, tapering to an obtuse point.
Stamens ..	3, without a hairy tip.	2 (or 3) with only 1 anther fully developed and 1 (or 2) staminodes, without a hairy tip.	3, the anthers often hairy at the tips.
Grain ..	oblong to obliquely pyriform, slightly compressed.	obovoid (pyriform) and slightly compressed.	fusiform-terete.
Embryo ..	one-third to one-half the length of the grain.	almost one-half the length of the grain.	about one-fifth the length of the grain.
Hilum ..	linear and about two-thirds the length of the grain.	linear and about two-thirds the length of the grain.	linear, nearly as long as the grain.

TAXONOMIC TREATMENT OF *ORYZOPSIS* AND *NASSELLA* AND A NOTE ON *PIPTOCHAETIUM*

ORYZOPSIS Michx.

Spikelets solitary, pedicellate, hermaphrodite, 1-flowered with the floret disarticulating above the glumes and the rhachilla not produced beyond the floret, borne in open or more or less contracted panicles. *Glumes* equal or slightly unequal, obtuse to acute or acuminate, membranous to firm, usually 3- to 5-nerved. *Lemma* shorter than to about as long as the glumes, rigidly membranous to coriaceous or indurate, oval, oblong, lanceolate, ovate-lanceolate or obovate in outline, convolute, appressed-pubescent to glabrous, 3- to 5-nerved, with a short, blunt, oblique callus, terminally or subterminally awned with the awn deciduous, slender, glabrous, straight or more or less geniculate. *Palea* shorter than to subequalling the lemma and embraced by its margins, 2-nerved. *Stamens* 3. *Lodicules* 2, rarely 3, hyaline, rather large. *Ovary* glabrous; styles free, short; stigmas plumose, laterally exserted. *Grain* oblong, oval or obovate in outline, terete, tightly enclosed by the hardened lemma and palea. Caespitose *perennials*. *Sheaths* open. *Ligules* membranous, truncate to elongate. *Blades* flat to involute.

A genus of about 24 species mostly native to the temperate and subtropical regions of the northern hemisphere. One naturalized in Australia.

***O. miliacea** (L.) *Aschers. et Schweinf.*, Mém. Inst. Égypte 2: 169 (1887); Summers in J. Dept. Agric. South Australia 10: 418, phot. (1907); J. M. Black, Naturalized Fl. South Australia: 169, figured (1909), Fl. South Australia: 67 (1922) and edn 2: 93, fig. 111 (1943); Breakwell, Grasses & Fodder Pl. New South Wales: 107, 108 phot. (1923); Ewart, Fl. Victoria: 183, fig. 96 (1931); Hitchcock & Chase, Manual Grasses United States: 437, fig. 625 (1951); C. A. Gardner, Fl. Western Australia 1, Gram.: 183 (1952); J. H. Willis, Handb. Pl. Victoria 1: 189 (1962) and edn 2, 1: 189 (1970); Beadle, Evans & Carolin, Handb. Vasc. Pl. Sydney Distr.: 532 (1963); Burbidge, Austral. Grasses 3: 56, Pl. XIII (1970); Beadle, Evans & Carolin, Fl. Sydney Region: 657 (1972).

SYNONYMY: *Agrostis miliacea* L., Sp. Pl. 1: 61 (1753). *Piptatherum miliaceum* (L.) Coss., Not. Crit.: 120 (1851).

Milium multiflorum Cav., Pl. Descr.: 36 (1802). *Piptatherum multiflorum* (Cav.) Beauv., Agrost.: 18, 168, 173 (1812).

Milium thomasii Duby in Candolle, Bot. Gall. 1: 505 (1828). *Piptatherum thomasii* (Duby) Kunth, Rev. Graminées 1 Suppl.: XIV (1830).

DISTRIBUTION: North and Central Coast, Northern and Central Tablelands, Central and South Western Slopes, Western and Far Western Plains, usually in situations sheltered from grazing by stock. Also in Victoria, Tasmania, South Australia and Western Australia; used to stabilise mine-dumps in moist and semi-arid regions in the southern half of Australia and frequently spreading from such plantings. Native to the Mediterranean region; introduced into Australia and North America.

Tufted *perennial* with a strong contracted rhizome with extravaginal innovations, glabrous except for the pubescent cataphylls. *Culms* slender to rather stout, rigid, wiry, leafy, branching and often with fascicles of branches at the nodes, erect, 60–150 cm long, subsmooth, 6- to 7-noded. *Sheaths* usually shorter than the internodes, tight around the culm, smooth, striate. *Ligule* hyaline, very obtuse or truncate, 2–3 mm long. *Blades* flat, 7–35 cm long, 8–10 mm wide, linear, finely long-acuminate, slightly scabrous above, smooth and often almost shining below, the midrib somewhat prominent below. *Panicle* 15–40 cm long, loose, open, the numerous, capillary, scabrous branches verticillate at the nodes, spreading and somewhat drooping towards their tips, branching to the second or third degree, bearing numerous, small, shortly pedicellate spikelets above the middle. *Spikelets* lanceolate, 3–3.5 mm long, greenish to purplish. *Glumes* membranous to hyaline, as long as the spikelet, long-acuminate, slightly unequal, pale greenish to purplish. *Lemma* 1.8–2 mm long, ovoid, shortly

notched at the summit, smooth, glabrous, hardened around the fruit and shining at maturity, bearing a terminal, readily deciduous, straight, capillary awn 2–4 mm long. Palea as long as the lemma, 2-nerved. *Anthers* c. 1 mm long. *Caryopsis* oblong, subterete. "Rice Millet", "Many-flowered Millet Grass", the "Smilo Grass" of the U.S.A.

SPECIMENS EXAMINED: **North Coast:** Wollongbar Experimental Farm, cult., *NSW 115744*, 12.1903. **Central Coast:** Botanic Gardens, Sydney, cult., *Boorman NSW 115749*, 5.1905; Homebush, *Vickery NSW 17931*, 11.1932; Hawkesbury Agricultural College, Richmond, cult., *NSW 115758*, 3.1909, *The Principal NSW 115761*, 11.1908. **Northern Tablelands:** Armidale. *Vane NSW 115735*, 1.1965. **Central Tablelands:** Orange district, *Madsen NSW 115752*, 12.1950; Bathurst Experiment Farm, *NSW 115746*, 3.1903. **Southern Tablelands:** Black Mtn, Canberra (A.C.T.), *Gray 5788*, 11.1965 (115737). **Central Western Slopes:** Cassilis, *Henry NSW 115755*, 5.1931; Boree Creek, *Cornell NSW 115736*, 11.1938; Cowra, *Brown NSW 115741*, 7.1961, *McBarron 9158*, 8.1964 (NSW); Young, cult., *Thomber NSW 115760*, 2.1908; Young, *NSW 115747*, 1933. **South Western Slopes:** Murrumburrah, *Morgan NSW 115748*, 12.1940; Springfield, North Wagga, *Commins NSW 115754*, 1.1934; Wagga Wagga, *Stening NSW 115756*, 10.1913, *Hutchinson NSW 115751*, 3.1972; Wagga Experimental Farm, *The Manager NSW 115753*, 9.1904; Wagga Wagga Soil Conservation Research Station, *NSW 115763*, 1955; Albury, *Yates & Co. NSW 115745*, 3.1913, *McBarron 1392*, 2.1948 (NSW). **Western Plains:** Leeton district, *Watkins NSW 115743*, 11.1950. **Far Western Plains:** Broken Hill, *Morris NSW 115742*, 3.1921.

A drought resistant grass of which the young foliage is palatable to stock but the mature tussocks with their wiry stems are not. Its virtual restrictions to sites sheltered from stock, such as gardens and waste land in country townships, indicates that it does not withstand grazing. It is somewhat decorative.

O. hymenoides (*Roem. & Schult.*) *Ricker* has been cultivated experimentally by the CSIRO at Ginninderra, Canberra (A.C.T.) [*Strong NSW 115733*, 11.1962].

NASSELLA E. Desv.

Spikelets all alike, hermaphrodite, 1-flowered with the rhachilla not prolonged beyond the floret. *Glumes* 3-nerved, lanceolate, acuminate, longer than the floret, subequal, persistent, with the lower back more or less herbaceous and greenish or purplish, the margins and apices scarious or hyaline. *Floret* obovate, obliquely pyriform, oblong or lanceolate, gibbous, slightly laterally compressed, without a corona, 1–3 mm long, with an excentric awn. *Lemma* cartilaginous and rigid or papery, glabrous or pubescent, the margins strongly overlapping and completely concealing the palea and flower, the callus very slightly and shortly oblique, obtuse or very shortly acute, glabrous or pilose, the awn slightly and loosely twisted or slightly geniculate or flexuose, deciduous, 1–3 cm long. *Palea* 1-nerved or nerveless, much shorter than the lemma, often hyaline, included within the lemma. *Stamens* 3, sometimes 1 or 2 of them reduced to staminodes or absent. *Ovary* oblong or fusiform with short styles and short, lightly plumose stigmas. *Caryopsis* oblong to obliquely pyriform or obovoid, very slightly compressed, the hilum linear. *Perennials*, usually with several-noded, usually branching, culms or these simple with inconspicuous nodes and short internodes at the base of the elongate peduncle, in the former case the sheaths usually shorter than the internodes. *Ligules* short. *Blades* flat or involute, acuminate. *Inflorescence* a contracted or open panicle.

A South American genus of about 10 species chiefly in or near the Andes extending from Ecuador southwards to lat. 42° in Patagonia. One species naturalized in Australia, New Zealand and the United States.

***N. trichotoma** (*Nees*) *Hack. ex Arech.*, Anales Mus. Nac. Montevideo 1: 336, fig. 19 (1896); Cross, Agric. Gaz. New South Wales 48: 546–548, figured (1937); Allan, New Zealand J. Agric. 63: 91–95 (1941); Cross & Vickery, Contr. New South Wales Natl. Herb. 1: 278 (1950); Blakelow, Tasmanian J. Agric. 31: 458–464, figured (1960); Campbell, Agric. Gaz. New South Wales 71: 9–19, figured, and 561

(1960) and ibid. 76: 679–687, figured (1965); J. H. Willis, Handb. Pl. Victoria 1: 188 (1962) and edn 2: 188 (1970); Goodyear, J. Agric. (Melbourne) 62: 314–317, figured (1964); Whittet, Weeds edn 2: 361–363, phot. (1968); Burbidge & Gray, Fl. Austral. Cap. Terr.: 54, fig. 46 (1970). Extensively mentioned in the Agricultural literature of eastern Australia and New Zealand since 1937.

SYNONYMY: *Stipa trichotoma* Nees, Agrost. Bras.: 375 (1829); Parodi, Revista Muse de la Plata, Secc. Bot. 6: 306 (1944); Parodi, Darwiniana 7: 369 (1947); Durán & Rosengurtt, Agros (Montevideo) No. 141: 12 (1956); Caro, Kurtziana 3: 79 (1966). *Urachne trichotoma* (Nees) Trin., Mem. Acad. St. Pétersb. ser. 6, Sci. Nat. 1: 124 (1834). *Piptochaetium trichotoma* (Nees) Griseb., Symb. Fl. Arg.: 297 (1879).

DISTRIBUTION: Naturalized and widely distributed on the Central and Southern Tablelands, more infrequently extending to the Northern Tablelands, Central Western Slopes and South Coast; also in Victoria and Tasmania. Native to South America; introduced into Australia and New Zealand.

Densely caespitose *perennial* with very numerous, often sterile, intravaginal innovations and wiry roots, the tussocks 20–60 cm high. *Culms* 2- to 4-noded but the nodes not thickened, quite inconspicuous and chiefly towards the base, very slender to almost capillary and each internode becoming attenuate downwards, simple, terete, smooth, glabrous. *Sheaths* tight around the culms or open towards the base of the plant, lightly striate, glabrous and smooth except for the more or less scaberulous margins, erect. *Ligule* opaque-whitish, papery, obtuse or truncate, 0.5–2.5 mm long, glabrous and smooth or more or less scaberulous on the back, symmetrical or asymmetrical and sublateral. Blades straight or curving outwards in the upper one-third, convolute-filiform, setaceous, c. 15–45 cm long, 0.25–0.5 mm in diameter, finely but not pungently pointed, the exterior surface minutely and rather distantly scaberulous, not striate with nerves, the interior surface scaberulous, few-nerved and furrowed between the nerves. *Panicle* at first more or less included in the uppermost sheath and then contracted, at length shortly exserted, pyramidal, very effuse with rather few spikelets towards the tips of the ultimate branches, erect, 15–25 cm long, often purplish from the colour of the glumes, the main axis somewhat compressed and planoconvex, antrorsely scabrous on the edges, the filiform branches 2- to 3-nate, scabrous-pubescent, the lower up to 10 cm long, again unequally branched and the spikelets borne on the ultimate branchlets on long capillary pedicels compressed upwards and only slightly thickened at their tips. *Spikelets* narrowly lanceolate. *Glumes* much longer than the floret, narrowly lanceolate, finely long-acuminate into a hair-like tip, the lower part of the back membranous and usually purplish, the margins upwards and the apex thinly hyaline, 3-nerved with the lateral nerves shorter and converging towards the median nerve, subsmooth, loose around the floret, somewhat unequal with the lower glume 6–8.5 mm long and c. 1.5 mm wide, slightly scabrous on the lower part of one margin, the upper glume 5–7 mm long and almost as wide as the lower. *Floret* obovate, very gibbous on the back, slightly compressed, without a corona, 1.5–2 mm long (without the awn), c. 1 mm wide. *Lemma* obscurely (at least on the outer surface) 5-nerved, strongly antrorsely scabrous upwards, otherwise glabrous, straw-coloured or somewhat purplish, with a very excentric filiform awn, the margins overlapping and tightly enclosing the palea and flower, the awn more or less straight or flexuose, 2–3.5 cm long, slightly twisted in the lower part, minutely scabrous, inconspicuously articulate with the lemma but not dilated at the base and rather tardily deciduous, the callus shortly oblique, shorter than the diameter of the body of the lemma, obtuse or minutely pointed, bearing white, erectly divergent unequal hairs up to 1.5 mm long. *Palea* thinly hyaline, elliptical to oblong, obtuse or the apex more or less irregular, nerveless, glabrous, c. one-half to one-third as long as the lemma. *Lodicules* 2, very thinly hyaline, obtriangular and truncate, or more or less oblanceolate and irregular, glabrous, nerveless, c. 0.25–0.75 mm long. *Stamens* 2–3 with only 1 anther fully developed in all specimens examined and another 1 (or 2) abortive. *Caryopsis* obovoid, turgid, lightly compressed, c. 1.2–1.5 mm long and c. 0.5 mm in diameter, brown, the hilum linear, straight, inconspicuous, c. two-thirds as long as the grain, the scutellum broad, almost half as long as the grain. "Serrated Tussock", "Yass Tussock".

SPECIMENS EXAMINED: **South Coast:** Bega River, *Hindle NSW 115765*, 11.1965. **Northern Tablelands:** Rockvale via Armidale, *Green NSW 115767*, 10.1955. **Central Tablelands:** Orange, *Madsen NSW 51322*, 2.1948; Blayney, *Shire Clerk NSW 3109*, 3.1947; Neville via Blayney, *Radburn NSW 115766*, 1.1949; Moss Vale, *Rodway NSW 89844*, 7.1937; 4 miles [7 km] N. of Berrima, *Green NSW 115775*, 6.1950; Carcoar, *Charles NSW 115770*, 12.1948; Rockley, *Cobb NSW 115760*, 12.1948; Oberon district, *Cantrill NSW 2264*, 11.1946. **Southern Tablelands:** Gibraltar Creek area, Paddys River district, *Pullen 3708A, 3708B (NSW)*, 11.1962; "Murray Flats", Goulburn, *Fitzgerald NSW 115768*, 11.1946 and *NSW 4743*, 12.1947; Gunning, *Shire Clerk NSW 51321*, 12.1943; Yass, *Shire Clerk NSW 115759*, 2.1936, *NSW 115762, 115764*, 11.1936; Yass, *Dunlop NSW 89840*, 10.1939; Yass, *Sleeman NSW 115774*. **Central Western Slopes:** Mudgee district, *Sengelman NSW 115773*, 11.1962.

In South America this grass is reported to be eaten by cattle, but in Australia it is neglected by stock, tends to over-run pastures and seriously reduces the value of infested properties. Its panicles, bearing minute seeds, are easily detached from the tussock, lifted by even the lightest breeze, and may be carried several kilometres by wind. Any tussock permitted to fruit may thus infect properties over a considerable radius from the source. It is therefore regarded as a serious noxious weed especially in Tablelands districts where it appears to thrive best. Control measures have received extensive study by agronomists.

PIPTOCHAETIUM Presl

P. stipoides (*Trin. et Rupr.*) *Hack. ex Arech.* has been cultivated experimentally at the Botanic Gardens from seed from Uruguay [*Vickery NSW 115730*, 11.1953].

P. bicolor (*Vahl*) *Desv.* has been cultivated experimentally by the CSIRO at Ginninderra, Canberra (A.C.T.) [*Strong NSW 115731, 115732*, 11.1962].

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