

PYRICULARIA ON BARLEY

DURING our survey of plant diseases in the winter months of 1969 and 1970 around Tirupati, we noted severe leaf spot on barley (*Hordeum vulgare* L.) and Italian millet (*Setaria italica* Beauv.) grown in the experimental farm of S.V. Agriculture College, and on ragi (*Eleusine coracana* Gaertn.), rice (*Oryza sativa* L.), bajra

are pale brown, cylindrical, straight or slightly curved, 1 to 4 septate, geniculate, with blunt tips and bulbous bases, and measure 12.24–130.08 × 3.06–7.65 μ . Conidia are hyaline, obclavate, straight, mostly 3-celled, rarely 2-celled, with a narrow apex and a broad base and distinct hilum, and measure 12.24–32.13 × 7.65–10.71 μ .

TABLE I
Comparison of isolates of *Pyricularia*

		Conidia						Conidiophores		
		Length*		Width*		Septa		Length	Width	Septa
		H†	C	H	C	H	C	H	H	H
<i>Hordeum vulgare</i>	Max.	32.13	35.65	10.71	7.75	2	2	130.08	7.65	4
	Min.	12.24	12.4	7.65	6.2	1	1	12.24	3.06	1
<i>Oryza sativa</i>	Max.	31.00	35.65	9.3	9.3	2	2	232.5	6.2	3
	Min.	12.4	13.95	7.75	6.2	1	1	49.6	3.1	2
<i>Setaria italica</i>	Max.	31.00	31.00	9.3	9.3	2	2	150.1	4.65	3
	Min.	12.4	12.4	6.2	6.2	1	1	45.5	3.1	2
<i>Eleusine coracana</i>	Max.	27.9	34.1	7.75	7.75	2	2	124.00	6.2	4
	Min.	15.5	12.4	6.2	6.2	1	1	46.5	3.1	2
<i>Pennisetum typhoides</i>	Max.	31.00	38.85	9.3	7.75	2	2	139.5	6.2	4
	Min.	9.3	15.5	6.2	6.2	1	1	31.00	3.1	2
<i>Arundo donax</i>	Max.	29.45	..	9.3	..	2	..	124.00	6.2	3
	Min.	15.5	..	7.75	..	1	.	36.2	3.1	2

* In microns, † H—From sporulating leaf lesions, C—From sporulating potato-sucrose-agar cultures.

(*Pennisetum typhoides* Stapf and Hubb.) and *Arundo donax* L. in some other farms. Single spore isolates yielded *Pyricularia*. Infection of barley by *Pyricularia* has also been noticed at the Sugarcane Institute, Anakapalle, during February 1970 and the isolate has since been identified as *Pyricularia grisea* Sacc. at the CMI, Kew¹. Presently, the isolate from barley has been compared with the other isolates of *Pyricularia* both from the point of view of spore morphology and infectivity.

When the isolate from barley was inoculated on leaves of barley plants minute yellow spots developed on the 3rd day. These yellow spots enlarged with time developing a browned centre. The spots eventually measured 2–3 cm long and 2–4 mm wide with 3 distinct zones—central pale brown necrotic area surrounded by a dark brown margin and an outermost chlorotic halo. Lesions develop on both young and old leaves. Lesions may coalesce to form large, irregular and elongated areas, accompanied by extensive yellowing of the leaves. The conidiophores and conidia develop on both surfaces of the lesion.

Conidiophores emerge through stomata or between epidermal cells in groups of 4 or 5,

Table I gives details of spore measurements of the different isolates. Isolates from *A. donax* did not sporulate in culture. Conidiophores from rice leaves are the longest, while those from other hosts fall within a narrow range of 124 to 150 μ . In lesions the length of conidia of all the isolates fall within the range of 28 to 32 μ . The width of conidia from barley leaves is the greatest and those from *E. coracana* the smallest. In culture, conidia of barley, ragi and bajra isolates are similar in width, forming one group, and those of rice and *S. italica* are wider forming another group. These spore measurements fall within the range reported by Asuyama² for various, *Pyricularia* isolates.

At least 4 single spore isolates from each of the hosts were used in the pathogenicity tests. The night temperatures fluctuated between 15 and 25° C during these experiments. All the 4 varieties of barley—B.D. 27, pirolina, N.P. 104 and N.P. 113—were highly susceptible to the barley isolates, which did not infect IR 8, TN 1 and GEB 24 cultivars of rice (*O. sativa*), *E. coracana*, *S. italica*, *P. typhoides*, *S. vulgare*, *T. vulgare* and *A. donax*. Isolates of *Pyricularia* from *E. coracana*, *S. italica*,

P. typhoides and *A. donax* appeared to be specific to their respective hosts under the experimental conditions of the investigation. An isolate from rice was, however, infective to barley also.

We record our thanks to the Principal and colleagues of the College of Agriculture for their help.

Dept. of Botany,
S.V. University,
Tirupati,

Y. R. SARMA.
M. V. NAYUDU.

and

Dept. of Botany,
University of Madras,
Madras, August 23, 1971.

S. SURYANARAYANAN.

-
1. Appalarasiah, P. and Lakshmikantham, M. (Private communication).
 2. Asuyama, H., *The Rice Blast Disease*, Johns Hopkins Press, 1963, p. 9.