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# of Plant Extracts for the Control of (*Pyricularia grisea*) Blast of Rice under Field Condition of Bastar, Chhattisgarh

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caused by *Pyricularia grisea* Cave continues to be a major constraint in rice production. Since, g chemical control measures being costly and may favour development of resistance in the potential alternative methods have been explored in the present studies. Five plant part mahua leaf extract (*Madhuca indica*), karla leaf extract (*Holarrhena antidysenterica*), Garlic (*Allium sativam*), van tulsa leaf extract (*Hiptis suaveolens*) and neem leaf extract (*Azadirachta* evaluated their efficacy against leaf and neck blast of rice (variety, swarna). Ediphenphas used for standard check fungicides for comparison. The results concluded that the garlic bulb @20ml was found significantly more effective as an alternative to conventional chemical

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sativa L.) is an important agricultural t supplies approximately 23% of the per for six billion people worldwide (Maclean are many serious plant diseases of rice, ascomycete fungus *Pyricularia grisea* *Magnaporthe grisea*) which causes the as rice blast (Correll 2000). *Pyricularia* infect most sections of the plant, but of the node or the panicle are the most of the disease (Ou 1985). When *P.* rice and produces neck rot or panicle either kill the host plant or prevent seed respectively. *P. grisea* also causes disease acious species besides rice (Malca 1957, Ou 1985, Sundaram 1972) and there are this pathogen in more than 85 countries

one of the most destructive diseases in is caused by *Magnaporthe grisea* Barr *grisea* anamorph Cav.). The fungus is world-wide and causes losses of up to 100% depending on cultivar susceptibility, conditions and management system. in India, rice blast was responsible for more than 266,000 tons of rice, which was of the total yield. In Japan, the disease imately 865,000 hectares of rice fields In the Philippines, rice fields may suffer 50% yield losses each year caused by rice 2003).

Among several methods deployed for the control of the disease (Mariappan *at al.* 1995), chemical control has been widely practiced in many countries. However, concern over the excess use of pesticides led the farmers to select alternative methods that are environmentally friendly and also relatively inexpensive compared with chemical pesticides. During the last two decades interest has increased in plants as potential sources of pest control materials and as possible alternatives to synthetic pesticides. The fungal pathogens of rice, viz *Sarocladium oryzae* (sheath rot pathogen) and *Pyricularia oryzae* (blast pathogen), were also found to be controlled effectively by neem oil and neem seed kernel extracts (Mariappan *et al.* 1995). Hence, in the present study some plant extracts locally available plants were tested under field conditions against rice blast disease caused by *Pyricularia grisea.*

MATERIALS AND METHODS

The field experiments were conducted during the years 2005-06 and 2006-07 at Research Farm of S. G. College of Agriculture and Research Station, Jagdalpur, Bastar (Chhattisgarh). Five locally available plant leaf/ bulb extracts viz mahua leaf extract (*Madhuca indica*), Karla leaf extract (*Holarrhena antidysenterica*), garlic bulb extract (*Allium sativam*), jangli tulsi leaf extract (*Hiptis suaveolens*) and neem leaf extract (*Azadirachta indica*) with one standard check fungicides Ediphenphas 50EC were included in the studies. The

was laid out in augmented randomized with three replications. The highly susceptible swarna was sown in 4m × 3m plots following recommended package of practices.

The plant extract were prepared following the given by Ansari (1995) with a slight ion. To make the standard plant extracts (100%),twenty g fresh leaf/ bulb extract of plant were thoroughly washed with tap water by distilled water at the rate of one g of tissue ml of water (1:1 w/v) and filtered through layered cheese cloth. The plant leaf/bulb @ 20ml/ litter water and fungicide 1ml/litter were applied as foliar spray. The plots three given at an interval of fifteen days, sprayed water served as check. Each treatment was thrice. The data on leaf blast severity were using the standard visual 0 to 9 ratings scoring the 4th edition of Standard Evaluation System (IRRI 1996). The Neck blast incidence was 7 days before harvesting by examining all the 25 randomly selected hills per plot. The per blast incidence was assessed by counting nicles and healthy panicles in each hill. The was recorded from individual plots. The disease control was worked out using the given by Abbotts (1925), Percentage reduction × 100, where, C is the population of control population of treated plots.

AND DISCUSSION

leaf blast severity, neck blast incidence and yield recorded from various treatment, are in Table 1. During the both years 2005 and 2006, the leaf blast severity was found to be significantly less in all treated plots over check. Among different plant extracts use as foliar spray, garlic bulb extract was found most effective treatment showing significantly less disease severity (6.00%) as compare to other extracts. Leaf blast severity was at par of garlic bulb extract and ediphenphas. A range of 19.32 to 85.98 percent disease control was noticed from various treatments. Maximum percent disease control was recorded from ediphenphas followed by garlic bulb extract whereas, mahua leaf extract showing least effect on disease control. Similarly, garlic bulb extract was also found to be effective in controlling neck blast (11.72%) and at par with ediphenphas. A range of 19.18 to 67.74 percent disease control was noticed from various treatments.

The leaf blast severity and neck blast incidence covered significant reduction in yield (control 1858 kg/ ha). Grain yield reveled from various treatment also revealed that the grain yield was significantly higher in ediphenphas (4868 kg/ha) and garlic bulb extract (4104 kg/ha). Jangli tulsi leaf extract and neem leaf extract were also showing significant effect on leaf blast and neck blast. Four plants extracts viz biskatali (*Polygonum hydropiper*), garlic (*Allium sativum*), onion (*Allium cepa*) and neem (*Azadirichta indica*) were evaluated against *Bipolaris oryzae*. Among the plant extracts neem and garlic were the most effective against *Bipolaris oryzae*. (Ahmed *et al.* 2002). Biswas *et al.* (1995) reported that plant extract of *A. cepa*, *A. sativum* and *Z. officinale* were found to be effective against powdery mildew, leaf spot and leaf rust of mulberry plant.

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Table 1 Effect of locally available plant extracts for the control of leaf blast, neck blast and grain yield of rice

Plant part extract/ Dosage	Leaf blast severity %			% disease control	Neck blast incidence %			% disease control	Grain yield (kg/ ha)			Increase yield over control
	2005	2006	Mean		2005	2006	Mean		2005	2006	Mean	
Mahua leaf extract 20 ml/ L	23.66 (4.85)	22.33 (4.61)	23.00	19.32	9.02 (3.00)	32.4 (34.57)	20.71	25.32	2083	1208	2687	830
Karla leaf extract 20 ml/ L	18.66 (4.31)	9.33 (3.05)	14.00	50.89	8.33 (2.88)	36.49 (37.13)	22.41	19.18	2125	1326	2788	931
Garlic bulb extract 20 ml/ L	4.33 (2.08)	7.66 (2.74)	6.00	78.96	3.71 (1.92)	19.73 (26.34)	11.72	57.74	2889	2431	4104	2247
Junglee Tulsi leaf extract 20 ml/ L	15.00 (3.86)	13.33 (3.60)	14.17	50.30	6.43 (2.53)	26.44 (30.70)	16.44	40.73	2417	2340	3587	1729
Neem leaf extract 20 ml/ L	10.00 (3.15)	18.33 (4.21)	14.17	50.30	4.42 (2.10)	33.69 (35.43)	19.06	31.28	2528	2264	3660	1802
Hinosan 50 EC 1ml/ L	4.33 (2.06)	3.66 (1.90)	4.00	85.98	2.93 (1.71)	14.96 (22.64)	8.95	67.74	3278	3181	4868	3010
control	27.00 (5.19)	30 (5.47)	28.50		10.52 (3.24)	44.94 (43.21)	27.73		1361	993	1858	
C.D. at 5%	0.62	6.70			0.23	1.49			473.82	60.06		
C V. at 5%	7.76	25.26			4.34	2.42			8.95	1.82		

Figure in the parentheses are square roots and arcsine transformed values