



Echinochloa oryzicola in California

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NOTES AND NEWS

ECHINOCHLOA ORYZICOLA IN CALIFORNIA.—For some years a singular species of *Echinochloa* has been persisting in the rice fields at the Rice Experiment Station near Biggs, Butte Co., California. It closely resembles the rice plant in gross vegetative appearance but is readily distinguished by the densely hairy collar and sheath margins and in the absence of the ligule. The character and position of the hairs separate it from any forms of the common watergrass, *Echinochloa crus-galli*. The spikelets are 5-6 mm long, quite shiny and less hispid than those of watergrass. The lemma of the sterile floret is largely smooth and shiny, this smooth portion with a texture similar to that of the fertile one. It matures at the same time as rice.

The grass was first collected at the Biggs station by the author on September 17, 1957 (*Crampton 4626*, AHUC). A specimen of the first collection was identified by N. L. Bor, Royal Botanic Gardens, Kew, as *E. oryzicola* var. *mutica*. It is native in the Far East but more recently has been imported with rice into middle Asia and the Caucasus (*Fl. USSR* 2:33. 1934). It is regarded as a noxious rice weed by the Russians. Vasinger-Alektorova (*Bull. Appl. Bot. Genet. Pl. Breeding* 25:109-152. 1931) clearly emphasized the weedy character of the grass and the problems of its management in his studies on rice weeds of the maritime Far East.

It is not known how long the grass has been growing at the Biggs station though it is quite likely that it was introduced as an impurity in oriental rice varieties. P. B. Kennedy during his research on rice weeds in California and subsequent publication (*Calif. Agric. Exper. Sta. Bull.* 356:467-494. 1928), had collected this *Echinochloa* at a temporary rice station at Cortena, Colusa Co. (*Kennedy*, in 1922, 1925, 1928, AHUC). Kennedy recognized the plants as "a new form of watergrass," however, did not publish a specific or varietal name nor allude to it in his publication on rice weeds.

The author visited Cortena in September, 1963, and collected in the rice there an *Echinochloa* (*Crampton 6892*, AHUC) which may be called *E. oryzicola* f. *glabra* (*Fl. USSR* 2:33. 1934). It is similar in habit, inflorescence and spikelet characters to those previously collected by Kennedy and to those collected at the Biggs station. The sheaths and collar, however, lack the characteristic pubescence, though a band of short appressed hairs was present around the base of the lowermost sheaths. Considerable search did not reveal var. *mutica* as having persisted at Cortena.

As far as it is known, *E. oryzicola* is, and has been, confined to the above localities and certainly is not the weed problem presented by the common watergrass. A description of this grass new to California and possibly to North America follows:

Echinochloa oryzicola (Vasing.) Vasing. var. *mutica* Vasing. Annual; culms 40—75 cm tall, stiffly erect, rooting and sometimes branching at the lower nodes, bearing leaves to the base of the panicle; blades stiffish, folded, tapering to a sharp point, strongly scabrous on the margins and upper surface; sheaths keeled, with closely appressed non-pustulate based hairs around the base and conspicuous long, coarse hairs along the margins in the uppermost portion; collar of lower sheaths with a conspicuous ring of numerous, stiff, tawny hairs, these hairs and those of the sheath margin with swollen or pustulate bases, several hairs often arising from a common pustule; ligule absent; inflorescence green or light green, 8—13 cm long, axis scabrous bearing 15 or less 1—sided racemes 5 cm or less long; rachis scabrous with scattered, stiff pustulate-based hairs, the hairs more numerous about the point of insertion on the axis; spikelets 5—6 mm long, awnless, shiny, commonly in clusters of 2 or 3 or sometimes solitary along the rachis; first glume about $\frac{1}{2}$ the length of the spikelet, ovate, prominently 5—nerved, ciliolate, scabrous over the back and on the nerves, second glume prominently 5—nerved, apiculate, ciliolate towards the apex, as long as the spikelet, scabrous over the back and on the nerves with some scattered, stout, pustulate-based hairs along the nerves in the upper half; sterile floret staminate, equalling the second glume, the lemma mostly smooth and shiny over the back resembling the texture of the enclosed fertile floret, 5—nerved, the central nerve (where back is smooth and shiny) indistinct, the lateral pairs marginal, prominent, scabrous with some scattered pustulate-based hairs, ciliate along the margin towards the apex, palea thin, about $\frac{7}{8}$ the length of the lemma; fertile floret stramineous, 4—4.5 mm long, smooth and shiny except for the puberulent apex, indistinctly nerved. (Based on *Crampton 4626* and *6887*).

Echinochloa oryzicola f. *glabra* Vasing. Vegetatively similar to the preceding except for absence of hairs on the collar and with only a few scattered hairs or none on the sheath margins. Inflorescence and spikelets are similar to var. *mutica* excepting the more obvious marginal pubescence at the apex of the sterile lemma. (Based on *Crampton 6892*.)

The long-awned var. *aristata* Vasing. has not been observed in California thus far.—BEECHER CRAMPTON, Department of Agronomy, University of California, Davis.

NEW COMBINATIONS IN WESTERN NORTH AMERICAN VIOLETS.—In a recent paper (Madroño 17:173—197. 1964) I treated *Viola aurea* and *V. aurea* ssp. *mohavensis* as subspecies of *V. purpurea*. This treatment was in accord with M. S. Baker's original concepts. In a letter dated Feb. 2, 1939, he had convinced me that the two taxa, *aurea* and *mohavensis*, most naturally should be treated as subspecies of *V. purpurea* along with eight others. In a preliminary manuscript of his 1949 paper (Madroño 10:110—128) Baker listed the 10 subspecies as they appeared in my recent paper. By the time the paper had appeared Baker had changed his mind and considered *aurea* and *mohavensis* as subspecies of *V. aurea*. In 1953 Baker (Madroño 12:8—13) presented a review of *V. aurea* and described ssp. *arizonensis* as new without my knowledge. This latter subspecies is exceedingly rare and according to the description appears to be only an extreme variant of *V. purpurea* ssp. *mohavensis*. Since Baker did not publish these taxa as subspecies of *V. purpurea* the formal transfers are being made as follows: *Viola purpurea* Kell. ssp. *aurea* (Kell.) J. Clausen, comb. nov. (*V. aurea* Kell., Proc. Calif. Acad. 2:185. 1862. *V. purpurea* Kell. var. *aurea* (Kell) Baker ex Jepson, Flora Calif. 2:521. 1936.) *Viola purpurea* Kell. ssp. *mohavensis* (Baker & Clausen ex Baker) J. Clausen, comb. nov. (*V. aurea* Kell. ssp. *mohavensis* Baker & Clausen ex Baker, Madroño 12:9. 1953. *V. aurea* Kell. ssp. *arizonensis* Baker & Clausen ex Baker, Madroño 12:11. 1953.)—J. CLAUSEN, Department of Plant Biology, Carnegie Institution of Washington, Stanford, California.