RESEARCH ARTICLE

SURVEY OF VARIOUS PESTS AND DISEASES OF NIGER (*GUIZOTIA ABYSSINICA* CASS) CROP UNDER TRIBAL BELTS OF SOUTH GUJARAT

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Abstract: Niger (*Guizotia abyssinica* Cass) is an important minor oil seed crop. The Niger crop is found infested by number of diseases & pests, which causes harsh damage to the crop. The survey for Niger diseases was conducted during the *Kharif*, 2013 in different villages of Vansda taluka of Navsari district, Kaprada taluka of Valsad district and similarly, in Dang district of Gujarat. The two major diseases *viz*., *Alternaria* and *Cercospora* leaf spot were noticed in the scale of 1.0 to 4.0 and 1.0 to 3.0 grades respectively. However, the incidence of powdery mildew disease was not observed but the infestation of *Cuscuta* was observed as a minor problem during the survey of Niger crop. Apart from this, in pest incidence hairy caterpillar was observed in scattered as well as in uniform population while, the population of aphids and white flies was not noticed in the field during the survey.

Keywords: Survey, Niger, Crop, Tribal

INTRODUCTION

Niger (*Guizotia abyssinica* Cass) is an important minor oil seed crop grown in countries like India, Ethiopia, East Africa, West Indies and Zimbabwe. In India, it is mainly cultivated in tribal belts of Gujarat, M.P., Orissa, Maharashtra, Bihar, Karnataka and Andhara Pradesh. Niger is a crop of dry areas grown mostly grown by tribal and interior places as life line of tribal segment. Niger is commonly known with different names as *ramtil*, *jagni* or *jatangi* (Hindi), *ramtal* (Gujarati), *karale* or *khurasani* (Marathi), *uhechellu* (Kannada), *payellu* (Tamil), *verrinuvvulu* (Telgu), *alashi* (Oriya), *sarguza* (Bengali), *ramtil* (Punjab) and *sorguja* (Assamese) in various parts of the country (Rao and Ranganatha, 1989). Niger is an important oilseed crop in Ethiopia where it provides about 50-60 per cent oil for domestic consumption (Riley and Belayneh, 1989) with the fatty acid composition of 75-80 % linoleic acid, 7-8 % palmitic acid and stearic acid and 5-8 % oleic acid (Getinet and Teklewold, 1995). It is also used as oilseed crop in India, where it provides about 3 per cent of the edible oil requirement of the country (Getinet and Sharma, 1996). The Niger seed contains 33.3 % protein, 34.2-39.7 % total carbohydrates and 13.5 % fiber. Niger oil is slow drying so used in food, paint, soap and as an illuminant. The oil is used as cooking as a ghee substitute. The oil is used in cooking and also used to treat burns and in the treatment of scabies. The seed is eaten fried, used as condiments or dried, powdered and mixed with flour to make sweet cakes. The seeds are used in chutney preparation with curd. The press cake from oil extraction is used for livestock feed. The oil is considered good for health (Pandey *et al*., 2014). The Niger crop is found infested by number of diseases & pests, which causes harsh damage to the crop. Further, the accidental rain at flowering stage leads the expansion of *Alternaria* and *Cercospora* leaf spot incidence and results in the poor seed set and seed yield. The crop is affected by number of fungal diseases. The important diseases of Niger are Alternaria blight (*Alternaria porii* & *A. alternata*), leaf spot (*Cercospora guizoticola*), Seedling blight (*Alternaria tenuis*), seed rot (*Rhizotonia bataticola*), rust (*Puccinia guizotiae*), powdery mildew (*Sphaetheca* sp.), root rot (*Macrophomina phaseolina*) and cuscuta as *Phanerogamic* parasite (Rajpurohit, 2004 and Rajpurohit & Dubal, 2009). *Cercospora* and *Alternaria* diseases cause heavy damage to this crop and reduce its seed yields, which harm the status of the farmers. Currently studies pertaining to the use of fungicides in management of diseases are highly emphasized (Kolte, 1985 and Sandipan *et al.*, 2014).
Looking on importance in terms of oil extraction, which having high medicinal values but knowledge of the diseases of this Niger crop merits attention, Niger is a crop of dry areas grown mostly by tribal in interior places due to which desired attention has not been given on the biotic and abiotic stresses. Now the crop is gaining importance and studies are being made on disease aspects (Rajpurohit, 2011). Therefore, this study was planned to record the pest and diseases of Niger crop plant so, that preventive measures can be taken well in advance to avoid any crop damage. Keeping in view the destructive nature and economic loss, the present investigation was undertaken to evaluate the respective scenario of the pests and diseases. Considering the economic losses this present investigation, attempts were therefore made to ascertain the spectrum of fungal pests and diseases of Niger crop under tribal region of South Gujarat.

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MATERIAL AND METHOD

Observation on score (grade) on Niger plant by observing top, middle and bottom leaves of the plant. And the scored by using the Disease Rating scale of (0 to 5) as developed by Mayee and Datar, 1986, Townsend and Heuberger, 1943.

Disease Score

Score	Description	PDI/ Incidence
0	No infection	Immune
1	1-10 % leaf area infected	Resistant
2	11-25 % leaf area infected	Moderately Resistant
3	26-50 % leaf area infected	Tolerant
4	51-70 % leaf area infected	Moderately Tolerant
5	71-100 % leaf area infected	Susceptible

RESULT AND DISCUSSION

The survey for Niger diseases was conducted during the *Kharif*, 2013 in different villages of Vansda taluka of Navsari district, Kaprada taluka of Valsad district and similarly, in Dang district of Gujarat. The two major diseases *viz*., *Alternaria* and *Cercospora* leaf spot were noticed in the scale of 1.0 to 4.0 and 1.0 to 3.0 grade respectively (Table: 1 and Graph: 1 & 2). However, the incidence of powdery mildew disease was not observed but the infestation of *Cuscuta* was observed as a minor problem during the survey.

Apart from this, in pest incidence hairy caterpillar was observed in scattered as well as in uniform population while the population of aphids and white flies was not noticed in the field during the survey. Similar, findings were found by Jagtap *et al*., 2014.

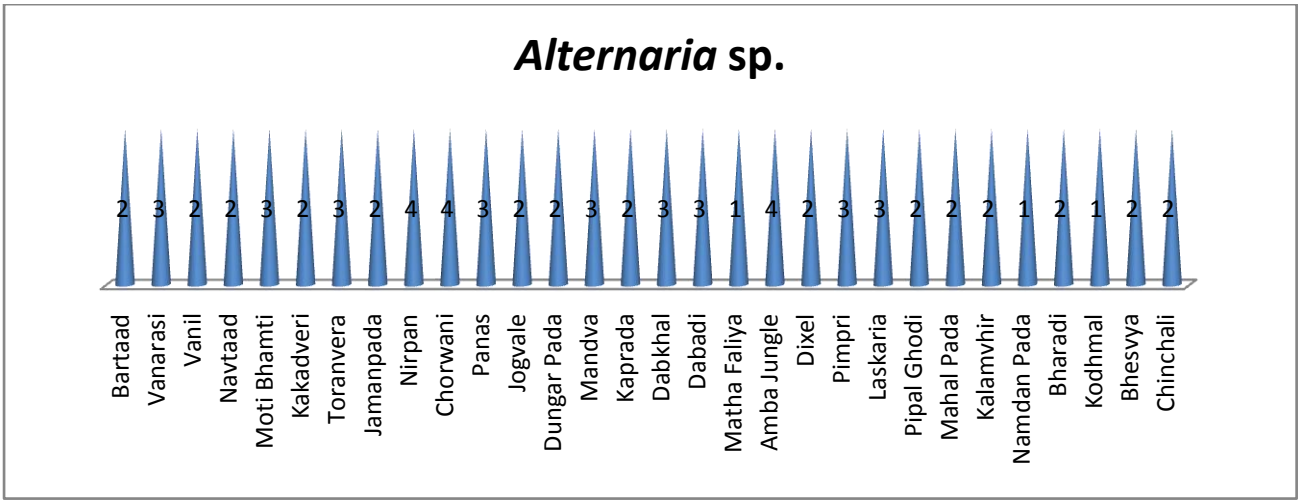
Table 1. Score of *Alternaria* (*Alternaria* sp.) and *Cercospora* (*Cercospora guizoticola*) leaf spot disease of Niger crop.

Vansda Taluka of Navsari district			
Sr. No.	**Villages**	***Alternaria* grade**	***Cercospora* grade**
1	Bartaad	02	01
2	Vanarasi	03	01
3	Vanil	02	01
4	Navtaad	02	02
5	Moti Bhamti	03	02
6	Kakadveri	02	03
7	Toranvera	03	02
8	Jamanpada	02	02
9	Nirpan	04	03
10	Chorwani	04	03
Kaprada taluka of Valsad district			
1	Panas	03	02
2	Jogvale	02	01
3	Dungar Pada	02	03
4	Mandva	03	02
5	Kaprada	02	01
6	Dabkhal	03	02
7	Dabadi	03	02
8	Matha Faliya	01	01
9	Amba Jungle	04	02
10	Dixel	02	02
Dang District			
1	Pimpri	03	02
2	Laskaria	03	02
3	Pipal Ghodi	02	01
4	Mahal Pada	02	01
5	Kalamvhir	02	02
6	Namdan Pada	01	02
7	Bharadi	02	02

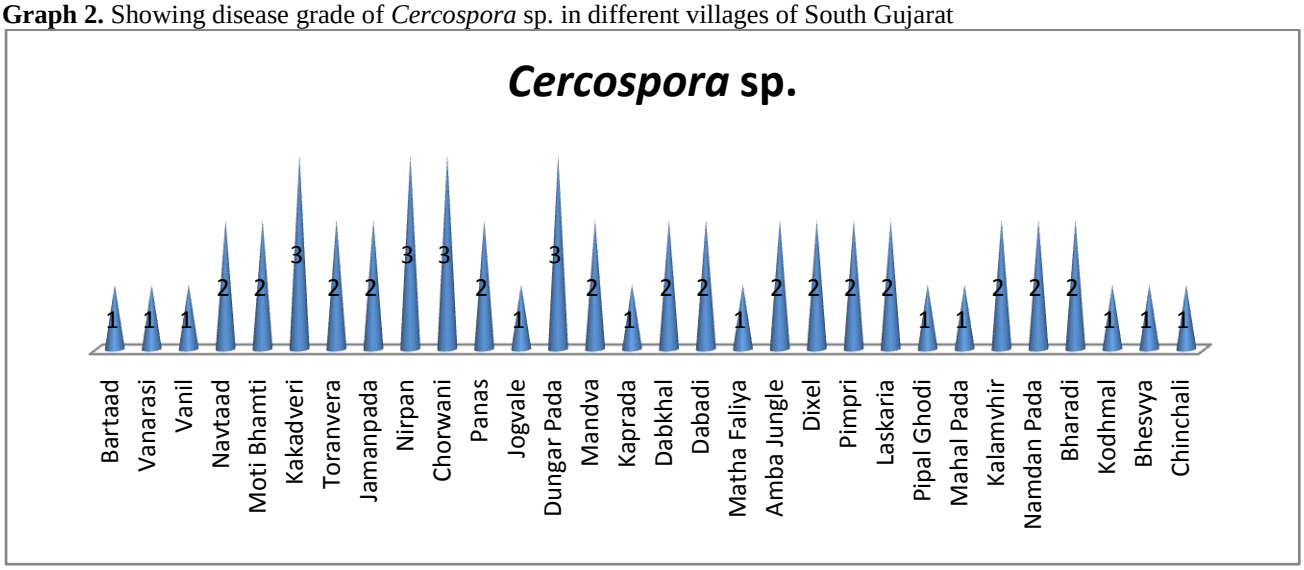
8	Kodhmal	01	01
9	Bhesvya	02	01
10	Chinchali	02	01

Note: Powdery mildew and Root rot disease was not observed during the *Kharif*, 2013 survey.

Graph 1. Showing disease grade of *Alternaria* sp. in different villages of South Gujarat



Graph 2. Showing disease grade of *Cercospora* sp. in different villages of South Gujarat



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