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Short Note

Scenario of rice diseases in major rice growing districts of Himachal Pradesh

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Abstract

Major rice growing districts of Himachal Pradesh *viz.,* Kangra, Mandi, Una, Sirmour and Chamba were conducted during *kharif* 2010 to 2015 under Production Oriented Survey (POS) programme of All India Coordinated Rice Improvement Project. The results revealed a changing scenario in the prevalence of rice diseases. It was observed that diseases like false smut, bacterial leaf blight and sheath blight which were predominant in tropical environment are regularly appearing in sub-temperate climate of mid-hills in considerable proportions. However, in districts Kangra, Mandi, Sirmour and Una, diseases like blast, false smut and bacterial blight were the most predominant ones during the period under study. The other diseases remained low to moderate with possible potential of resulting losses to rice production in the state under high severity. Foot rot of rice or Bakane disease which is also known as Rice Foolish seedling disease was observed for the first time from Indora block of district Kangra during *kharif* 2015 infecting Pusa 1121, a popular basmati cultivar.

Key words: Survey, rice, diseases, intensity.

Rice is one of the three major food crops of the world and is the staple food for more than half of the world's population. In India, rice occupies a pivotal position as the primary source of nutrition for more than 70 per cent population. India ranks first in terms of area (44 m ha) and second in the world in terms of production (102.7 m tones) after China (Prakasam *et. al*., 2013). Rice is cultivated in the country under four major ecosystems *viz.,* irrigated, rainfed lowland, flood prone and rainfed upland (Srinivas Prasad *et al.,* 2011). In Himachal Pradesh rice was cultivated during 2009-2010 (*kharif*) on an area of 76.7 thousand hectares with overall production of 105.9 thousand metric tones (Anonymous, 2012). Rice crop is infested by a number of insect-pests and diseases of which diseases like blast, false smut, sheath blight, sheath rot etc. are the potential constraints in rice production in the state. The present studies were undertaken to know the present scenario of various diseases prevalent in the major rice producing districts of the state.

The survey in different rice growing districts of Himachal Pradesh was conducted during *kharif* 2010-2015 under the production oriented survey (POS) programme of AICRIP starting from tillering, booting, flowering and maturity stages of crop growth following Eye ball method of survey (Laha, 2009). The major rice growing districts covered under survey programme included Kangra, Mandi, Una, Sirmour and Chamba. The intensity of diseases was designated as low (L = <5%), low to moderate (L-M = 6-25%), moderate to severe (M-S = 26-50%) and severe (S = >50%) while disease below observable level was designated as traces (T).

The observations obtained from the survey conducted during *kharif* 2010-2015 in different rice growing districts of the state (Table 1) revealed that the intensity of leaf blast was low to moderate in district Kangra throughout the six years (2010-2015) while it was low in Una district during 2010, 2011 and 2015. Leaf blast intensity in rest of the districts varied between low to moderate in different years except district Sirmour where leaf blast intensity was moderate to severe during 2010. The intensity of neck blast also followed the same trend in all the districts. Similar observations on leaf and neck blast intensity were also reported earlier by Sharma *et al.* (2011). False smut was more prominent in district Mandi during four years (2011-2014) and in Sirmour during 2010

varying between moderate to severe while it was low to moderate in other districts. Low incidence of false smut was recorded from Chamba district. The higher intensity of false smut in Mandi district especially in Balh valley attributes to increased cultivation of rice hybrids which are highly prone to false smut (Upmanyu and Rana, 2013). The intensity of sheath blight which is typically a disease of tropical climate was moderate to severe in district Sirmour during 2010 while it was

Table 1. Scenario of rice diseases in major rice growing districts of Himachal Pradesh during 2010-2015

Year		2010	2011	2012	2013	2014	2015
Disease	**District**						
Leaf Blast	Kangra	L-M	L-M	L-M	L-M	L-M	L-M
	Mandi	L-M	L-M	L	L	L-M	L
	Una	L	L	-	-	-	L
	Sirmour	M-S	L-M	-	-	-	-
	Chamba	L-M	-	L	L	-	-
Neck Blast	Kangra	L-M	L-M	L-M	L-M	L-M	L-M
	Mandi	L-M	L-M	L	L	L-M	L
	Una	L	L	-	-	-	L
	Sirmour	M-S	L-M	-	-	-	-
	Chamba	L	-	L	L	-	-
False Smut	Kangra	L-M	L-M	L-M	L-M	L-M	L-M
	Mandi	L-M	M-S	M-S	M-S	M-S	L-M
	Una	L-M	L-M	-	-	-	L-M
	Sirmour	M-S	L-M	-	-	-	-
	Chamba	L	-	L	L	-	-
Sheath blight	Kangra	L	L	L	L	L	L
	Mandi	L	L-M	L	L	L	L
	Una	L-M	L	-	-	-	L
	Sirmour	M-S	L-M	-	-	-	-
	Chamba	NIL	-	NIL	NIL	-	-
Brown Spot	Kangra	L-M	L	L	L	L-M	L
	Mandi	L-M	L-M	L-M	L-M	L	L
	Una	L-M	L-M	-	-	-	L
	Sirmour	M-S	L-M	-	-	-	-
	Chamba	NIL	-	NIL	NIL	-	-
Bacterial Blight	Kangra	L	L-M	L-M	L	L	NIL
	Mandi	L	L	L	L	L	NIL
	Una	L-M	L-M	-	-	-	NIL
	Sirmour	M-S	L	-	-	-	-
	Chamba	NIL	-	NIL	NIL	-	-
Grain Discolouration	Kangra	L-M	L	L	L	L-M	L-M
	Mandi	L-M	L-M	L	L	L-M	L
	Una	L-M	L	-	-	-	L
	Sirmour	L-M	L	-	-	-	-
	Chamba	L-M	-	NIL	NIL	-	-
Sheath Rot	Kangra	L	L	L	L-M	L-M	L-M
	Mandi	L	L-M	L	L-M	L-M	L
	Una	L	L-M	-	-	-	L-M
	Sirmour	T	L-M	-	-	-	-
	Chamba	T	-	NIL	L	-	-
Narrow Brown Leaf Spot	Kangra	L	L	L	L	L	L
	Mandi	L-M	L-M	L-M	L	L-M	L-M
	Una	L-M	L-M	-	-	-	L-M
	Sirmour	L	L	-	-	-	-
	Chamba	NIL	-	NIL	NIL	-	-
Leaf Scald	Kangra	L-M	L-M	L	L	L	T
	Mandi	L-M	L-M	L	L	L	T
	Una	L	L	-	-	-	L
	Sirmour	L-M	L-M	-	-	-	-
	Chamba	T	-	NIL	NIL	-	-

low to moderate during 2011 besides Una (2010) and Mandi (2011). The intensity of brown spot, another important disease of rice was moderate to severe in Sirmour district (2010) and low to moderate in Mandi for four consecutive years (2010-2013). Similarly intensity of bacterial blight was moderate to severe in Sirmour district (2010) and low to moderate in other districts. Higher intensity of diseases like false smut, sheath blight and bacterial blight has also been reported in previous years (Sharma *et al.*, 2011). Grain or glume discolouration intensity varied between low to moderate across the districts surveyed while incidence of sheath rot was low to moderate in district Kangra (2013-2015) and Mandi (2011, 2013 and 2014). Narrow brown leaf spot was prominent in Mandi (2010-2012, 2014-2015) and Una (2010-2011 and 2015) districts while leaf scald intensity was comparatively higher in Kangra, Mandi and Sirmour districts during 2010 and 2011 than in later years. However, another alarming disease of rice, Bakane (not depicted in the table) was found to hit Indora block of district Kangra for the first time during *kharif* 2015 infecting Pusa 1121 (Intensity $\leq$ 5%) procured from private dealers of adjoining districts of Punjab *viz.,* Pathankot, Gurdaspur and Mukerian (POS, 2015).

A perusal of the observations (Table 1) showed that intensity of the diseases varied year after year across the districts and also indicated that the diseases like, bacterial blight, sheath blight, brown spot, sheath rot etc. which appeared in lesser proportions may cause havoc under favourable conditions. Thus, proper management practices should be followed based on the information obtained from regular monitoring of the diseases. The need based and timely application of fungicides will help minimize the cost incurred upon crop protection measures and reduce the health hazards as well. The information generated in the present studies will form the basis for carrying out further studies on various aspects of the emerging diseases and reporting any new disease in rice ecosystem of Himachal Pradesh.

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