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**The genus *Oryza* L.
Current status of taxonomy**

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THE GENUS *ORYZA* L. CURRENT STATUS OF TAXONOMY¹

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ABSTRACT

This paper describes the taxonomy of the genus *Oryza*, concentrating on recent work, but drawing on the major earlier literature. It outlines species relationships using biogeography and level of ploidy as guides.

The paper also provides an updated key and enumerates valid species, including synonymy. Species names found in the literature are listed alphabetically and matched with those given in the enumeration.

By clarifying names for the different species, this paper aids persons interested in the wild relatives of rice.

Errors, omissions, or differing views on species relationships should be brought to the author's attention.

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THE GENUS *ORYZA* L. CURRENT STATUS OF TAXONOMY

This paper discusses the taxonomy and nomenclature of species in the genus *Oryza* L., to which rice, *Oryza sativa* L., belongs, and provides a key and an updated enumeration of species. It does not review all papers concerning *Oryza* taxonomy, but discusses some recent works and refers to major previous works that shape current understanding. Since two earlier reviews covered in detail the extensive literature on cytogenetic relationships (Chang 1964, Nayar 1973), this topic is not discussed at length.

Linnaeus (1753) named the genus to which rice belongs *Oryza* and gave the specific name to rice, *Oryza sativa*. The cultivated rice of West Africa, *Oryza glaberrima* Steud., was named in 1854 by Steudel (1855). The number of *Oryza* species increased to about 30 before revisions of generic delimitation reduced the number to just over 20 (Launert 1965, Tateoka 1965a).

The characteristics that distinguish species in the genus *Oryza* are attributes of the spikelet, which contains the fruit or caryopsis (Table 1). The outermost structures of the spikelet are sterile lemmas, formerly thought to be glumes (Fig. 1). The spikelet and its structure have played a major role in species classification. However, the spikelet is a principal structure used in selection. Thus, in the cultigens, the spikelet is one of the most variable structures. Spikelet structure may be an appropriate taxonomic key character for distant wild relatives of the two rice cultigens, but it is a less suitable key character for their close wild relatives.

Oryza belongs to the subfamily *Oryzoideae*, in the family *Poaceae* (*Gramineae*); this subfamily has species in tropical

and temperate regions worldwide (Table 2) (Chang and Vaughan 1989, Duistermaat 1987, Second 1985b). A revision of the African species in the genus *Leersia* by Launert (1965) moved three African species that had been in the genus *Oryza*—*O. angustifolia*, *O. perrieri*, and *O. tisseranti*—to the genus *Leersia* Swartz. *Leersia* spp., such as *L. hexandra* Swartz, are common companions of *Oryza* spp. Species in both genera are well adapted to wet habitats and are not aggressive weeds in wild habitats; they are, therefore, compatible in an ecosystem.

Tateoka (1965a) named a new genus *Porteresia* Tateoka for a single species that was first called *Oryza coarctata* Roxb., then *Sclerophyllum coarctatum* Griff. This species, now known as *Porteresia coarctata* (Roxb.) Tateoka, interests scientists concerned with growing rice in saline conditions because it grows in salt marshes, particularly around the Bay of Bengal. Currently biotechnologists are trying to fuse protoplasts of this species with *Oryza* spp. (R. Finley, University of Nottingham, United Kingdom, pers. comm., 1988). However, *Porteresia coarctata*, unlike *Oryza* spp., has recalcitrant seeds— the seeds die when they are dried— making it very difficult to work with.

Some taxa in the genus *Oryza* have been described as consisting of complexes of closely related species, while a few species have no clear relatives (Table 3) (Tateoka 1962b). Species with no obvious relatives in the genus will be discussed first, followed by species that are related geographically and in species complexes.

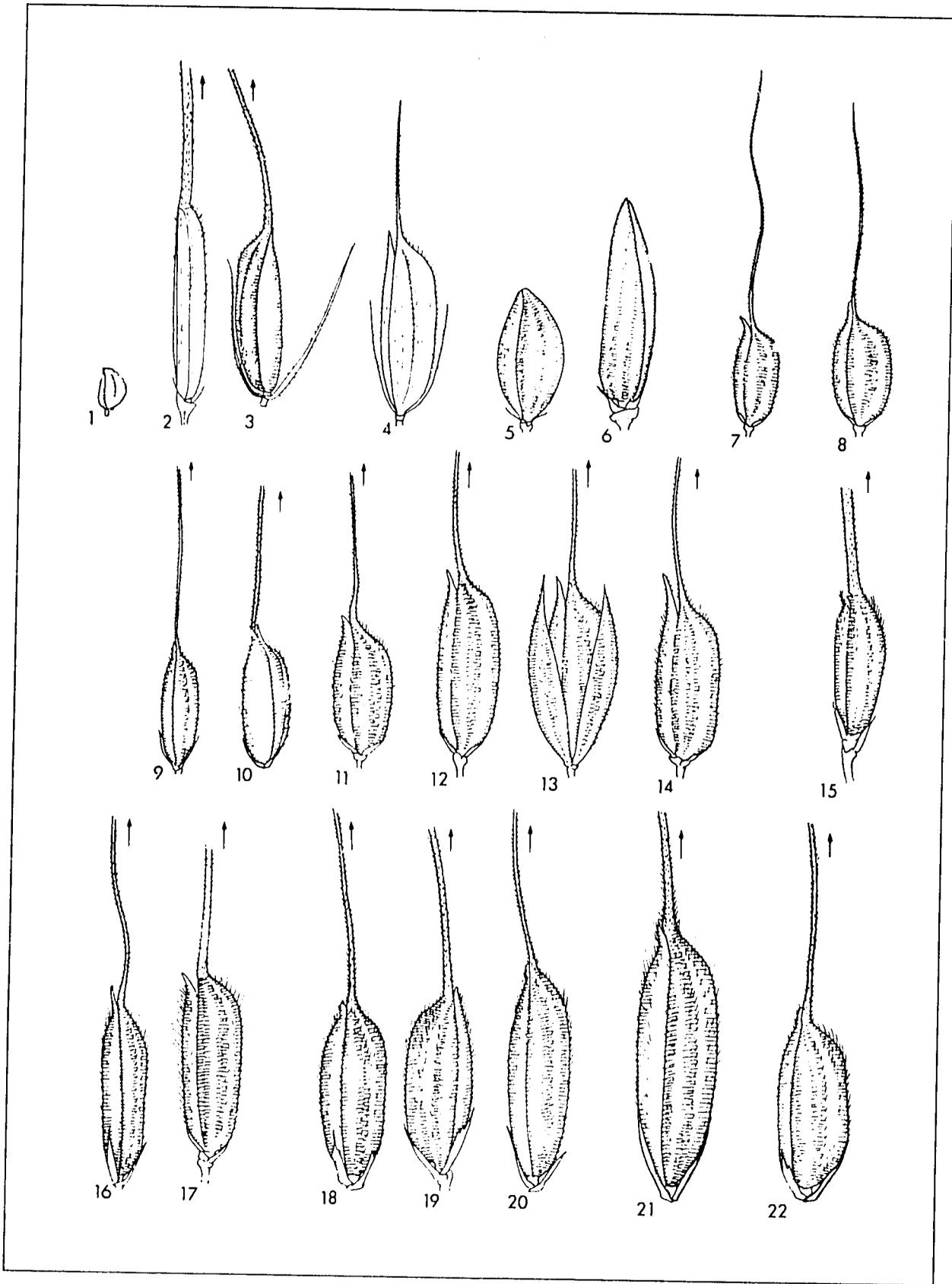
SPECIES AND COMPLEXES

Oryza schlechteri Pilger

O. schlechteri, the least studied species in the genus, has not recently been collected, and may be extinct. Collected in 1907 by Schlechter, *O. schlechteri* from northeast New Guinea is known only from a few herbarium specimens; living material is not available in the world's germplasm collections (Fig. 2). It is a tufted perennial, less than 1 m tall, with erect, 4- to 5-cm panicle and small, unawned spikelets, 1.75-2.15 mm long (Duistermaat 1987). Its relationship to other species is unknown.

Table 1. Characteristics of the genus *Oryza* (Launert 1965, Tateoka 1964a).

1. Spikelets obliquely or horizontally attached to the pedicel.
2. Glumes rudimentary (scalelike) or reduced to a two-lobed projection, or occasionally an entire rim is present.
3. Sterile lemmas always present, but usually very small.
4. Fertile lemma coriaceous or rarely chartaceous-coriaceous, awned, or sometimes the awn is suppressed.
5. Embryo is of two types: a) the epiblast and scutellum are laterally fused and auricles are developed (*sativa* complex), or b) the epiblast is not laterally fused with the scutellum and auricles are not developed (*meyeriana* and *ridleyi* complexes).



1. Spikelets of species in the genus *Oryza* x 5: 1. *O. schlechteri*, 2. *O. brachyantha*, 3. *O. longiglumis*, 4. *O. ridleyi*, 5. *O. granulata*, 6. *O. meyeriana*, 7. *O. minuta*, 8. *O. officinalis*, 9. *O. eichingeri*, 10. *O. punctata*, 11. *O. latifolia*, 12. *O. alta*, 13. *O. grandiglumis*, 14. *O. australiensis*, 15. *O. meridionalis*, 16. *O. rufipogon*, 17. *O. glumaepatula*, 18. *O. nivara*, 19. *O. sativa*, 20. *O. longistaminata*, 21. *O. barthii*, 22. *O. glaberrima* (modified and expanded from Tateoka 1963b and Duistermaat 1987).

Table 2. Genera, number of species, distribution, chromosome number, and spikelet structure in the subfamily *Oryzoidae* (Duistermaat 1987, Pyrah 1969, Second 1985b).

Genus	No. of species	Distribution	Chromosome number (2n)	Spikelet structure
<i>Oryza</i>	22	Pan-tropical (T) ^a	24, 48	Bisexual
<i>Leersia</i>	17	Worldwide (t + T)	48, 60, 96	Bisexual
<i>Chikusiochloa</i>	3	China, Japan (t)	24	Bisexual
<i>Hygroryza</i>	1	Asia (t + T)	24	Bisexual
<i>Porteresia</i>	1	South Asia (T)	48	Bisexual
<i>Zizania</i>	3	Europe, Asia, North America (t + T)	30, 34	Unisexual
<i>Luziola</i>	11	North and South America (t + T)	24	Unisexual
<i>Zizaniopsis</i>	5	North and South America (t + T)	24	Unisexual
<i>Rhynchoryza</i>	1	South America (t)	24	Bisexual
<i>Maltebrunia</i> ^b	5	Tropical and Southern Africa (T)	unknown	Bisexual
<i>Prospytochloa</i> ^b	1	Southern Africa (t)	unknown	Bisexual
<i>Potamophila</i> ^b	1	Australia (t + T)	24	Unisexual and bisexual

^aT = tropical, t = temperate. ^bDuistermaat (1987) considers that *Prospytochloa* and *Maltebrunia* are within the generic limits of *Potamophila*.

Table 3. Taxa in the genus *Oryza*: complexes and genome groups (Chang 1985, Duistermaat 1987, IRR1 1964, Tateoka 1963b).

Species complex Taxa	Genome group ^a
<i>O. schlechteri</i> <i>O. brachyantha</i>	Diploid FF
<i>O. ridleyi</i> complex <i>O. longiglumis</i> <i>O. ridleyi</i>	Tetraploid Tetraploid
<i>O. meyeriana</i> complex <i>O. granulata</i> <i>O. meyeriana</i>	Diploid Diploid
<i>O. officinalis</i> complex <i>O. officinalis</i> <i>O. minuta</i> <i>O. eichingeri</i> <i>O. punctata</i> <i>O. latifolia</i> <i>O. alta</i> <i>O. grandiglumis</i> <i>O. australiensis</i>	CC BBCC CC BB, BBCC CCDD CCDD EE
<i>O. sativa</i> complex <i>O. sativa</i> <i>O. nivara</i> <i>O. rufipogon</i> <i>O. glaberrima</i> <i>O. barthii</i> <i>O. longistaminata</i> <i>O. glumaepatula</i> <i>O. meridionalis</i>	AA AA AA A ^B A ^B A ^B A ^B A ¹ A ¹ A ^B A ^B A ^B A ^m A ^m

^aSuperscripts for genome group have been changed from IRR1 (1964) only to correspond to valid names today.

Oryza brachyantha Chev. et Roehr

O. brachyantha grows on the African continent (Fig. 3). Of all the species in the genus *Oryza*, it is the most closely related to the genus *Leersia*. The genome of this diploid species, designated FF, is dissimilar to those of all other species in the genus *Oryza* (Li et al 1961, Yang et al 1965). This species has a small, narrow spikelet with a long awn.

Features of the awn, such as its coriaceous, rigid structure served with a single vascular bundle, ally this species with *Oryza* rather than *Leersia* (Launert 1965). This species grows in the Sahel zone and in East Africa in small, temporary pools, often in laterite soils. It often grows with *O. barthii* (Chevalier 1932).

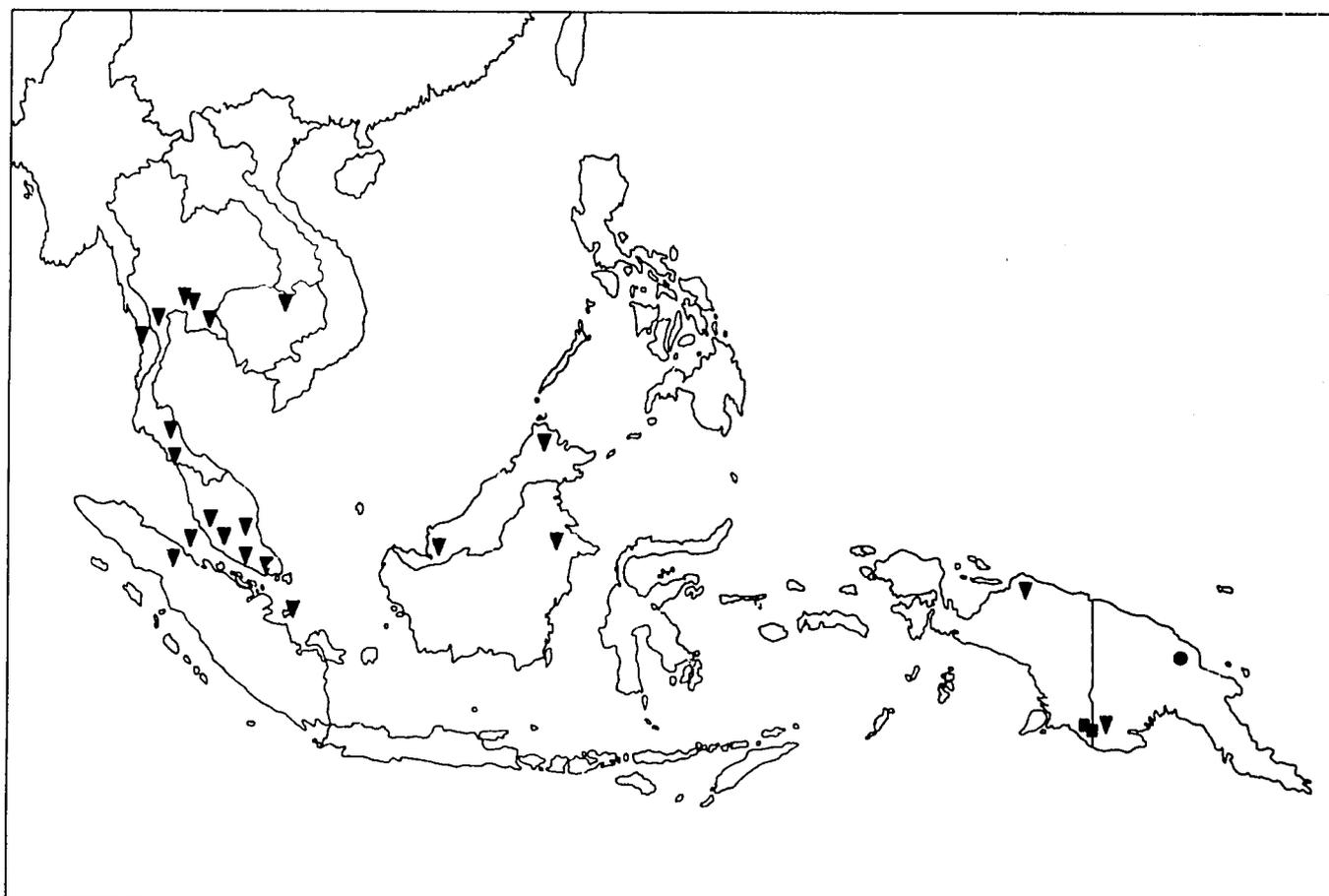
Oryza ridleyi complex

O. longiglumis Jansen is known only from a few sites along the Koembe River, Irian Jaya, Indonesia, and in Papua New Guinea (Fig. 2) (Duistermaat 1987, Katayama 1961). In Irian Jaya this species grows in the shade near the river, which floods in the wet season.

O. longiglumis is related to *O. ridleyi* Hook. f. but has much longer sterile lemmas in relation to the palea and lemma length (Fig. 1). *O. ridleyi* grows across Southeast Asia and as far east as Papua New Guinea (Fig. 2). *O. longiglumis* and *O. ridleyi* are both tetraploid. *O. ridleyi* has been crossed with *O. sativa*, *O. minuta*, and *O. officinalis*. Results indicate that this species does not have a genome similar to these species (Katayama and Onizuka 1979, Katayama et al 1981). *O. longiglumis* and *O. ridleyi* usually grow in shaded habitats beside rivers, streams, or pools. They are clearly distinguished from other species in the genus, and there has been no controversy concerning their names.

Oryza meyeriana complex

The *O. meyeriana* complex consists of taxonomically confused species. Changes in names of members of this complex appear in Table 4. The principal reason for nomenclature differences is the weight given to the spikelet length. The most common and widely spread species of the complex, *Oryza granulata* Nees et Arn. ex Watt, grows in South Asia, Southeast Asia, and southwest China, with spikelets shorter than 6.4 mm (Fig. 3) (Tateoka 1962b).



2. Distribution of species in the genus *Oryza*: 1. *O. schlechteri* (●), 2. *O. longiglumis* (■), 3. *O. ridleyi* (▼).

Oryza meyeriana (Zoll. et Mor. ex Steud.) Baill., found in Southeast Asia, has a spikelet length of 6.4-9 mm. The third taxon in the complex, "*Oryza abromeitiana* Prod.,"¹ is uncommon; found in the Philippines and the Maluku Islands, Indonesia, it has spikelets longer than 9 mm (Fig. 3). Most workers today consider "*O. abromeitiana*" synonymous with *O. meyeriana* (Chang 1985, Duistermaat 1987).

The *O. meyeriana* complex highlights a typical problem of taxonomy. When a taxon or related taxa are poorly represented in herbaria or germplasm collections, it is difficult to be sure what status they should be given. If sufficient collections were available for study, the range of variation in spikelet length in this species complex could be continuous.

All members of this species complex grow in the shade or partial shade of degraded primary or well-established secondary forests, often on sloping terrain. *O. granulata* is called forest rice by tribal people in Kerala, South India, and peacock rice in parts of Vietnam (Chevalier 1932). This taxon is not found in the deep shade of primary forests. Members of the *O. meyeriana* complex grow at higher

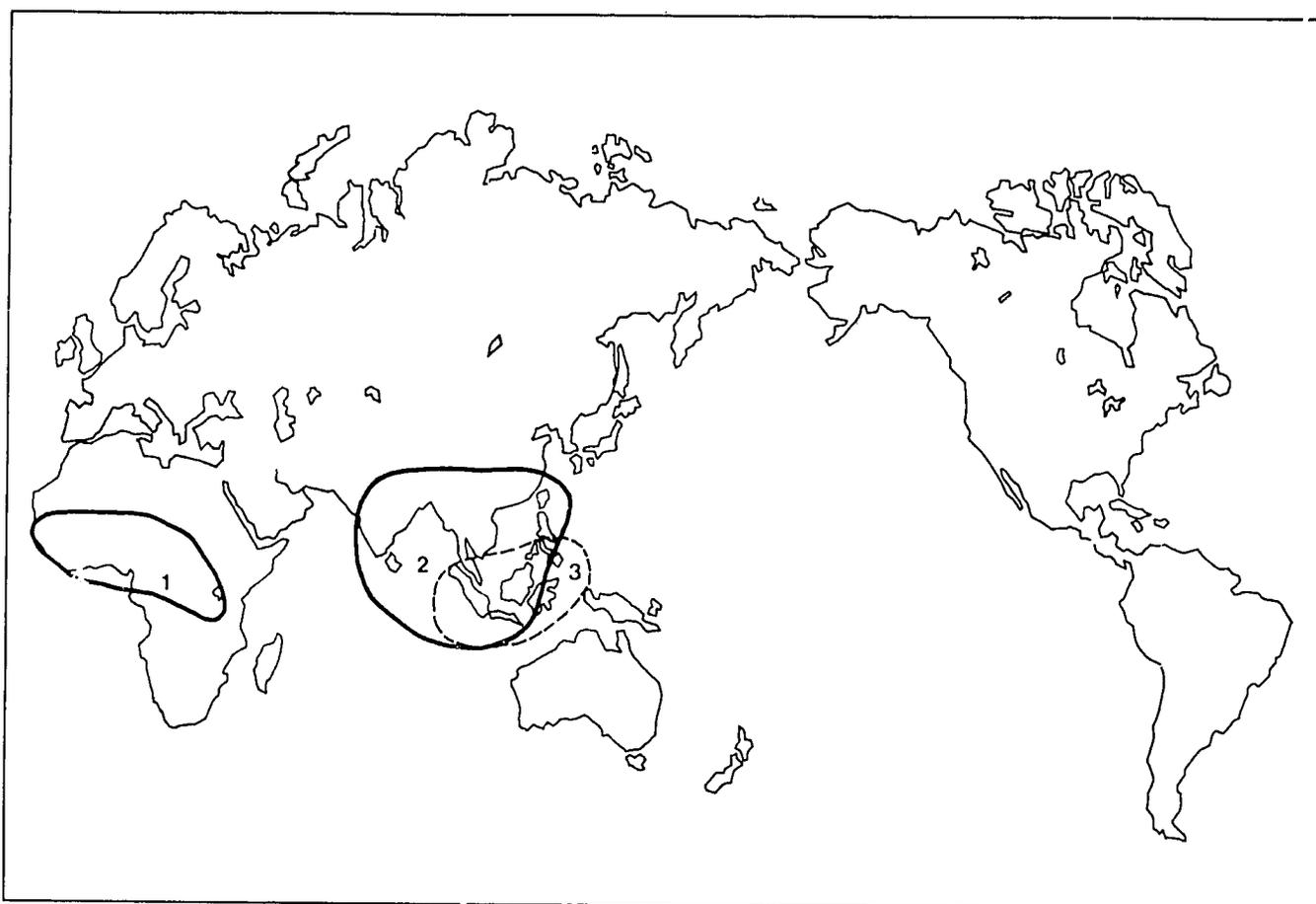
Table 4. Changes in names given to taxa in the *Oryza meyeriana* complex.

Tateoka (1963b)	IRRI (1964)	Sharma (1983)	Duistermaat (1987)
<i>Oryza meyeriana</i> ssp. <i>meyeriana</i>	<i>O. meyeriana</i>	<i>O. meyeriana</i>	<i>O. meyeriana</i> var. <i>meyeriana</i>
<i>Oryza meyeriana</i> ssp. <i>granulata</i>		<i>O. granulata</i>	<i>O. meyeriana</i> var. <i>granulata</i>
<i>Oryza meyeriana</i> ssp. <i>abromeitiana</i>		<i>O. abromeitiana</i>	

elevation than other wild species in the genus, as high as 1,000 m (Watt 1891). The plants of this complex are usually widely scattered on the forest floor and appear intolerant of competition.

These shade-loving species have not been studied as much as most species in the genus. Because they grow in habitats different from other species of *Oryza*, they have been less well represented in germplasm collections. However, recent living collections have been made of species from this complex by the author and colleagues in India, Indonesia, Nepal, Sri Lanka, and Thailand. The cytological relationship between the members of this complex and other species in the genus is unknown.

¹Species of uncertain or questionable status are placed inside quotation marks.



3. Distribution of species in the genus *Oryza*: 1. *O. brachyantha*, 2. *O. granulata*, 3. *O. meyeriana*.

A recently named taxon, "*Oryza inlandamanica* Ellis," from Rutland Island in the Andamans, India, belongs to this complex (Ellis 1985). No key character to distinguish this species from others in the *O. meyeriana* complex is apparent from the published description. Since *O. granulata* has been collected in Nepal, northern Thailand, and South India, it seems possible that this isolated population, called "*O. inlandamanica*," is of this species. It may grow on Rutland Island because migrating birds carried seeds there. Until this isolated population is compared with other forms of the complex, its status will remain questionable.

Oryza officinalis complex

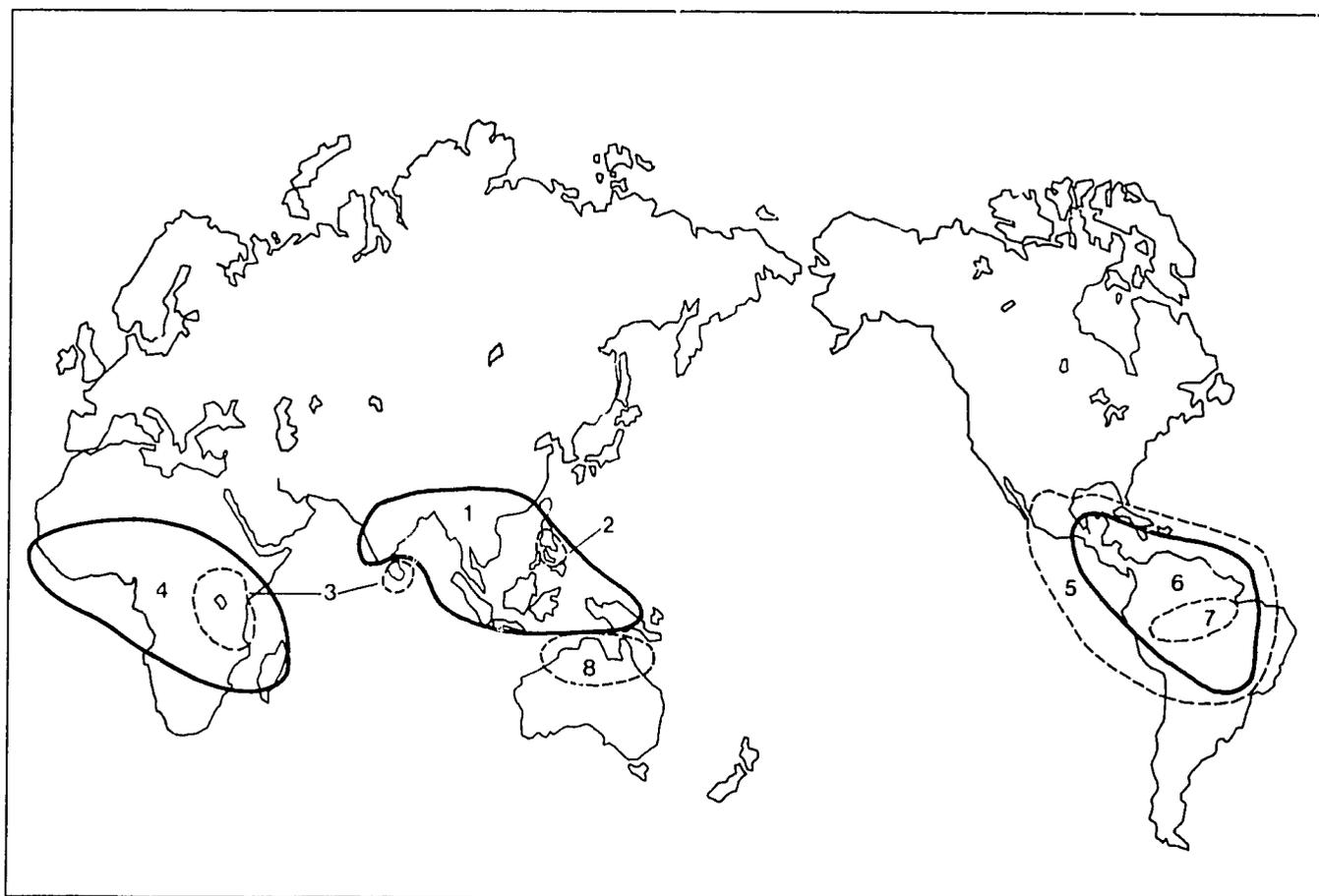
The largest complex in the genus is the *O. officinalis* complex, also called the *O. latifolia* complex by Tateoka (1962a, 1965e). This complex has related species groups in Asia, Africa, and Latin America (Fig. 4). Most species are clearly defined; however, some local forms have unclear status.

In Asia, the most common species is *Oryza officinalis* Wall. ex Watt, widely distributed in South and Southeast Asia and south and southwest China. *O. officinalis* thrives in partial shade or full sun. In the Philippines, it is called bird rice (Katayama 1961, 1963). A vigorous herb, it has been found by the author beside streams in India within 100 m of

O. granulata, and beside pools of water in Thailand adjacent to *O. ridleyi*.

Tetraploid relatives of *O. officinalis* grow in the Philippines and India. In the Philippines, *O. minuta* J. S. Presl. et C. B. Presl. is sympatric with *O. officinalis* in the central islands of Bohol and Leyte. Cytological studies have suggested that *O. minuta* is an allopolyploid with genome designation BBCC (Kihara 1963), with one set of chromosomes similar to *O. officinalis* (genome CC) and the other similar to the diploid form of *O. punctata* (genome BB) (Table 3) (Kihara 1963). It is, however, difficult to understand the role of *O. punctata* in the formation of *O. minuta*, based on the current distribution of *O. punctata* in Africa. Lack of bivalent formation during meiosis of species hybrids may be insufficient justification for considering this species an allopolyploid (Nayar 1973).

O. officinalis and *O. minuta* were systematically compared by Tateoka and Pancho (1963), who considered them clearly distinguishable. However, Duistermaat (1987) recently considered them the same species, *O. minuta*. Most taxonomists consider these species readily separable on the basis of morphological characters such as spikelet, panicle, and plant size, all of which tend to be smaller in the tetraploid, *O. minuta* (Sharma and Sampath 1985, Tateoka and Pancho 1963). *O. minuta* grows in shade or partial



4. Distribution of species in the genus *Oryza*: 1. *O. officinalis*, 2. *O. minuta*, 3. *O. eichingeri*, 4. *O. punctata*, 5. *O. latifolia*, 6. *O. alta*, 7. *O. grandiglumis*, 8. *O. australiensis*.

shade along stream edges as a minor member of the flora (Vaughan 1980).

Only a few populations of the tetraploid "*Oryza malampuzhaensis* Krishnaswamy *et* Chandrasekharan" have been found (Krishnaswamy and Chandrasekharan 1957). This taxon has a localized distribution in neighboring parts of Kerala and Tamil Nadu in South India near the town of Malampuzha. "*O. malampuzhaensis*" is not easily distinguished from *O. officinalis*, which grows in the same region. The main morphological difference from *O. officinalis* is slightly larger spikelets in "*O. malampuzhaensis*." Populations of "*O. malampuzhaensis*" have recently been found in a marshy area of a partially shaded forest floor of a well-established teak plantation (Vaughan and Muralidharan 1989). Tateoka (1963b) considered it a subspecies of *O. officinalis*. As with other taxa that until recently were poorly represented in herbaria and germplasm banks, a detailed study comparing representatives of this tetraploid with other species in the complex could clarify its status.

A form of the *O. officinalis* complex from Sri Lanka was named "*Oryza collina* (Trimen) Sharma *et* Shastri" (Sharma and Shastri 1965b), based on one sample of material studied in India, coming originally from Sri Lanka

via the USA. A subsequent study by one author resulted in a retraction of the name "*O. collina*" and agreement with Tateoka (1963b) that this form from Sri Lanka is within the range of variation of *Oryza eichingeri* Peter, an African species of the same complex (Biswal and Sharma 1987). This taxon from Sri Lanka grows in both shaded and open habitats, whereas *O. eichingeri* grows in the shade of forests in Uganda (Tateoka 1964b, 1965c). Unfortunately, taxonomists cannot usually give much weight to the habitat of a taxon, since field notes are generally scanty. Also, most environmental parameters of plants are complex and change over time. The present status of the Sri Lankan form is still unclear. New material in the world's germplasm collections enables comparative studies.

In Africa, two species of the *O. officinalis* complex are *O. punctata* Kotschy *ex* Steud. and *O. eichingeri* Peter. Both have been reported as having diploid and tetraploid forms (Hu 1970, Tateoka 1965b). However, the reported tetraploid *O. eichingeri* may be the result of an error (compare Tateoka [1965c] with Hu [1970]). The diploid forms of these species have different genome designations, namely BB for *O. punctata* and CC for *O. eichingeri* (Kihara 1963, Naya 1973). The only major field collections of *O. eichingeri* in Africa were by Tateoka in 1964. He

Table 5. Mean measurements and standard deviations (SD) of 16 characters for 9 diploid and 8 tetraploid strains of *O. punctata* (Sano 1980).

Character	Diploid		Tetraploid		t value ^a (d.f. = 15)
	Mean	SD	Mean	SD	
Plant height at 40 d (cm)	27.1	4.19	16.1	2.76	6.30**
Plant height at maturity (cm)	142.5	19.74	147.6	7.85	0.62
Panicles (no.)	9.5	1.81	6.6	2.32	2.43*
Panicle length (cm)	24.0	2.81	26.9	5.02	1.70
Seed length (0.1 mm)	59.0	1.41	48.5	1.73	6.24**
Seed width (0.1 mm)	22.0	0.82	23.5	0.58	2.72**
100-seed weight (0.1 g)	11.4	1.10	9.0	0.47	5.80**
Width of flag leaf (mm)	14.2	2.38	21.7	2.87	9.87**
Awn length (cm)	4.7	1.35	3.2	0.23	6.44**
Awn diameter (µm)	142.6	35.46	115.0	7.33	5.56**
Awn bristle length (µm)	164.5	24.54	142.3	4.92	5.31**
Awn development index	2.9	0.46	2.8	0.20	9.05**
Seed fertility (%)	77.8	7.75	66.0	16.58	2.38*
Anther length (mm)	2.1	0.82	2.5	0.01	5.90**
Days to heading	104.5	6.61	122.7	1.15	6.92**
Regenerating ability index	1.3	0.26	2.6	0.27	8.80**

^aAsterisks show that the difference between diploid and tetraploid forms was significant at the 5% (*) or 1% (** level).

carefully compared this species morphologically and cytologically with *O. punctata*, which he also collected in East Africa (Tateoka 1965b,c), and distinguished the two.

A recent study by Sano (1980) listed characteristics that distinguish the annual, diploid form of *O. punctata* from the perennial, allotetraploid form (Table 5). Thus, the two chromosome races of *O. punctata* may deserve subspecific ranking. The name "*Oryza schweinfurthiana* Prod." has been used by some workers (Sharma and Sampath 1985) to refer to the tetraploid form of *O. punctata*. However, the original description of Prodoehl (1922) takes no account of chromosome number.

The American species of this complex are *Oryza latifolia* Desv., *Oryza alta* Swallen, and *Oryza grandiglumis* (Doell) Prod. *O. latifolia* is widely distributed, growing in Central and South America as well as on the Caribbean islands. *O. alta* and *O. grandiglumis* grow only in South America, primarily in the Amazon basin, except for one population of *O. alta* reported from Belize (Fig. 4) (Oka 1961). These species are all allotetraploid with the same genomic designation, CCDD (Kihara 1963). They vary in several characteristics, of which leaf width, spikelet morphology, and spikelet dimensions are the principal key characters. Although, Gopalakrishnan and Sampath (1967) and Roy (1966) suggested that these three species do not deserve separate species ranking, most workers today consider them separate species (Chang 1985, Sharma and Sampath 1985, Tateoka 1963b).

One publication reports a diploid population of *O. latifolia* from the Paraguayan Chaco (Brucher 1977). This population has not been given a separate valid species name, although Sharma (1983) suggested the name "*Oryza brucherii*" after the individual who reported it. This report of a diploid *O. latifolia* caused considerable interest among rice scientists, since it may represent a diploid with the genome DD. Diploids are known for all the genomes that have so far

been identified in the genus *Oryza* except the DD genome of tetraploid species from Latin America. Herbarium specimens and seeds of this form from Paraguay have not been distributed; thus its status and genome group remain unclear.

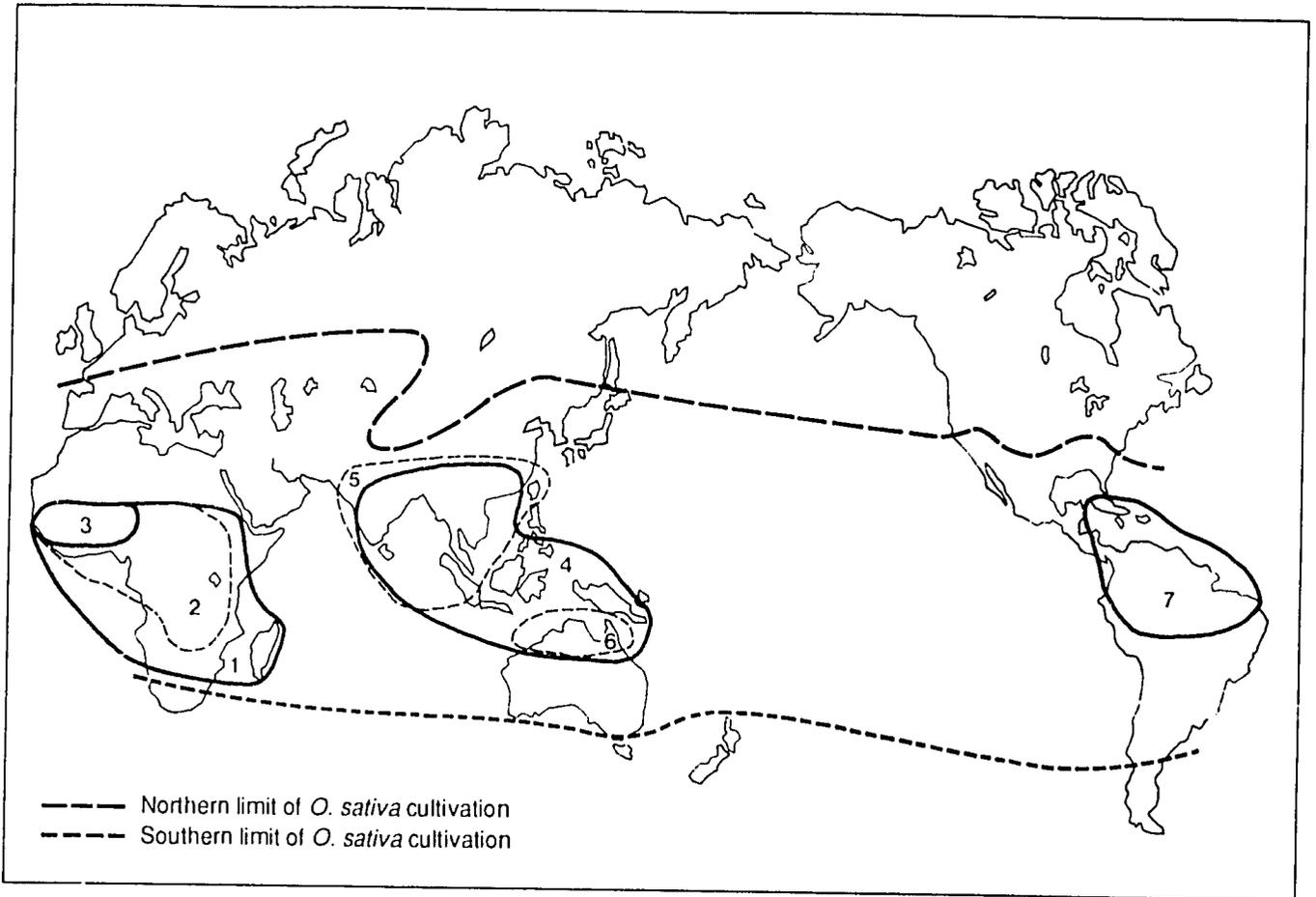
Some workers put in this complex (compare Tateoka [1962a] with Second [1985a]) a species found in tropical Australia called *Oryza australiensis* Domin. It clearly differs from other species of the genus, not just in its location, but also in its strongly rhizomatous habit. Its genome, EE, differs from all other species in the genus (Li et al 1963). This species grows only in the northern tropical zone of Queensland, Northern Territory, and Western Australia. It often grows alongside another *Oryza* species found in Australia, *Oryza meridionalis* Ng.

The rice cultigens *Oryza glaberrima* Steud. and *Oryza sativa* L. and their close relatives

The most confused area of *Oryza* nomenclature concerns the names and relationships of species closely related to the two cultigens in the genus, *Oryza glaberrima* Steud., the cultivated rice of West Africa, and *Oryza sativa* L., the main rice species cultivated worldwide. In common with the taxonomy of other cultivated species, these cultigens and their close wild relatives have undergone many name changes and differences in interpretation (Harlan 1975, Harlan and de Wet 1971).

All taxa of this complex have the same genome, AA (IRRI 1964). However, genomic differences have been observed, particularly in samples from different continents. These differences are indicated by adding a superscript to the AA designation (Table 3) consisting of letter(s) from the specific epithet.

African taxa. The species closely related to the West African cultivated rice, *O. glaberrima*, are somewhat easier to distinguish from each other and the cultigen than their



5. Distribution of species in the genus *Oryza*: 1. *O. longistaminata*, 2. *O. barthii*, 3. *O. glaberrima*, 4. *O. rufipogon*, 5. *O. nivara*, 6. *O. meridionalis*, 7. *O. glumaepatula*.

counterparts in Asia. However, their nomenclature has been more confused. The perennial relative of *O. glaberrima* is now correctly called *Oryza longistaminata* Chev. et Roehr. (Clayton 1968). Previously, it was called *Oryza barthii* Chev. (Clayton 1968) or *Oryza perennis* ssp. *barthii* Tateoka et al (IRRI 1964). This species is easily distinguished from the annual wild species of this complex in Africa by its strong rhizomes and long anthers.

The annual wild relative of *O. glaberrima* is correctly called *Oryza barthii* Chev. (Clayton 1968). Previously, it was called *Oryza breviligulata* Chev. et Roehr. (Chevalier 1932). It is similar in many ways to the annual relative of *O. sativa*. *Oryza nivara* Sharma et Shastry, which also has strongly awned spikelets and high seed production. Both species are gathered by local people using swing baskets (Oka and Morishima 1971, Second 1985b, Vaughan and Chang 1980). *O. barthii* differs morphologically from its Asian counterpart primarily in its panicle branching and short ligule. *O. longistaminata* (perennial) and *O. barthii* (annual) can hybridize with *O. glaberrima* and *O. sativa* (Bezanceon et al 1977, Ghesquiere 1985). Weedy forms have been called "*Oryza stapfii* Rosehev." Weedy forms are constantly being formed in nature, by hybridizing and differentiating, and have no single botanically correct name (Harlan 1969, 1975).

O. glaberrima is distinguished from *O. sativa* by its short, rounded ligule, panicle lacking secondary branches, and almost glabrous lemma and palea. *O. glaberrima* is not as variable as *O. sativa*, and the area grown to this species is declining. However, in some areas of West Africa, local people prefer the taste of *O. glaberrima*, and the species is better adapted to some deepwater and upland habitats than is the introduced rice from Asia (Oka 1977).

O. glaberrima is grown primarily in West Africa but has been collected in East Africa (Bezanceon and Second 1984). *O. barthii* is more widely distributed in Africa than is *O. glaberrima*. However, *O. longistaminata* is the most widely distributed *Oryza* spp. in Africa, growing south of the Sahara and in Madagascar (Fig. 5).

Asian taxa. Close relatives of *O. sativa* have been variously named. The species name *Oryza perennis* Moench, widely used for the perennial wild relative of rice found in Asia, Africa, and Latin America, is uncertain, as Tateoka (1963b) noted, because the type specimen was lost and the original description was unclear. He considered *Oryza rufipogon* Griff. a taxonomically valid name for this species. Many scientists who have used *O. perennis* in their publications have been reluctant to change the name (Morishima et al 1980; Oka 1977, 1988; Sampath 1964; Second 1982).

Tateoka (1963b) used *O. rufipogon* to refer to the wild relatives of rice found in Asia and America. Sharma and Shastry (1965a) divided *O. rufipogon* of Asia into two categories, recognizing a new species, *Oryza nivara* Sharma et Shastry, as an annual form of wild rice, and retaining *O. rufipogon* for perennial populations. Collections of wild rices from the coast of Orissa and West Bengal and from the Deccan plateau of India indicated at least two types of close relatives of rice. *O. nivara* grows in seasonally dry habitats. It is photoperiod insensitive, produces many seeds, and grows primarily in the drier parts of South and Southeast Asia. The perennial *O. rufipogon*, growing in deepwater habitats, is photoperiod sensitive and produces fewer seeds. *O. rufipogon* grows across tropical Asia to Australia (Fig. 5). Some characteristics that distinguish *O. rufipogon* from *O. nivara* are similar to those shown in Table 5 for the diploid and tetraploid races of *O. punctata*. These differences reflect different life style strategies associated with the high seed-producing annual species (r) and low seed-producing perennial species (k) described by Harper (1977).

Taxonomists and other scientists working with wild species of rice since the publications of Tateoka (1963b) and Sharma and Shastry (1965a) have differed in their acceptance of the name *O. nivara*. Chang (1976b), for example, has used the species described by Sharma and Shastry (1965a), *O. nivara*, to illustrate the parallel evolutionary pathway of the two cultigens. Duistermaat (1987), on the other hand, considers *O. nivara* to be synonymous with *O. sativa*. Rice and its wild relatives in Asia, *O. nivara* and *O. rufipogon*, are interfertile to varying degrees (e.g., Morishima et al 1961, Oka 1956). Variation further extends from low seed-producing, perennial forms to high seed-producing, annual forms, to the cultigen and various weedy forms resulting from hybridization and differentiation cycles. These three taxa—*O. sativa*, *O. nivara*, and *O. rufipogon*—together with the weed race (*Oryza sativa* f. *spontanea*) form a large species complex.

Recent literature seems to agree on giving the wild relatives of rice a separate species name, *O. rufipogon*. It is not agreed whether *O. nivara* can be distinguished from *O. sativa*, *O. rufipogon*, and weedy types. Differences that appear clear in the field are less apparent when viewing herbarium sheets.

The confusion concerning nomenclature of the wild relatives of *Oryza* is common to the wild relatives of many other cultivated plants. Uniform systems of nomenclature for these species complexes have been advocated by Harlan and de Wet (1971) and de Wet (1981). For most wild-weedy-cultivated species complexes that produce fertile hybrids, the rank of subspecies has been suggested (de Wet 1981). For the cultivated rices, it seems necessary to achieve a sound, taxonomically based consensus on names.

The weedy types of rice have been given various names such as "*latua*" (Chatterjee 1948) and "*spontanea*" (Roschevitz 1931) in Asia and "*O. stapfii*" (Prodoehl 1922) in Africa. These weeds are not generally considered good

taxonomic species, since they can originate by mutation of the cultigen, hybridization between the cultigen and wild species, or by introduction of wild species into cultivated fields. These weedy forms usually have red endosperm, hence the common name "red rice." Depending on location, these weedy rices may be more closely related to *O. rufipogon* and or *O. nivara* in Asia and to *O. longistaminata* or *O. barthii* in Africa, with some genes from one of the cultigens, too. In the U.S. and other parts of the world, red rice could be a consequence of mutation or an introduction of weedy rice and red coated cultivars from the tropics. A valuable bibliographic source of information on this subject is Fastin (1979).

The *O. sativa* complex includes two other species. One, distributed across tropical Australia, is called *Oryza meridionalis* Ng (Ng et al 1981). This species has many characteristics similar to those of *O. nivara* described by Sharma and Shastry (1965a). However, it has longer awns, narrower spikelets, and a more compact panicle. This species often grows with *O. australiensis* in Australia.

A wild rice closely related to *O. rufipogon*, called *Oryza glumaepatula* Steud., grows in Latin America. However, the names *Oryza paraguayensis* Steud. (Tateoka 1962b) and *Oryza cubensis* Ekman or *Oryza perennis* ssp. *cubensis* Tateoka et al (IRRI 1964) have also been used for this taxon. It is not clear how this species got to America. Chang (1985) considers early forms of *Oryza* to have been in America since the breakup of the ancient continent of Gondwanaland. Second (1985b) believes the American form of *O. glumaepatula* is a recent introduction. Oka (1961) discusses at length the historical records of rice in Latin America. With reference to *O. glumaepatula*, he quotes Hitchcock (1936): "It (*O. glumaepatula*) is not a weed and has never been found among cultivated rice. It grows in pineland swamps far from human dwellings as, for instance, in Cienaga de Lanier, Isla de Pinos, Cuba, where rice has never been cultivated. It is, I repeat it, absolutely out of the question that it could be an escape form of the cultivated rice. It is, moreover, perennial, not annual, as *O. sativa*." One might expect a recent, post-Columbian introduction of wild rice into Latin America to have come from Africa. However, neither *O. barthii* nor *O. longistaminata* is found in Latin America.

FUTURE AREAS OF RESEARCH

This overview highlights areas where more work can clarify the status of taxa and their relationships with other taxa in the genus. The main areas for study are as follows:

- Genera related to *Oryza* offer characteristics for improving rice such as monoecious flowers of *Zizania* and the aerenchymatous leaf sheaths of floating *Hygroryza aristata* Nees. Some related genera have been little studied; chromosome numbers for the genera *Maltebrunia* and *Prosphytochloa* have not been officially recorded.

- Exploration to find *O. schlechteri* is necessary to determine its relationship with other species in the genus. Similarly, material needs to be collected of the diploid member of the *O. officinalis* complex from Paraguay to determine its genome constitution.
- Species in the *O. meyeriana* complex offer characteristics useful to plant breeders, such as abilities to live in dryland and to tolerate shade. Recent collections of these species should be studied to determine relationships with other species in the genus.
- In the *O. officinalis* complex, understanding the mechanism controlling polyploidy would be of value. In-depth studies are needed similar to those of Gopalakrishnan and Shastry (1964), who induced autopolyploidy in wild *Oryza* species to explain cytological differences. The *O. officinalis* complex, unlike others in the genus, has closely related diploid and tetraploid taxa. Investigations into why polyploidy is a feature of this complex would be valuable and could help in manipulating chromosomes between species.
- Evolutionary studies are needed to explain the divergence between sun-loving and shade-loving species. This could help clarify the taxonomy of the genus and would be useful to rice physiologists who help breeders adapt rice to various ecological conditions.
- The concentration on morphological and cytological studies of the genus *Oryza* has neglected ecology and population genetics, which could help explain species relationships. Recently, isozyme studies have used extensive wild species germplasm (e.g., Second 1982, 1985a), but other potentially helpful biochemical analyses such as flavonoid studies are lacking. With the current interest in wild species, application of techniques such as restriction fragment length polymorphisms and studies at the DNA level can enhance our knowledge of *Oryza* germplasm.
- More effort is needed to understand intrapopulation variation (e.g., Morishima et al 1984, National Institute of Genetics 1987). Such studies could clarify species limits. In addition, studies of population structure could indicate ways to genetically structure agricultural production for sustainable agro-ecosystems (Brown 1978).
- Greater understanding is needed of the taxonomy of "*O. malampuzhaensis*," "*O. indandamanica*," the Sri Lankan and East African form of *O. eichingeri*, and the diploid and tetraploid forms of *O. punctata*, *O. glumaepatula*, and *O. meridionalis*. Another question is whether rice cultigens and their wild and weedy relatives differ sufficiently from other cultivated crop complexes to warrant separate species for different forms.

In undertaking taxonomic studies, it is important to follow the rules of taxonomy. The international rules governing the naming of new species were first agreed on at

the 1930 Botanical Congress, Cambridge, United Kingdom, and have been updated at subsequent Congresses (Lawrence 1951). The principal criterion for distinguishing species is that they should be morphologically definable units (Davis and Heywood 1973). Major steps involved in publication of a new species name are

- Follow the principle of priority, i.e., a taxon can bear only one valid name, the earliest name that follows the Rules of Nomenclature.
- The Latin description of the specimen must be based on a type specimen placed in a reputable herbarium. Whenever possible, herbarium specimens from the type population should be distributed to other major herbaria.
- A new species name must be validly published, that is, the written description and name must be prepared in accordance with the Rules of Nomenclature and appropriately distributed.

Taxonomists, particularly at major herbaria, have access to a wealth of historical information and specimens. On the other hand, germplasm banks have a wealth of living germplasm of wild species. Working together, taxonomists and genetic conservationists now have an opportunity to clarify species relationships.

Wild relatives of crop plants can offer innumerable insights into cultivated species. Wild species are generally difficult to use in breeding programs because they have many undesirable characteristics such as strong seed dormancy, poor plant type, and seeds that easily shatter from the panicle. However, these species live in natural ecosystems or in human-altered agro-ecosystems. To compete with other members of the ecosystem, they must have many built-in defenses against pests and diseases. Wild species of *Oryza* can be appropriate material to compare with the cultigen for, among other things, the mechanisms of pest and disease resistance, physiological changes during evolution, and major attributes of seed quality such as seed storage ability. Wild species have been a major source of resistance to viruses and their vectors (Aguiero et al 1984, Heinrichs et al 1985, IRR1 1970). Wild species have contributed valuable sources of cytoplasmic male sterility, a key component in hybrid rice production in China (Lin and Yuan 1980).

The wild species of *Oryza* offer sources of genetic diversity not found in the cultigens. These species, because of their different genetic makeup and evolutionary relationship to rice, may provide answers to questions that more closely related germplasm might not give. Their potential for helping reinstate genetic diversity into rice breeding programs is enhanced by advances in biotechnology.

Habitat destruction has affected wild species of *Oryza* (IRRI-IBP-CR 1982, Kiang et al 1979). Some forest species, such as *Oryza ridleyi*, are now rare (Vaughan 1988). Urgent efforts are needed to protect these genetic resources for rice improvement programs. Both in situ and ex situ conservation can provide long-term protection for these relatives of rice.

Key to species in the genus *Oryza*
(modified from Chang [1976a], Duistermaat [1987], and Tateoka [1963b])

- 1a Spikelet usually shorter than 2 mm; nodes hairy
- 1b Spikelet longer than 2 mm
- 2a Sterile lemma linear or linear-lanceolate
- 3a Ligule of lower leaves 14-45 mm long; tip acute
- 4a Usually annual with panicle compact prior to maturity; anther shorter than 4.0 mm
- 5a Grain persistent at maturity
- 5b Grain deciduous at maturity
- 6a Semi-open panicle at maturity; spikelets usually wider than 2.0 mm
- 6b Panicle with stiff, erect branches ascending and tightly adpressed to the main axis; spikelet shorter than 2.3 mm
- 4b Perennial; panicle usually wide spreading; anther longer than 3.0 mm
- 7a Erect habit; rhizomatous
- 7b Spreading habit, without well-developed rhizomes
- 8a Extravaginal branching; usually prostrate habit
- 8b No extravaginal branching; semi-erect habit
- 3b Ligule of lower leaves shorter than 13 mm; tip rounded or truncate
- 9a Rhizomatous; axis of the panicle increasingly hispid-scabrous toward the tip
- 9b Sometimes rhizomatous; axis of the panicle glabrous or hairy in the axils of the branches

O. schlechteri

Distribution: Papua New Guinea. Rare. Collected from a rock about 300 m above sea level. Plants were 30-35 cm; panicle 4-5 cm long; sterile lemmas only about 0.1 mm long or absent.

O. sativa

Widely cultivated in the tropics, subtropics, and temperate regions. Great diversity of form; leaf blades usually narrow; no rhizomes; panicle usually compact; anther usually shorter than 2.1 mm, spikelet usually 4-8.5 mm long, 2-4 mm wide; embryo usually shorter than 2.1 mm; diploid.

O. nivara

Distribution: Asia. Usually insensitive to photoperiod; semi-erect to decumbent; no rhizomes; basal internodes spongy; intravaginal branching; panicle inserted or not well exerted; panicle with fewer branches and sub-branches; thick, stout rachis; spikelets usually 6-8.4 mm long, 1.9-3.0 mm wide, 1.2-2 mm thick; long, thick awn, 4-10 cm; embryo usually 1-1.5 mm long; strong seed dormancy; high spikelet fertility; annual; diploid.

O. meridionalis

Distribution: tropical Australia. Similar to *O. nivara* of Asia but with compact panicle and long, scabrous awns, 7.8-10.3 cm; panicle branches stiff and ascending; spikelet narrow, 7.6-8 mm long, 1.9-2.2 mm wide, 1.3-1.5 mm thick; occasionally perennial; diploid.

O. longistaminata

Distribution: Africa. May be a serious weed due to its branched and spreading rhizomes; anthers longer than 3 mm, filling the spikelet before being exerted; elliptic pollen; partially self-incompatible; perennial; diploid.

O. rufipogon

Distribution: tropical Asia and Australia. Photoperiod sensitive; decumbent or floating; forming a perennial root stock; adventitious roots and extravaginal branching at higher nodes; long internodes; panicle well exerted and spreading; awns long, 5.5-10.6 mm; anthers usually longer than 3 mm; grain slender, 7.0-9.3 mm long, 1.9-2.6 mm wide, 1.6-1.9 mm thick, highly shattering, and may have low seed set; embryo usually 1-1.5 mm long; perennial; diploid.

O. glumaepatula

Distribution: Central and South America, and Caribbean. Similar to *O. rufipogon* but usually has larger spikelets and longer awns; perennial; diploid.

O. australiensis

Distribution: tropical Australia. Main axis of the panicle with slightly woolly pubescence at the base of primary branches; strongly rhizomatous; awns shorter than 5 cm, hairlike; long apiculus; perennial; diploid.

10a Spikelet longer than 7 mm; spikelet awned or awnless; awn usually rigid

11a Cultivated; persistent to partly shattering grain at maturity; palea and lemma not hispid

O. glaberrima

Distribution: Africa, mainly west. Cultivated annual; erect plant; leaves almost glabrous; panicles more or less compact, main panicle axis generally without secondary or tertiary branches; lemma and palea almost perfectly glabrous; spikelet width 2.9-3.6 mm; tip of sterile lemma acute; diploid.

11b Wild; deciduous grain; lemma and palea hispid; long scabrous awn

O. barthii

Distribution: Africa. Annual plants, erect to spreading; spikelets 7.8-11.0 mm long, 2.8-3.4 mm wide; awns up to 10 cm long; sterile lemma 2.1-5.0 mm long, acute tip; diploid

10b Spikelet shorter than 7 mm or if longer the ligules always hairy and often covered with matted hairs on dorsal surface; spikelet usually awned; awn not rigid

12a Ligule usually glabrous; leaves narrower than 2 cm

13a Spikelet usually wider than 2 mm

14a Spikelet usually longer than 4.8 mm

15a Distribution: Africa

O. punctata

Distribution: Africa. Culm base soft and spongy; ligule longer than 3 mm, soft and split when dried, straight or flexuous with rigid bristles; panicle loose with spreading branches; spikelet wider than 1.9 mm (usually more than 2 mm); base of culms thick (more than 4 mm diameter) and usually spongy; awns straight or flexuous with rather rigid bristles; sterile lemma acute and triangular; perennial and annual forms; tetraploid or diploid.

15b Distribution: Sri Lanka

14b Spikelet shorter than 5.4 mm; spikelet not inserted near base of lower whorled panicle branches

O. eichingeri (see 16a)

O. officinalis

Distribution: tropical Asia. Ligule glabrous or hairy; awns often shorter than 2 cm, or awnless, usually rhizomatous; perennial; diploid (tetraploid populations in southern India known as "*O. malampuzhensis*").

13b Spikelet usually narrower than 2 mm

16a Spikelet 4.5-6 mm long; panicle 13-20 cm long; diploid

O. eichingeri

Distribution: East Africa and Sri Lanka. Culm base slender, hard, and not spongy; ligule glabrous, shorter than 3.5 mm; never split, hard; awns flexuous with fine bristles; sterile lemmas acuminate and narrowly triangular; spikelet inserted from almost the base of some lower unwhorled panicle branches; perennial; diploid.

16b Spikelet 3.7-4.7 mm long; panicle 9-20 cm long; tetraploid

O. minuta

Distribution: Philippines. Awned (2 cm or less) or awnless; panicle semi-open at maturity; perennial; tetraploid.

12b Ligule pubescent, leaves wider than 2 cm

17a Sterile lemma more or less equal in length to fertile lemma and of similar texture

O. grandiglumis

Distribution: Amazon of South America. Tall, 2 m or more; perennial; tetraploid.

17b Sterile lemma shorter than fertile lemma and of different texture

18a Leaves narrower than 5 cm; spikelet shorter than 7 mm

O. latifolia

Distribution: South and Central America, and Caribbean. Tall, 2 m or more; perennial; tetraploid.

18b Leaves wider than 5 cm; spikelet longer than 7 mm

O. alta

Distribution: South America and reports from Belize. Tall, 2 m or more; perennial; tetraploid.

2b Sterile lemma subulate or setaceous

19a Surface of sterile lemma and palea granulate; spikelet awnless

- 20a Spikelet oblong to elliptic-oblong; shorter than 6.4 mm *O. granulata*
Distribution: South Asia, Southeast Asia, and southern China. Sterile lemma shorter than 1.5 mm, tapered from the base; leaves dark green; photoperiod insensitive; perennial; diploid.
- 20b Spikelet narrowly oblong to lanceolate; longer than 6.4 mm *O. meyeriana*
Distribution: insular Southeast Asia. Sterile lemma shorter than 2 mm, tapered from the base; leaves dark green; photoperiod insensitive; perennial; diploid.
- 19b Surface of sterile lemma and palea not granulate; spikelet awned *O. brachyantha*
Distribution: Africa. Culm short (less than 1 m) and slender; spikelet linear; awns 6-17 cm long; sterile lemmas 2 mm long; annual; diploid.
- 21a Annual; spikelet narrower than 1.6 mm *O. ridleyi*
Distribution: Southeast Asia and Papua New Guinea. Lemma surface smooth between rows of trichomes; perennial; tetraploid.
- 21b Perennial; spikelet wider than 1.6 mm *O. longiglumis*
Distribution: Irian Jaya, Indonesia, and Papua New Guinea. Spikelet 2 mm wide; lemma surface smooth between rows of trichomes; perennial; tetraploid.
- 22a Awns 3-15 mm long; sterile lemma 0.3-0.85 times as long as spikelet
- 22b Awns 12-36 mm long; sterile lemma 0.8-1.3 times as long as spikelet

Species in the genus *Oryza*, including synonymy

Part I

Part I alphabetically lists 22 species and their synonyms.

A. Valid and widely recognized species

- Oryza alta* Swallen, Publ. Carnegie Inst. Wash. 461:156 (1936)
syn: *O. latifolia* Desv. var. *grandispiculis* A. Chev. (1932)
O. latifolia Desv. ssp. *longispiculus* Gopal. et Sampath (1967)
Distribution: Central and South America
- Oryza australiensis* Domin, Biblioth. Bot. 20, Heft. 85:333 (1915)
syn: *O. caduca* Muell. (1867)
O. sativa Muell. (1873)
Distribution: Australia - Western Australia, Northern Territory, and Queensland
- Oryza barthii* A. Chev., Bull. Mus. Hist. Nat. Paris 16:405 (1911)¹
syn: *O. breviligulata* A. Chev. et Roehr. (1914)
O. glaberrima ssp. *barthii* (A. Chev.) J. M. J. de Wet (1981)
O. mezii Prod. (1922)
O. perennis Moench ssp. *barthii* (A. Chev.) A. Chev. (1932)
O. silvestris var. *barthii* Stapf ex A. Chev. (1913) *nomen nudum*
O. stapfii Roschev. (1931)
Distribution: Africa
- Oryza brachyantha* A. Chev. et Roehr., Compt. Rend. Acad. Sci. 159:561 (1914)
syn: *O. guineensis* A. Chev. (1932)
O. mezii Prod. (1922) *pro parte*
Distribution: West Africa to Sudan
- Oryza eichingeri* A. Peter, Fedde Rep. Sp. Nov., Beih. 40:74 (1930)
syn: *O. collina* (Trimen) Sharma et Shastry (1965)
O. glauca Robyns (1936) *nomen nudum*
O. latifolia Hook. f. var. *collina* (Trimen) Hook. f. (1896)
O. sativa L. var. *collina* Trimen (1889)
Distribution: East and Central Africa (Uganda, Zaire, Tanzania) and Sri Lanka
- Oryza glaberrima* Steud., Syn. Pl. Glum. 1:3 (1854)
Distribution: West Africa, occasionally East Africa
- Oryza glumaepatula* Steud., Syn. Pl. Glum. 1:3 (1854)
syn: *O. cabensis* Ekman *nomen nudum*
O. paraguayensis Wedd. ex Franch. (1895)
O. perennis Moench *pro parte* (1794)

References

- Jackson 1901-1987, Tateoka 1963b
Tateoka 1963b
Gopalakrishnan and Sampath 1967
- Tateoka 1963b
Roschevitz 1931
Tateoka 1963b
- Clayton 1968
Clayton 1968
Jackson 1901-1987
Tateoka 1963b
Clayton 1968
Clayton 1968
Tateoka 1963b
- Clayton 1968
Tateoka 1963b
Roschevitz 1931
- Tateoka 1963b
Biswal and Sharma 1987
Tateoka 1963b
Tateoka 1963b
Tateoka 1963b
- Tateoka 1963b
- Tateoka 1963b
IRRI 1964
Tateoka 1963b
Duistermaat 1987

¹*Oryza barthii* has for half a century been applied to the African perennial form, but the original type distributed by Auguste Chevalier under the name *O. barthii* was the annual form that for half a century has been called *O. breviligulata* (Harlan 1969).

- O. perennis* Moench ssp. *cubensis* Tateoka et al (1964)
O. perennis Moench var. *cubensis* Sampath (1961)
O. sativa Hochst. ex Steud. (1854)
Distribution: South America, Central America, and Caribbean
8. *Oryza grandiglumis* (Doell) Prod., Bot. Archiv. 1:233 (1922)
syn: *O. latifolia* Desv. var. *grandiglumis* (Doell) A. Chev. (1932)
O. latifolia Desv. ssp. *grandiglumis* Gopal. et Sampath (1967)
O. sativa L. var. *grandiglumis* Doell (1870)
Distribution: South America, primarily Amazon basin
9. *Oryza granulata* Nees et Arn. ex Watt. Diet. Econ. Prod. Ind. 5:500 (1891)
syn: *O. filiformis* Buch-Ham. ex Steud. (1855) *nomen nudum*
O. indandamanica Ellis (1985, published 1987)¹
O. meyeriana ssp. *granulata* (Nees et Arn. ex Watt) Tateoka (1962)
O. meyeriana var. *granulata* (Watt) Duistermaat (1987)
O. triandra Heyne ex Steud. (1854) *nomen nudum*
Padia meyeriana Zoll. et Mor. (1845)
Distribution: South and Southeast Asia, southern China
10. *Oryza latifolia* Desv. Jour. de Bot. 1:77 (1813)
syn: *O. brucheri* Sharma (1983) *nomen nudum*
O. latifolia Desv. ssp. *latifolia* Gopal. et Sampath (1967)
O. officinalis Wall (1891)
O. platyphylla Schult. f. (1830)
O. sativa L. var. *latifolia* (Desv.) Doell (1871)
Distribution: Central and South America and Caribbean
11. *Oryza longiglumis* Jansen, Reinwardtia 2:312 (1953)
Distribution: Papua New Guinea and West Irian, Indonesia
12. *Oryza longistammata* A. Chev. et Roehr., Compt. Rend. Acad. Sci. 159:561 (1914)
syn: *O. barthii* sensu Hutch. et Dalz. (1936)
O. dewildemanii Vanderyst (1920)
O. madagascariensis (A. Chev.) Roschev. (1937)
O. perennis Moench (1794) *nomen dubium*
O. perennis Moench ssp. *barthii* Tateoka et al (1964)
O. perennis Moench ssp. *madagascariensis* A. Chev. (1932)
O. silvestris Stapf ex A. Chev. (1910) *nomen nudum*
O. silvestris Stapf var. *punctata* Stapf forma *longiligulata*, Stapf ex A. Chev. (1913)
Distribution: Africa
13. *Oryza meridionalis* Ng (1981)
syn: *O. perennis* Moench (1794) *pro parte*
O. rufipogon Griff. (1851) *pro parte*
O. sativa auct. non L. (1878)
Distribution: Australia - Western Australia, Northern Territory, and Queensland
14. *Oryza meyeriana* (Zoll. et Mor. ex Steud.) Baill., Hist. Pl. 12:166 (1894)
syn: *O. abromeitiana* Prod. (1922)
O. meyeriana ssp. *abromeitiana* (Prod.) Tateoka (1962)
O. meyeriana ssp. *meyeriana* Tateoka (1962)
O. meyeriana var. *meyeriana* (Tateoka) Duistermaat (1987)
Padia meyeriana Zoll. et Mor. (1845)
Distribution: Southeast Asia
15. *Oryza minuta* J.S. Presl. ex C.B. Presl., Rel. Haenk. 1:208 (1830)
syn: *O. fatua* Ridley non Koen. (1925)
O. latifolia F. Vill. non Desv. (1882)
O. manilensis Merrill (1908)
O. officinalis Wall ex Watt (1891) *pro parte*
Distribution: Philippines (Luzon, Samar, Leyte, and Bohol)
16. *Oryza nivara* Sharma et Shastry, Ind. J. Genet. Plant Breed. 25:161 (1965)
syn: *O. fatua* Koenig ex A. Chev. (1932) *pro parte*
O. rufipogon Senartna non Griff. (1956)
O. sativa auct. non L. (1832) *pro parte*
O. sativa ssp. *fatua* (Prain) J.M.J. de Wet (1981)
O. sativa var. *fatua* Prain (1903) *pro parte*
O. sativa L. *spontanea* Roschev. (1931) *pro parte*
Distribution: South and Southeast Asia

IRRI 1964
Tateoka 1963b
Jackson 1895

Tateoka 1963b
Tateoka 1963b
Gopalakrishnan and Sampath 1967
Tateoka 1963b

Duistermaat 1987
Chatterjee 1948
Ellis 1985
Tateoka 1963b
Duistermaat 1987
Tateoka 1963b
Roscheviev 1931

Tateoka 1963b
Sharma 1983
Gopalakrishnan and Sampath 1967
Jackson 1901-1987
Tateoka 1963b
Tateoka 1963b

Tateoka 1963b

Clayton 1968
Clayton 1968
Tateoka 1963b
Tateoka 1963b
Chatterjee 1948
IRRI 1964
Tateoka 1963b
Tateoka 1963b

Clayton 1968

Ng et al 1981
Ng et al 1981
Ng et al 1981
Duistermaat 1987

Tateoka 1963b
Roscheviev 1931
Tateoka 1963b
Tateoka 1962b
Duistermaat 1987
Tateoka 1963b

Tateoka 1963b
Chatterjee 1948
Roscheviev 1931
Tateoka 1963b
Duistermaat 1987

Sharma and Shastry 1965a
Sharma and Shastry 1965a
Sharma and Shastry 1965a
Sharma and Shastry 1965a
Jackson 1901-1987
Sharma and Shastry 1965a
Sharma and Shastry 1965a

¹*Oryza grandiglumis* has been wrongly applied to forms of *O. perennis*, *O. ridleyi*, and *O. sativa* that have long sterile lemmas.

²No key taxonomic characters of this recently described species distinguish it from *Oryza granulata*. Until a systematic comparison is made with *O. granulata*, this form from the Andaman Islands should be considered synonymous with *O. granulata*.

17. *Oryza officinalis* Wall ex Watt, Dict. Econ. Prod. Ind. 5:501 (1891)
syn: *O. latifolia* Hook. (1897)
O. latifolia Desv. var. *silvatica* Camus (1921)
O. montana Buch-Ham. (1848) *nomen nudum*
O. officinalis ssp. *malampuzhaensis* (Krish. et Chand.) Tateoka (1963)
O. officinalis ssp. *officinalis* (Wall ex Watt) Tateoka (1963)
O. malabarensis nomen nudum
O. malampuzhaensis Krish. et Chand. (1958)
Distribution: South and Southeast Asia, South China, Papua New Guinea
18. *Oryza punctata* Kotschy ex Steud., Syn. Pl. Glum. 1:3 (1854)
syn: *O. sativa* Hochst. ex Steud. (1854)
O. sativa L. var. *punctata* (Kotschy ex Steud.) Kotschy (1926)
O. schweinfurthiana Prod. (1922)
O. ubanghensis A. Chev. (1951)⁴
Distribution: Africa
19. *Oryza ridlevi* Hook. f., Fl. Br. Ind. 7:93 (1897)
syn: *O. stenothyrsus* K. Schum. (1905)
Distribution: Southeast Asia and Papua New Guinea
20. *Oryza rufipogon* Griff., Notul. Pl. Asia 3:5 (1851)
syn: *O. aquatica* Roschev. (1931)
O. balunga (Sampath et Govind.) Yeh et Henderson (1961) *nomen nudum*
O. fatua Koenig ex Trin. (1893) *nomen nudum*
O. fatua Trin. var. *longe-aristata*, Ridley (1925)
O. formosana Masamune et Suzuki (1935)
O. perennis Moench (1794) *nomen dubium*
O. perennis Moench emend. Sampath (1964)
O. perennis Moench ssp. *balunga* Tateoka et al (1964)
O. perennis var. *balunga* Sampath et Govind. (1958) *nomen nudum*
O. sativa Hochst. ex Steud. (1854)
O. sativa var. *abuensis* Watt (1891)
O. sativa f. *aquatica* Roschev. (1931)
O. sativa var. *bengalensis* Watt (1891)
O. sativa var. *coarctata* Watt (1891)
O. sativa var. *fatua* Prain (1903)
O. sativa var. *rufipogon* (Griff.) Watt (1891) *pro parte*
O. sativa f. *spontanea* Backer (1928)
O. sativa f. *spontanea* Roschev. (1931) *pro parte*
O. sativa ssp. *rufipogon* (Griff.) J.M.J. de Wet (1981)
Distribution: South and Southeast Asia and Australia
21. *Oryza sativa* L. Sp. Pl. 333 (1753)
syn: *O. aristata* Blanco (1837)
O. aristata Bosc. (1803)
O. caudata Trin. (1871)
O. communissima Lour. (1793)
O. demidata Desv. ex Steud. (1821)
O. elongata Desv. ex Steud. (1821)
O. longinata Steud. (1841)
O. facca Koenig ex Trin. (1893) *nomen nudum*
O. formosana Masamune et Suzuki (1935)
O. glutinosa Lour. (1793)
O. jeyeporensis Govindasw. et Krishnasw. (1958) *nomen nudum*
O. latifolia P. Beauv. non Desv. (1812)
O. marginata Desv. ex Steud. (1821)
O. montana Lour. (1793)
O. mutica Lour. ex Steud. (1821)
O. nepalensis G. Don. ex Steud. (1854)
O. palustris Salisbury (1796)
O. parviflora Beauv. (1812)
O. perennis Moench (1794)
O. plena (Prain) Chowdhury (1949)
O. praecox Lour. (1793)
O. pubescens Desv. ex Steud. (1821)
- Tateoka 1963b
Chatterjee 1948
Duistermaat 1987
Tateoka 1963b
Tateoka 1963b
Nayar 1973
Chevalier 1932
Tateoka 1963b
- Tateoka 1963b
Jackson 1895
Tateoka 1963b
Tateoka 1963b
Tateoka 1963b
- Tateoka 1963b
Chatterjee 1948
- Tateoka 1963b
Duistermaat 1987
Sharma and Shastry 1965a
Tateoka 1963b
Duistermaat 1987
Tateoka 1963b
Duistermaat 1987
Nayar 1973
IRRI 1964
- IRRI 1964
Jackson 1895
Tateoka 1963b
Nayar 1973
Tateoka 1963b
Tateoka 1963b
Tateoka 1963b
Tateoka 1963b
Duistermaat 1987
Tateoka 1963b
Jackson 1901-1987
- Jackson 1895
Tateoka 1963b
Jackson 1901-1987
Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Chatterjee 1948, Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Tateoka 1963b
Nayar 1973
Duistermaat 1987
Tateoka 1963b, Roschevicz 1931
Tateoka 1963b
Chatterjee 1948, Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Tateoka 1963b, Roschevicz 1931
Chatterjee 1948, Roschevicz 1931
Jackson 1895, Roschevicz 1931
Tateoka 1963b
Tateoka 1963b, Roschevicz 1931
Chatterjee 1948, Roschevicz 1931

⁴“According to the French description and figures given by Chevalier, the plant named *O. ubanghensis* is related to the Asian and African species of *O. latifolia* complex” (Tateoka 1963b).

- O. pumila* Hort. ex Steud. (1841)
O. repens Buch-Ham. ex Steud. (1854)
O. rubribarbis Desv. ex Steud. (1821)
O. sativa Muell. (1873)
O. sativa var. *formosana* Yeh et Henderson (1961)
O. sativa var. *plena* Prain (1903)
O. sativa f. *spontanea* Roschev. (1931) *pro parte*
O. segetalis Russ. ex Steud. (1854)
O. sorghoidea Desv. ex Steud. (1821)
O. sorghoides Desv. ex Steud. (1821)
O. triandra Heyne ex Steud. (1854)
- Distribution: native to Asia; cultivated worldwide
22. *Oryza schlechteri* Pilger, Engl. Bot. Jahrb. 52:168 (1914)
 Distribution: Papua New Guinea
- B. Former *Oryza* species names now attributed to species in other genera**
- Oryza angustifolia* Hubb. (1950) = *Leersia angustifolia* Munro ex Prodoehl (1922) Launert 1965
Oryza australis A. Braun ex Schweinfurth = *Leersia hexandra* Swartz (1788) Launert 1965
Oryza caudata Nees = *Rhynchoryza subulata* (Nees) Baill. (1892) Rosechevitz 1931
Oryza ciliata Buch-Ham. = *Leersia hexandra* Swartz (1788) Rosechevitz 1931
Oryza clandestina A. Braun ex Aschers = *Leersia oryzoides* (L.) Swartz (1788) Jackson 1895
Oryza coarctata Roxb. = *Sclerophyllum coarctatum* Griff. (1851) = *Porteresia coarctata* (Roxb.) Tateoka (1965) Duistermaat 1987, Tateoka 1965a
Oryza hexandra Doell = *Leersia hexandra* Swartz (1788) Jackson 1895
Oryza leersioides Baill. = *Maltebrunia leersioides* Kth. (1830) Rosechevitz 1931
Oryza leersioides Steud. = *Potamophila leersioides* Benth. = *Maltebrunia leersioides* Kth. (1830) Chatterjee 1948, Rosechevitz 1931
Oryza mexicana Doell = *Leersia hexandra* Swartz (1788) Chatterjee 1948
Oryza monandra Doell = *Leersia monandra* Swartz (1788) Chatterjee 1948
Oryza oryzoides Brand. = *Leersia oryzoides*, (L.) Swartz (1788) = *Phalaris oryzoides* L. (1753) Chatterjee 1948
Oryza oryzoides Dalla Torre et Sarnth = *Leersia oryzoides* (L.) Swartz (1788) Jackson 1901-1987
Oryza parviflora (R. Br.) Baill. = *Potamophila parviflora* R. Br. (1810) Jackson 1901-1987
Oryza perrieri Camus = *Leersia perrieri* (Camus) Launert (1965) Launert 1965
Oryza prehensilis Steud. = *Potamophila prehensilis* Benth. (1881)¹ Jackson 1901-1987
Oryza prehensilis Baill. = *Maltebrunia prehensilis* Nees¹ Rosechevitz 1931
Oryza rubra Hort. = *Panicum colonum* L. = *Echinochloa colona*, (L.) Link Chatterjee 1948, Michael 1983
Oryza subulata Nees = *Rhynchoryza subulata* (Nees) Baill. (1892) Tateoka 1963a
Oryza tisseranti A. Chev. = *Leersia tisseranti* (Chev.) Launert (1965) Launert 1965
Oryza triticooides Griff. = *Porteresia coarctata* (Roxb.) Tateoka (1965) Rosechevitz 1931

Part 2

Part 2 is an alphabetical list of specific and subspecific names given in Part 1. Letters and numbers in brackets refer to sections and species numbers in Part 1. Species in bold letters are valid and widely accepted names.

- O. abrometiana* Prod. = *O. meyeriana* (Zoll. et Mor. ex Steud.) Baill. [A14]
O. alta Swallen [A1]
O. angustifolia Hubb. = *Leersia angustifolia* Munro ex Prodoehl [B]
O. aquatica Roschev. = *O. rufipogon* Griff. [A20]
O. aristata Blanco = *O. sativa* L. [A21]
O. aristata Bosc. = *O. sativa* L. [A21]
O. australiensis Domin [A2]
O. australis A. Braun ex Schweinfurth = *Leersia hexandra* Swartz [B]
O. bahunga (Sampath et Govind.) Yeh et Henderson = *O. rufipogon* Griff. [A20]
O. barthii A. Chev. [A3]
O. barthii sensu Hutch. et Dalz. = *O. longistaminata* A. Chev. et Roehr. [A12]
O. brachyantha A. Chev. et Roehr. [A4]
O. breviligulata A. Chev. et Roehr. = *O. barthii* A. Chev. [A3]
O. brucheri Sharma = *O. latifolia* Desv. [A10]
O. caduca Muell. = *O. australiensis* [A2]
O. caudata Nees = *Rhynchoryza subulata* (Nees) Baill. [B]
O. caudata Trin. = *O. sativa* L. [A21]
O. ciliata Buch-Ham. = *Leersia hexandra* Swartz [B]
O. clandestina A. Braun ex Aschers = *Leersia oryzoides* (L.) Swartz [B]
O. coarctata Roxb. = *Porteresia coarctata* (Roxb.) Tateoka [B]
O. collina (Trimen) Sharma et Shastri = *O. eichingeri* A. Peter [A5]
O. communissima Lour. = *O. sativa* L. [A21]
O. cubensis Ekman = *O. glumaepatula* Steud. [A7]
O. denudata Desv. ex Steud. = *O. sativa* L. [A21]
O. dewildemanii Vanderyst [A12]
O. eichingeri A. Peter [A5]
O. elongata Desv. ex Steud. = *O. sativa* L. [A21]
O. emarginata Steud. = *O. sativa* L. [A21]
O. fatua Koenig ex A. Chev. = *O. nivara* Sharma et Shastri [A16]
O. fatua Koenig ex Trin. = *O. rufipogon* Griff. or *O. sativa* L. [A20, A21]
O. fatua Ridley non Koen. = *O. minuta* Presl. ex Presl. [A15]
O. fatua Trin. var. *longe-aristata* Ridley = *O. rufipogon* Griff. [A20]
O. filiformis Buch-Ham. ex Steud. = *O. granulata* Nees et Arn. ex Watt [A9]
O. formosana Masamune et Suzuki = *O. rufipogon* Griff. or *O. sativa* L. [A20, A21]

¹Disagreement continues as to whether *Potamophila* and *Maltebrunia* are within the same genus.

- O. glaberrima* Steud. [A6]
O. glaberrima ssp. *barthii* (A. Chev.) J.M.J. de Wet = *O. barthii* A. Chev. [A3]
O. glauca Robyns = *O. eichingeri* A. Peter [A5]
O. glumaepatula Steud. [A7]
O. glutinosa Lour. = *O. sativa* L. [A21]
O. grandiglumis (Doell) Prod. [A8]
O. granulata Nees et Arn. ex Watt [A9]
O. guineensis A. Chev. = *O. brachyantha* A. Chev. et Roehr. [A4]
O. hexandra Doell = *Leersia hexandra* Swartz [B]
O. indandamanica Ellis = *O. granulata* Nees et Arn. ex Watt [A9]
O. jeyporensis Govindasw. et Krishnasw. = *O. sativa* L. [A21]
O. latifolia P. Beauv. non Desv. = *O. sativa* L. [A21]
O. latifolia Desv. [A10]
O. latifolia Desv. ssp. *grandiglumis* Gopal. et Sampath = *O. grandiglumis* (Doell) Prod. [A8]
O. latifolia Desv. ssp. *latifolia* Gopal. et Sampath = *O. latifolia* Desv. [A10]
O. latifolia Desv. ssp. *longispiculus* Gopal. et Sampath = *O. alta* Swallen [A1]
O. latifolia Desv. var. *grandiglumis* (Doell) A. Chev. = *O. grandiglumis* (Doell) Prod. [A8]
O. latifolia Desv. var. *grandispiculus* A. Chev. = *O. alta* Swallen [A1]
O. latifolia Desv. var. *silvatica* Camus = *O. officinalis* Wall ex Watt [A17]
O. latifolia Hook. = *O. officinalis* Wall ex Watt [A17]
O. latifolia Hook. f. var. *collina* (Trimen) Hook. f. (1896) = *O. eichingeri* A. Peter [A5]
O. latifolia F. Vill. non Desv. = *O. minuta* Presl. ex Presl. [A15]
O. leersioides Baill. = *Maltebrunia leersioides* Kth. [B]
O. leersioides Steud. = *Maltebrunia leersioides* Kth. [B]
O. longiglumis Jansen [A11]
O. longistaminata A. Chev. et Roehr. [A12]
O. madagascariensis (A. Chev.) Roschev. = *O. longistaminata* A. Chev. et Roehr. [A12]
O. malabarensis = *O. officinalis* Wall ex Watt [A17]
O. malampuzhaensis Krish. et Chand. = *O. officinalis* Wall ex Watt [A17]
O. manilensis Merrill = *O. minuta* Presl. ex Presl. [A15]
O. marginata Desv. ex Steud. = *O. sativa* L. [A21]
O. meridionalis Ng [A13]
O. mexicana Doell = *Leersia hexandra* Swartz [B]
O. meyeriana (Zoll. et Mor. ex Steud.) Baill. [A14]
O. meyeriana ssp. *abromeitiana* (Prod.) Tateoka [A14]
O. meyeriana ssp. *granulata* (Nees et Arn. ex Watt) Tateoka = *O. granulata* Nees et Arn. ex Watt [A9]
O. meyeriana var. *granulata* (Watt) Duistermaat = *O. granulata* Nees et Arn. ex Watt [A9]
O. meyeriana ssp. *meyeriana* Tateoka = *O. meyeriana* Zoll. et Mor. ex Steud. Baill. [A14]
O. meyeriana var. *meyeriana* (Tateoka) Duistermaat = *O. meyeriana* (Zoll. et Mor. ex Steud.) Baill. [A14]
O. mezii Prod. = *O. barthii* A. Chev. and *O. brachyantha* A. Chev. et Roehr. [A3, A4]
O. minuta J.S. Presl. ex C.B. Presl. [A15]
O. monandra Doell. = *Leersia monandra* Swartz [B]
O. montana Buch-Ham. = *O. officinalis* Wall ex Watt [A17]
O. montana Lour. = *O. sativa* L. [A21]
O. mutica Lour. ex Steud. = *O. sativa* L. [A21]
O. nepalensis G. Don. ex Steud. = *O. sativa* L. [A21]
O. nivara Sharma et Shastry [A16]
O. officinalis Wall [A10]
O. officinalis Wall ex Watt [A15, A17]
O. officinalis ssp. *malampuzhaensis* (Krish. et Chand.) Tateoka = *O. officinalis* Wall ex Watt [A17]
O. officinalis ssp. *officinalis* (Wall ex Watt) Tateoka = *O. officinalis* Wall ex Watt [A17]
O. oryzoides Brand. = *Phalaris oryzoides* L. [B]
O. oryzoides Dalla Torre, et Sarnth. = *Leersia oryzoides* (L.) Swartz [B]
O. palustris Salisbury = *O. sativa* L. [A21]
O. paraguayensis Wedd. ex Franch. = *Oryza glumaepatula* Steud. [A7]
O. parviflora (R. Br.) Baill. = *Potamophila parviflora* R. Br. [B]
O. parviflora Beauv. = *O. sativa* L. [A21]
O. perennis Moench = variously associated with *O. glumaepatula* Steud., *O. longistaminata* A. Chev. et Roehr., *O. meridionalis* Ng, *O. rufipogon* Griff., and *O. sativa* L. [A7, A12, A13, A20, A21]
O. perennis Moench emend. Sampath = *O. rufipogon* Griff. [A20]
O. perennis Moench ssp. *bahunga* Tateoka et al = *O. rufipogon* Griff. [A20]
O. perennis Moench var. *bahunga* Sampath et Govind. = *O. rufipogon* Griff. [A20]
O. perennis Moench ssp. *barthii* (A. Chev.) A. Chev. = *O. barthii* A. Chev. [A3]
O. perennis Moench ssp. *barthii* Tateoka et al = *O. longistaminata* A. Chev. et Roehr. [A12]
O. perennis Moench ssp. *cubensis* Tateoka et al = *O. glumaepatula* Steud. [A7]
O. perennis Moench var. *cubensis* Sampath = *O. glumaepatula* Steud. [A7]
O. perennis Moench ssp. *madagascariensis* A. Chev. = *O. longistaminata* A. Chev. et Roehr. [A12]
O. perrieri Camus = *Leersia perrieri* (Camus) Launert [B]
O. platyphylla Schult. f. = *O. latifolia* Desv. [A10]
O. plena (Prain) Chowdhury = *O. sativa* L. [A21]
O. praecox Lour. = *O. sativa* L. [A21]
O. prehensilis Baill. = *Maltebrunia prehensilis* Nees [B]
O. prehensilis Steud. = *Potamophila prehensilis* Benth. [B]
O. pubescens Desv. ex Steud. = *O. sativa* L. [A21]
O. pumila Hort. ex Steud. = *O. sativa* L. [A21]
O. punctata Kotschy ex Steud. [A18]
O. repens Buch-Ham. ex Steud. = *O. sativa* L. [A21]
O. ridleyi Hook f. [A19]
O. rubra Hort. = *Echinochloa colona* (L.) Link [B]
O. rubribarbis Desv. ex Steud. = *O. sativa* L. [A21]
O. rufipogon Griff. [A13, A20]
O. rufipogon Senartna non Griff. = *O. nivara* Sharma et Shastry [A16]
O. sativa Hochst. ex Steud. = *O. glumaepatula* Steud. and *O. punctata* Kotschy. ex Steud. [A7, A18, A20]
O. sativa L. [A21]
O. sativa auct. non L. = *O. meridionalis* Ng [A13, A16]
O. sativa Muell. = *O. australiensis* Domin [A2, A21]
O. sativa var. *abuensis* Watt = *O. rufipogon* Griff. [A20]
O. sativa f. *aquatica* Roschev. = *O. rufipogon* Griff. [A20]
O. sativa var. *bengalensis* Watt = *O. rufipogon* Griff. [A20]
O. sativa var. *coarctata* Watt = *O. rufipogon* Griff. [A20]
O. sativa L. var. *collina* Trimen = *O. eichingeri* A. Peter [A5]
O. sativa var. *fatua* Prain = *O. rufipogon* Griff. [A16, A20]
O. sativa var. *formosana* Yeh et Henderson = *O. sativa* L. [A21]
O. sativa L. var. *grandiglumis* Doell = *O. grandiglumis* (Doell) Prod. [A8]
O. sativa L. var. *latifolia* (Desv.) Doell = *O. latifolia* Desv. [A10]
O. sativa var. *plena* Prain = *O. sativa* L. [A21]
O. sativa L. var. *punctata* (Kotschy ex Steud.) Kotschy = *O. punctata* Kotschy ex Steud. [A18]
O. sativa var. *rufipogon* (Griff.) Watt = *O. rufipogon* Griff. [A20]
O. sativa f. *spontanea* Backer = *O. rufipogon* Griff. [A20]
O. sativa f. *spontanea* Roschev. = *O. nivara* and *O. sativa* [A16, A20, A21]
O. sativa ssp. *fatua* (Prain) J.M.J. de Wet = *O. nivara* Sharma et Shastry [A16]
O. sativa ssp. *rufipogon* (Griff.) J.M.J. de Wet = *O. rufipogon* Griff. [A20]
O. schlechteri Pilger [A22]
O. schweinfurthiana Prod. = *O. punctata* Kotschy ex Steud. [A18]
O. segetalis Russ. ex Steud. = *O. sativa* L. [A21]
O. silvestris Stapf ex A. Chev. = *O. longistaminata* A. Chev. et Roehr. [A12]
O. silvestris var. *barthii* Stapf ex A. Chev. = *O. barthii* A. Chev. [A3]
O. silvestris Stapf var. *punctata* Stapf forma *longiligulata*, Stapf ex A. Chev. = *O. longistaminata* A. Chev. et Roehr. [A12]
O. sorghoidea Desv. ex Steud. = *O. sativa* L. [A21]

- O. sorghoides* Desv. ex Steud. = *O. sativa* L. [A21]
O. stapfii Roschev. = *O. barthii* A. Chev. [A3]
O. stenothyrsus K. Schum. = *O. ridleyi* Hook. [A19]
O. subulata Nees = *Rhynchoriza subulata* (Nees) Baill. [B]
O. tisseranti A. Chev. = *Leersia tisseranti* (Chev.) Launert [B]
O. triandra Heyne ex Steud. = *O. grandata* Nees et Arn. ex Watt [A9, A21]
O. triticondes Griff. = *Porteresia coarctata* (Roxb.) Tateoka [B]
O. ubanghensis A. Chev. = *O. punctata* Kotschy ex Steud. [A18]

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