*Himachal Journal of Agricultural Research 36 (1): 114-116, 2010*

***Short Note***

# Fungicidal management of Phytophthora blight of Colocasia

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**Abstract**

**Phytophthora blight (*Phytophthora colocasiae* Racib.) is the most serious disease of colocasia and considerable yield loss has been attributed to this disease. Five fungicides; Ridomil MZ 72 WP, Blitox, Dithane-M45, Cholorothalonil, and Antracol were evaluated individually and in different spray schedules consisting of 14 treatments including control under field conditions at four locations. At all the locations three sprays of Ridomil MZ 72 WP (0.25%) at 15 days interval were found most effective in managing the blight disease. Among protectants Blitox was comparatively more effective at all the locations except at Sundernagar.**

**Key words:** Phytophthora blight, colocasia, fungicidal control.

Colocasia is the most important vegetable crop among the Arum family due to its delicious taste, nutritive and medicinal value. In Himachal Pradesh, it is grown in low and mid hills. Phytophthora blight (*Phytophthora colocasiae* Racib.) is the most serious disease of colocasia and considerable yield loss has been attributed to this disease. Blight causes destruction of leaves thus reducing the yield of corms and also leads to rotting of freshly harvested parts in storage. Chemical management of this disease is the only alternative as no resistant varieties are available. Therefore, five fungicides; Ridomil MZ 72 WP, Blitox, Dithane-M45, Cholorothalonil, and Antracol were evaluated individually and in different spray schedules consisting of 14 treatments (Table 1) including control under field conditions at four locations using randomized block design representing low (Dhaulakuan & Una) and mid hills (Bajaura & Sundernagar).All the recommended package and practices of colocasia were followed. Disease severity was recorded periodically by observing all the 6 plants per plot using disease scale of 1-9 and calculated the percentage disease severity (Vasquez, 1990).

At all the locations three sprays of Ridomil MZ 72 WP (0.25%) at 15 days interval were found most effective in managing the blight disease. In this treatment, disease severity ranged between 6.73 per cent at Bajaura to 13.3 par cent at Sundernagar as compared to 47.26 and 78.3 per cent in control plots at these locations (Table 1). The perusal of the data revealed that three sprays of all the protectant fungicides at 10 days interval also reduced the disease significantly in comparison to control plots. Among protectants Blitox was comparatively more effective at all the locations except at Sundernagar. However, in the spray schedules involving one spray of Ridomil MZ 72 WP , the disease was invariably reduced significantly. Spray schedule of 2 sprays of Blitox at 10 days interval after 15 days of first spray of Ridomil MZ 72WP was more effective in two locations (Bajaura and Una) whereas, differential effects were observed at other locations.

Yield data available from 2 locations (Una & Dhaulakuan) revealed that three sprays of Ridomil MZ 72 WP resulted maximum yield at Dhaulakuan (298.3 q/ha) followed by at Una (277.8.q/ha) in comparison to 186.6 and 183.9 q/ha in control plots at these locations respectively. Similarly in spray schedules of protectants as well as with Ridomil MZ 72 WP invariably increased the yields, maximum yield (296.4 q/ha) was realized with spray schedule of Blitox (0.25%)-Ridomil MZ 72 WP (0.25 %) -Blitox (0.25%) followed by spray schedule of Dithane M-45- Ridomil MZ 72 WP
- Dithane M-45 (294.9 q/ha) at Una location. Whereas, three sprays of Ridomil MZ 72 WP resulted maximum yield (298.3 q/ha) followed by 276.1 q/ha with Cholorothalonil – Ridomil MZ 72 WP- Cholorothalonil spray schedule at Dhaulakuan location.

Effectiveness of different fungicides against colocasia leaf blight has been demonstrated by many workers including protectants like Dithane M-45 ( Bergquist, 1972), Copper oxychloride (Jackson *et al.*, 1980 ; Singh *et al.*, 2007), Kavach

HAREC Dhaulakuan[1], KVK Una[2], KVK Sundernagar[3], HAREC Bajaura[4]

**Table 1. Effect of fungicidal treatments on Phytophthora blight of colocasia**

| | Treatment | Dose | Disease severity (%) | | | | Yield q /ha | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | Bajaura | Una | D.kuan | S.Nagar | Una | D.kuan | |
| $T_1$ | Ridomil MZ | 0.25 | 6.73 (15.03) | 3.83 (2.20) | 11.8 (19.9) | 13.3 (21.33) | 277.8 | 298.3 | 3 sprays at 15 days interval |
| $T_2$ | Blitox | 0.25 | 15.40 (23.10) | 7.17 (2.85) | 27.8 (31.8) | 43.3 (41.14) | 263.4 | 218.3 | 3 sprays at 10 days interval |
| $T_3$ | Dithane M-45 | 0.25 | 16.73 (24.14) | 8.77 (3.12) | 32.9 (34.9 | 23.3 (28.84) | 267.5 | 216.7 | 3 sprays at 10 days interval |
| $T_4$ | Cholorothalonil | 0.20 | 17.40 (24.64) | 9.17 (3.18) | 18.1 (25.1) | 15.0 (22.78) | 225.4 | 251.1 | 3 sprays at 10 days interval |
| $T_5$ | Antracol | 0.25 | 18.3 (25.34) | 10.9 (3.45) | 27.0 (31.2) | 22.8 (27.98) | 244.9 | 205.6 | 3 sprays at 10 days interval |
| $T_6$ | $T_1$ - $T_2$ | 0.25-0.25 | 13.27 (21.36) | 3.73 (2.17) | 19.8 (26.3) | 28.3 (32.13) | 238.7 | 256.1 | After 15 days of Ridomil MZ spray , 2 sprays of Blitox at 10 days interval |
| $T_7$ | $T_1$– $T_3$ | -do- | 13.40 (21.47) | 4.33 (2.31) | 15.8 (23.4) | 26.67 (31.06) | 271.6 | 243.3 | After 15 days of Ridomil MZ spray , 2 sprays of Dithane M-45 at 10 days interval |
| $T_8$ | $T_1$-$T_4$ | 0.25-0.20 | 14.47 (22.35) | 6.57 (2.75) | 33.9 (35.6) | 21.7 (27.70) | 254.6 | 212.8 | After 15 days of Ridomil MZ spray , 2 sprays of Cholorothalonil at 10 days interval |
| $T_9$ | $T_1$– $T_5$ | 0.25-0.25 | 15.07 (22.84) | 6.27 (2.70) | 31.2 (33.9) | 23.3 (28.84) | 251.7 | 235 | After 15 days of Ridomil MZ spray , 2 sprays of Antracol at 10 days interval |
| $T_{10}$ | $T_2$–$T_1$-$T_2$ | -do- | 14.06 (22.03) | 2.67 (1.91) | 14.0 (21.6) | 30.0 (33.20) | 296.4 | 268.3 | After 10 days of Blitox spray, 1 spray of Ridomil MZ and after 15 days 1 spray of Blitox |
| $T_{11}$ | $T_3$- $T_1$- $T_3$ | -do- | 15.17 (22.92) | 21.17 (1.78) | 13.4 (21.4) | 28.3 (32.13) | 294.9 | 253.9 | After 10 days of Dithane spray, 1 spray of Ridomil MZ and after 15 days 1 spray of Dithane M-45 |
| $T_{12}$ | $T_4$-$T_1$-$T_4$ | -do- | 15.20 (22.94) | 4.0 (2.34) | 18.5 (25.4) | 26.7 (31.06) | 279.2 | 276.1 | After 10 days of Cholorothalonil spray, 1 spray of Ridomil MZ and after 15 days 1 spray of Cholorothalonil |
| $T_{13}$ | $T_5$– $T_1$- $T_5$ | -do- | 15.57 23.24) | 4.3 (2.30) | 35.2 (36.3) | 25.0 (29.99) | 271.6 | 209.4 | After 10 days of Antracol spray, 1 spray of Ridomil MZ and after 15 days 1 spray of Antracol |
| $T_{14}$ | Control | -- | 47.26 (43.37) | 19.3 (4.51) | 44.8 (42.0) | 78.3 (62.26) | 186.6 | 183.9 | Plain water spray |
| | CD (P=0.05) | | (1.75 ) | (0.19) | (5.5) | (3.97) | 13.7 | 8.44 | |

(Singh *et al.*, 2007) , and systemic fungicide Ridomil MZ (Cox and Kasimani, 1990; Ghosh and Pan 1991; Singh *et al.*, 2007). Gurung (2001) found corm dip and three sprays of Ridomil MZ 72 WP highly effective against colocasia leaf blight. Though Ridomil MZ is mixture of Metalaxyl and protectant fungicide mancozeb which may delay the development of fungicide resistance but Metalaxyl component being a systemic fungicide having site specific mode of action, exposure to Ridomil MZ through out the season may lead to development of fungicidal resistance. Moreover, Ridomil MZ 72 WP is very costly and may not be economical. Therefore, spray schedules involving Ridomil MZ and protectant fungicides as studied should be preferred. Rana (2006) also reported the effectiveness of spray schedules involving Ridomil MZ 72 WP and protectants effective in managing Phytophthora blight of colocasia.

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