

Personal

My dear Dr. Pat,  
-this note is <sup>kindly</sup> in the  
first instance - & I  
will be useful in  
drafting a reply to  
the letter.

Yours sincerely  
R. S. Sander

3/4/57

Division of Mycology and Plant Pathology,  
Indian Agricultural Research Institute,  
New Delhi, March 21/24, 1951.

To  
The Director,  
Indian Agricultural Research Institute,

Through  
The Head of the Division of Mycology

Sir,

I understand that the Wheat Rust Control Committee at its last meeting held on 7th March, 1951, decided to discontinue rust control measures in Peninsular India by lifting the ban which was imposed three years ago on the cultivation of summer crop of wheat and barley in the Nilgiri and Palni hills and of the Kharif crop in Mysore and Bombay States. Since in my opinion such a step is highly dangerous and likely to result in the recurrence of 1946-47 rust epidemic in the country, I beg to request you to convey the following observations to the Convener of the Rust Control Committee and the Secretary, Ministry of Agriculture, Government of India.

(1) There is incontestible evidence to show that the summer crop sown in the Nilgiri and Palni hills in April-May and harvested in October-November is infected with rusts. Rusts are also found on self-sown plants, tillers and stubble during summer. I quote here from the Annual Report for 1938-39, of the Government Mycologist, Madras. The same observation has been made in all his annual reports during 1935 to 1940 when a whole-time research assistant was working on the Oversummering of Rusts under his direct supervision.

"Incidence of rusts in the hills. Rust surveys carried out this year on the Nilgiri and Palni hills confirm the conclusions already arrived at. The rusts of wheat are always present in the uredo stage, either on stubble, self-sown plants or crop. The development of rust is low at the beginning of the first season crop i.e. in April and May, and with the commencement of the south-west monsoon in June it rapidly increases. After 31st August there is a fall in the quantity of infection but it rises again from October".

(2) The Kharif crop of wheat sown in Bombay and Mysore in June-July and harvested in October-November gets infected in September by the inoculum which is blown down from rusted summer crop in Nilgiri and Palni hills.

Bageshpura (Mysore)	.. Rust appeared on 9th Sept. 1944
Coimbatore	.. Rust appeared on 24th Sept. 1944
Ranebennur (Bombay)	.. Moderate rust infection was observed on 10th October, 1944
Shivni (Mysore)	.. Rust appeared on 24th Oct. 1944
Arbhavi (Bombay)	.. Heavy infection was noticed in 1st week of Dec. 1944.

(3) Abundant inoculum is, therefore, available for the Rabi crop soon after it is sown in October-November in Madras, Mysore, Hyderabad and Bombay States, resulting in very early and severe infection. It is significant that rusts seem to travel from south to north in Peninsular India as shown by their later appearance as you go north.

(4) Large numbers of spores are then blown to Madhya Bharat, Madhya Pradesh etc. causing devastating epidemics under favourable weather. In this tract also, wheat crop in the

southern districts get infected earlier than those farther north.

(5) Cultures of rusts could not be maintained at Coimbatore during May and June which proves that rusts can not survive during those months at such places.

(6) The role of wild grasses in carrying over the rusts from one crop to the next has been very much exaggerated and is based on hypothetical assumptions. At the first meeting of the Rust Control Committee held in 1947, the Mycologists of Madras, Bombay and Madhya Pradesh were urged to make a thorough search for rusted wild grasses. So far, black rust has been found only on two wild grasses in the Nilgiris; they are Vulpia myurus and Briza minor. Both the collections have proved to be Puccinia graminis avenae, the Oat rust, which does not infect wheat, and seedlings of both the grasses are susceptible to oat rust and not to wheat rust. This proves beyond doubt that these grasses are not connected with wheat rust outbreaks. There is no evidence yet to show that any of the wild grasses is a functional alternative host in India.

(7) The prohibition is applicable to less than 5,000 acres involving an yield of at the most 25,000 mds of wheat, whereas the area that would be protected from rusts covers several million acres.

(8) This is the only method which could be immediately enforced to control rust epidemics. Cultivation of resistant varieties is no doubt the easiest and the most efficacious method. But we do not yet have a resistant variety, and even if we had, it would take another 10-15 years to multiply its seed so as to cover 40 million acres.

(9) The experiment has not been given a fair trial. Out of three years that it has been in force, the first year was lost on account of late notification, whereby wheat was cultivated without restriction. The other two years are stated to have been too dry for rust development. It is, therefore, necessary to continue the ban for another year or two since the weather could not be expected to be dry every year. It should receive a fair deal before the method is discarded as worthless. Authorities on rusts of international fame have approved of these methods most emphatically. Reference may be made to the observations of Sir John Russell and Prof. Brooks. Chester in his book on 'Cereal Rusts and their control' on page 178 calls 'Mehta's proposal sound and that the prospective gain would enormously repay the cost of the regulation, even if the hill farmers were reimbursed 100 per cent for the wheat taken out of cultivation.' Stakman in 1940 found a similar situation in Southern U.S.A. and Mexico and observed as follows:-

'It is clear that Puccinia graminis tritici (wheat rust) can persist independently in the wheat growing areas of southern Mexico. Observations made during February and August, 1938, and April, 1939, show that the uredial stage can persist throughout the year, because wheat is grown almost continuously through the year, at elevations ranging from about 5,000 ft. to about 8,000 ft. The principal crop is sown in the fall, but a certain amount is sown in the spring or early summer also. Therefore, there is an overlap: the early-sown summer wheat becomes infected from the late maturing winter wheat and the early-sown winter wheat becomes infected from the late-maturing fields of summer wheat. Volunteer wheat and barley may also assist in this transfer of rust from one season's crop to another.

'Obviously, the fact that wheat is grown at different elevations is likely to favour the persistence of rust, as several kinds of climate are compressed into a small area

and there is less likelihood that unfavourable weather will completely eliminate rust. The fact that early-sown fields enable rust to bridge the gap between seasons was very clear, both in 1938 and 1939.

'Stem rust probably could be controlled to a considerable extent in Southern Mexico by eliminating the relatively small amount of summer wheat and the prematurely sown fields of winter wheat in order to avoid the overlap of wheat crop seasons'. (Amer. J. Bot. 27 : 90-99, 1940)

(10) Alternatively, what steps are we going to take against the danger of rust epidemic? Are we to simply watch and pray? Suppose we have a rust epidemic next year, are we to be caught napping as happened in 1946-47?

(11) The Plant Pathologist to Bombay State has given his whole hearted support to this method of control in his note submitted to the last meeting of the Rust Control Committee and furnished convincing arguments in support of his views. His observations deserve more serious and careful consideration.

(12) On account of the reasons given above, I am convinced that the following measures should be continued and rigorously enforced at least for another period of two years in order to get a clear proof of the efficacy or otherwise of this method of control. It is obvious that during the period of test atleast all the precautions ~~xx~~ are observed and no loop-hole is left.

- (a) Prohibition of summer wheat and barley cultivation in the Nilgiri and Palni hills and Devikulam Taluka.
- (b) Prohibition of Kharif wheat cultivation in Mysore, Bombay and Madras States
- (c) Clean-up of volunteer wheat and barley plants in the Nilgiri and Palni hills. Even if this is not done, (a) and (b) if rigorously enforced should yield satisfactory results.

Yours faithfully,

(R. Prasada)  
Assistant Plant Pathologist  
I.A.R.I.  
(formerly Asst. Mycologist, Rust  
Research Scheme, I.C.A.R.)