contraction stage observed by early cytologists Wilson[16] and Sharp[17]. Wilson[16] considered the diffuse stage and the second contraction stage to be highly variable and probably absent in some organisms. From the published photomicrographs,[4,13–15,18] it seems highly possible that the synizetic knot stage, the continuous appearance of the pachytene chromosomes and interchromosomal connections during early diakinesis are characteristics of meiosis in certain organisms and are of some functional significance. These aspects need to be further investigated before attempting any redefinition of meiotic prophase stages.

The authors thank CSIR, New Delhi for the award of fellowships to two of the authors (CKJ and VJS).

10 November 1986

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OCCURRENCE OF NEW VIRULENT PATHOGENIC FORMS IN RACE 77 OF *PUCCINIA RECONDITA* F. SP. *TRITICI* IN INDIA

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Brown rust of wheat caused by *Puccinia recondita* f. sp. *tritici* Rob. ex Desm. occurs all over the wheat growing states of India, due to its wider adaptability to edaphic conditions. In order to minimize the crop losses due to sudden breakdown of resistance, variability in *P. recondita tritici* is being continuously monitored. Virulence 77 (45R31) detected during 1955[1] has two biotypes 77-A (109R31) and 77-A-1 (109R23) that were isolated during 1974[2] and 1976[3], respectively. Since then no new variability in 77 was detected till 1984. During 1983–1985 crop seasons, virulence of 77-A (109R31) dominated the flora of Nilgiri Hills in Tamil Nadu and virtually replaced race 77 (45R31). It appears that a genetic change in 77-A (109R31) recently occurred resulting in additional gain in virulence to *Lr26* and IWP-94. This explains the breakdown in resistance of some lines that were hitherto resistant to brown rust at Nilgiris.

During 1984-85 crop season two samples from IARI, Regional Station, Wellington in Nilgiris had additional pathogenicity and are being reported here.

Samples were multiplied on universal susceptible wheat i.e. Agra local and inoculated on the sets of differential[4] to identify the virulence. This new procedure permits identifying the avirulence/virulence genes in the pathogen isolate. The sample collected from variety Burgas-2 gave reaction identical to earlier described 77A (109R31) except that it was virulent on Benno (*Lr26*) of set-B[5]. This line is immune to all other virulences so far reported except 12-1 (5R37)[6] intercepted in only five samples since its detection in 1983.

Isolations from *Lr26* were further compared with the type virulence 77A (109R31) on the differentials (table 1). It was evidently a new virulence and is designated as 77-1 (109R63) before getting listed in our type culture collections. The avirulence/virulence formula of this virulence is *Lr9*, *Lr19*, *Lr24*, *Lr25*, *Lr28*, *Lr29*, *Lr18* (Sabikei)/*Lr1*, *Lr2a*, *Lr2c*, *Lr2d*, *Lr3*, *Lr10*, *Lr11*, *Lr12*, *Lr13*, *Lr14a*, *Lr14b*, *Lr14ab*, *Lr15*, *Lr16*, *Lr17*, *Lr18*, *Lr20*, *Lr21*, *Lr22*, *Lr27*.

Table 1 *Differential reactions of variants of race 77*

Virulence value		Year of	Host-pathogen response on			
Old	New	detection	*Lr10**	*Lr20*	*Lr26*	*IWP–94*
77	45R31	1955	0;–1	4	0;	0;–1
77-A	109R31	1974	4	4	0;	0;–1
77-A-1	109R23	1976	4	0;–1	0;	0;–1
77-1	109R63	1984	4	4	4	0;–1
77-2	109R31-1	1984	4	4	0;	4

* Temperature sensitive.

One more sample received from Wellington during 1984 similar to virulence 77-A (109R31) had additional virulence on IWP-94 a line in set-0. Isolations from IWP-94 confirmed that the test isolate is different from the type culture 77-A (109R31). The new isolate though has additional virulence on IWP-94 had no perceivable difference on genes *Lr1* to *Lr29*. This virulence designated as 77-2 (109R31-1) (table 1) has the following avirulence/virulence formula:— *Lr9*, *Lr19*, *Lr24*, *Lr25*, *Lr26*, *Lr28*, *Lr29*, *Lr18* (Sabikei)/*Lr1*, *Lr2a*, *Lr2c*, *Lr2d*, *Lr3*, *Lr10*, *Lr11*, *Lr12*, *Lr13*, *Lr14a*, *Lr14b*, *Lr14ab*, *Lr15*, *Lr16*, *Lr17*, *Lr18*, *Lr20*, *Lr21*, *Lr22*, *Lr27*.

Most of the selections derived from the Spring × Winter wheat programme of CIMMYT contain IB/IR translocation wherein, the gene *Lr26* is located. Occurrence of new virulences 77-1 (109R63) and 77-2 (109R31-1) necessitates the use of gene combinations *Lr10* + *Lr9* or *Lr9* + *Lr26* that can accord total resistance to brown rust under Indian situations.

9 January 1987; Revised 16 February 1987

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A POTENTIAL PREDATOR FOR SORGHUM MITE, *OLIGONYCHUS INDICUS* (HIRST.)

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Oligonychus indicus (Hirst.) is one of the major pests of sorghum causing severe damage in Tamil Nadu and many parts of India[1]. The nymphs and adults feed on the leaves by remaining on the lower surface causing red spots which later coalesce forming large red patches hindering photosynthetic activity. Though chemical control is the main tool in pest management of sorghum, it should be adopted only as a last resort[1]. Presently attention is focussed on identifying natural enemies and studying their predatory potential in order to include them in the biological control programmes. Reddy and Jagadish[2] reported *Scolothrips indicus* Priesn as a potential predator of sorghum mite preying on nymphs and adults. A coccinellid beetle, *Stethorus pauperculus* (Weise) was also found to feed on nymphs and adults of *O. indicus*[3].

Recently, a serious outbreak of sorghum mite was observed at the Millet Breeding Station of this University in a popularly grown CO 26 sorghum cultivar. With a view to have some idea on the presence of natural enemies, the affected area was surveyed by adopting standard sampling methods[4]. By this method 25 plants were randomly selected and two leaves (preferably 5th and 6th) were observed on the middle in a leaf area of 1 cm^2. We looked for the presence of mite as well as any natural enemy.

The population of *O. indicus* ranged from 12 to 55/cm^2. A coccinellid beetle *Scymnus gracilis* Motsch. was seen feeding on the mites in large numbers. The population of the beetle ranged from 1–2 larvae per square centimeter and invariably one adult beetle was found per square centimeter. Observation on the entire single leaf for this predator showed a maximum number of 35 larvae and 90 adults and on an average 10 larvae, 15 pupae and 30 adults.

To study the predatory potential of *S. gracilis*, laboratory studies were conducted by allowing known number of eggs, nymphs and adults of mites to be fed by *S. gracilis* grubs and adults. The grubs of the beetle were found to feed voraciously on the eggs of *O. indicus*. The adult beetles preferred nymphs and adults of the mite.