

4. Plant Pathology

Disease Scenario

During 2019-20, moderate to severe occurrence of Alternaria blight was recorded at all locations. However, low to the medium severity of Alternaria blight was recorded from JAG and MOR. White rust appeared in moderate to severe form at all locations except JAG. Medium to severe prevalence of DM was observed at the cotyledonary stage at JHS and PNT. Powdery mildew severity was moderate to high at JHS, SKN, MOR and low at JAG and BPR. Low to moderate incidence of Sclerotinia rot was observed at MOR, HSR, SGN, and PNT. Different trials were on dates as given below:

Centre	Date of sowing of different trials						
	4.1	4.2	4.3	4.4	4.5	4.6	4.9
PNT	(A) 22.10.2019 (B) 22.10.2019	22.10.2019	22.10.2019	23.10.2019	23.10.2019	23.10.2019	21.10.2019
HSR	(A) 09-11-2019	09-11-2019	09-11-2019	09-11-2019	09-11-2019	09-11-2019	-
LDH	(A) 04.11.2019 (B) 04.11.2019	04.11.2019	04.11.2019	-	04.11.2019	04.11.2019	-
SGN	(A) 27.10.2019	27.10.2019	-	-	-	27.10.2019	27.10.2019
NDH	(A) 05-11-2019	05-11-2019	-	-	-	-	-
MOR	14.11.2019	14.11.2019	14.11.2019	15.11.2019	-	15.11.2019	30.10.2019
SKN	(A) 25.11.2019	25.11.2019	-	-	-	25.11.2019	25.10.2019
JAG	(A)07.12.2019	07.12.2019	-	-	-	07.12.2019	07.12.2019
DOL	(A) 28.11.2019 (B) 28.11.2019	29.11.2019	29.11.2019	-	29.11.2019	30.11.2019	30.11.2019
SHL	(A) 08.11.2019 (B) 08.11.2019	08.11.2019	15.11.2019	16.11.2019	09.11.2019	16.11.2019	16.11.2019
BPR	(A) 24.10.2019	-	-	-	24.10.2019	-	24.10.2019
JHS	(A) 05.11.2019	05.11.2019	-	-	05.11.2019	-	-
VAR	(A) 01.11.2019	08.11.2019	08.11.2019	-	08.11.2019	01.11.2019	-

4.1. Screening of *Brassica* germplasm and breeding materials

Natural conditions: DOL, SHL, NDH, HSR, JHS, MOR, PNT, SGN, JAG, LDH, and VAR.

Artificial conditions: **AB:** DOL, SHL, PNT, HSR, LDH, and JHS; **WR:** PNT, JHS, HSR and LDH; **DM:** JHS, PNT; **SR:** LDH, HSR, MOR, PNT and BPR.

25 breeding lines with 8 checks were sown in single 3-m row in randomized completely block design (RCBD) with 2 replications. Susceptible checks were used after every two test rows. Under artificial conditions, repeated inoculation was done after collecting inoculum from naturally infected plants for AB to facilitate the secondary spread. For screening against WR and DM, the oosporic material of local isolate was added with seed after grinding hypertrophied plant material collected from the previous year's crop as per standard procedure.

Observations on Alternaria blight on leaves (ABL), WR, DM, PM and SR were recorded at 75 and/or 90-100 days after sowing (DAS). Number of staghead and Alternaria pod blight (ABP) severity/incidence were recorded 15 days before harvest. The results are given in Table 4.1.1-6. Data of VAR were not as per the technical programme, therefore, excluded from mean of locations. All disease data recorded in per cent were depicted as arc sin transformation value.

AB: None of the entries showed tolerance to Alternaria blight.

WR: Under natural condition PDZ 11, PDZ 12 (Bj) and AKMS 8141, AKGS 8146, AKGS 8217, GSH 1717, GSH 1699 (Bn) were found resistant at all eight locations (Table 4.1.3). Under artificial condition PDZ 12, PDZ 11 (Bj), and AKGS 8217, HNS 1102, GSH 1699, AKMS 1841, AKGS 8146, GSH 1717, (Bn) were found resistant to WR at all locations except JHS (Table 4.1.6).

DM: RH (OE) 1706 of *B. juncea* and GSH 1717 of *B. napus* showed resistance to DM at PNT and JHS.

PM: None of the entries of *B. juncea* were tolerant at JHS, SKN, JAG, MOR and SKN.

SR: None of the entries were found tolerant to SR under natural/ artificial condition at all locations.

4.2. Uniform Disease Nursery for major diseases

Locations: SHL, MOR, DOL, NDH, PNT, HSR, JAG, LDH, VAR, JHS and SGN.

Total 49 entries, including 8 checks, were sown in a single 3-m row with two replications in RCBD. Susceptible checks were sown after every two test rows. Observations on AB, WR, DM, SR and PM were recorded under natural infection conditions (Tables 4.2.1-3).

WR: DRMRSJ-1, DRMRSJ-7, DRMR 2018-37, and PAB 14-5 of *B. juncea* showed resistance reaction to WR under natural conditions with mean disease severity <10%, whereas highest WR severity was on check Rohini was 31.5%.

SR: DRMRSJ 25 at MOR and PNT while, RMM-10-1-1, DRMRSJ 26 and DRMR 2018-41 were found tolerant at MOR and SGN to SR under natural condition.

4.3 National Disease Nursery (NDN) for Alternaria blight

Locations: PNT, DOL, HSR, LDH, MOR, VAR and SHL.

Total 39 strains including 4 check were sown in paired rows of 3 m length. Observation on AB was recorded on leaves 75, 100 DAS at silique formation stage and 15 days before harvesting under artificial inoculation conditions. Reaction to WR, DM, SR and PM was also recorded under natural conditions (Table 4.3.1-3).

PMW 8, DRMR-2018-37, DRMR 2018-41, DRMRSJ-7, PAB 14-5, DRMRSJ-1, DRMRSJ-4, DRMRDJ-3, DRMRDJ-1, and DRMRSJ-19 of *B. juncea* showed resistant reaction to WR.

4.4 National Disease Nursery (NDN) for white rust

Locations: PNT, MOR, SHL, HSR (natural condition); LDH, NBPGR (artificial condition)

Total 93 genotypes, including 10 checks, were sown in paired-row of 3 m length between susceptible check. Observation for WR on leaves and staghead formation was recorded at 75, 100 DAS under artificial inoculation conditions. Reaction to AB, SR, DM and PM was also recorded under natural conditions (Table 4.4.1-2).

PRD 17-1, PRD 17-2, DRMRIJ 12-40, DRMRIJ-16-7-1, RH 1400, RH 1400-1, entries of *B. juncea* showed immune reaction to WR at MOR, PNT, HSR locations. Some of the promising strains sowing resistance to WR were DRMRIJ 12-27, DRMRIJ 12-37, DRMR-5206, PDZ 5, DRMRSJ-1, DRMRSJ-4, DRMR 2018-41, DRMRDJ-1, DRMR 2018-37 and DRMRIJ 12-37 (3 locations).

PB (A4A5)-842, PJK (A4A5)-21, Varuna (A4A5)-936-279 were showed immune reaction to WR at 5 locations and also at cotyledonary stage under artificial conditions. Although, PB(A4A5)-491 showed resistant reaction to WR at 3 locations (Table 4.4.3).

DRMRIJ 12-26, and DRMRMJA-35 were found consistently resistant to WR during 2014-15, 2015-16, 2016-17, 2017-18, 2018-19 and 2019-20.

PM: None of the entries of *B. juncea* showed resistance to PM at MOR.

4.5 National Disease Nursery (NDN) for Sclerotinia rot

Locations: PNT, HSR, LDH, BPR, VAR and SHL

Total 20 strains including 3 checks were sown in paired rows of 3 m length between susceptible check (Rohini, RL 1359) and NRCYS-5-2. Stem inoculation was done to ensure SR infection. Sclerotinia rot was recorded prior to harvest. In addition, reaction to AB, WR, DM and PM was also recorded (Table 4.5.1-2).

DRMRSJ 21, DRMRSJ-22 and DRMR 5206 showed promising reaction to SR with small lesion size and <50% incidence under artificial conditions consistently second year.

4.6 Screening of IVT entries of Brassica against different diseases

Locations: MOR, DOL, SHL, PNT, HSR, LDH, SGN and JAG

Total 126 strains including 8 checks were sown in single 3m row in RCBD with 2 replications. Susceptible check(s) were used after every 2 test rows. Susceptible variety 'Rohini' was used as filler. Observations on Alternaria blight on leaves, WR, DM, PM, SR and BR were recorded at 75 and 100 DAS. Number of staghead and Alternaria pod blight incidence was recorded 15 days before harvesting. Entries showing resistance/ tolerance to AB, WR, DM, PM and SR under natural conditions are listed in Table 4.6.1-2).

WR: MCB 1-2-3-2-4, PDZ 13, 91J5001 (Q), 7J157C (H) of *B. juncea* were found resistant and DRMR 2018-25 and JC 33 were also found promising to WR at five locations. While, almost all the entries of *B. rapa* var. Toria and *B. rapa* var Yellow Sarson, *B. napus* escaped WR infection.

4.7 Standardization of differential hosts for identification of races in *A. candida*

The reaction of 10 rapeseed-mustard genotypes was recorded against 4 isolates of *Albugo candida* (PNT, HSR, BPR, NDH, LDH) at LDH, HSR, PNT and NBPGR. Noe of the genotype gave resistant reaction against all 4 isolate. Genotype DRMRAB-753 gave susceptible reaction to all isolates at all five locations. While, genotypes DRMR 2035, Basanti gave resistant reaction against Ac-BPR, and Ac-HSR, while variable reaction to other isolates of *A. candida* at 3 locations (Table.4.7.1-2). Short of consistent results concluding findings under this experiment is lacking.

4.8 Epidemiology of Alternaria blight, white rust, powdery and downy mildew

Experiments on the epidemiology of foliar diseases of rapeseed-mustard were laid out using cv. Varuna and local variety was sown on eight different dates at the weekly interval starting from October 01 to November 19 without adopting any protection measures against pest and diseases at PNT, SHL, SKN, MOR, JAG, DOL (Table 4.8.1-6).

PNT

Two genotypes Varuna and Kranti were taken for eight different sowing dates. Downy mildew disease first appeared 10 DAS on Nov 05, Nov 12, and 11 DAS on Oct 29 and Nov 19 sown Varuna and Kranti cultivars. Whereas, on Oct 01 to Oct 22 sown crop the DM appeared between 35 to 42 DAS and on Oct 29 to Nov 19 sown

crop disease appeared between 56 to 70 DAS on both the cultivars. White rust disease first appeared 38 DAS on Nov 12 and Nov 19 sown crop while 50 DAS on Oct 1, and Oct 08, continued up to 97 DAS on late sown crop (Table 4.8.1). *Alternaria* blight disease was first noticed 39 DAS on Oct 08 and 46 DAS on Oct 01, and Nov 05 on both the cultivars. While, on Oct 22 sown crop, the disease appeared late i.e. 56 DAS. The *Alternaria* blight on pods first appeared 88 DAS on late (Nov 12) sown crop which is 7 days early in comparison to last year. On early (Oct 01) sown crop, the symptoms on pod appeared late after 120 days of sowing (Table 4.8.2).

SHL

Epidemiological experiment was laid out with cv. Varuna and TM 2. The crop was sown with 6 dates of sowing started from Oct 15 to Nov. 19 at weekly intervals. AB was first observed at 41 DAS in Nov 05 sown crop. While AB appeared at 66 DAS in Oct 08 seeded crop during 2018-19, while, it was appeared in 39 DAS in Nov 19 sown crop during 2017-18. AB on silique first appeared at 85 DAS in Nov 19 sown crop which was appeared at 110 DAS in early sown crop on Oct 15 in both the cultivars. Maximum disease severity was at 100 DAS (39.2%) in Nov 19 on cv TM 2 (Table 4.8). Maximum yield was recorded in Oct 29 sown cv Varuna (17.2 q/ha) while in TM 2 it was 12.9 q/ha (Oct 29). Yield data revealed that the best sowing time of crop in the region is last week of October (Table 4.8.3).

SKN

Experiment was laid out with cv. Varuna and GM 2 sown on 8 dates of sowing started from Oct 01 to Nov. 19 at weekly intervals. Powdery mildew disease first appeared at 78 DAS instead of 83 DAS, 76 DAS during 2018-19, 2017-18 respectively, on Nov 19 sown crop of Varuna and 79 DAS instead of 88 DAS last year in Nov 19 sown GM 2. The maximum disease severity was observed 99% in Nov 19 on Varuna followed 97% in Nov 12 sown GM 2. The maximum seed yield reduction was observed in late sown crop. Although, highest yield was observed in Oct 01 sown crop (Table 4.8.4).

MOR

Trial on epidemiology of foliar diseases of Indian mustard was laid out with cv. Varuna and Rohini. The crop was sown with 8 dates of sowing started from Oct 01 to Nov. 19 at weekly intervals using recommended agronomic practices. *Alternaria* blight on leaf was first appeared 70 DAS in Nov 12, and Nov 19 sown both Varuna and Rohini. Whereas, Ab on silique appeared at 80 DAS on same plots (4.8.5). PM was observed first 80 DAS and was maximum 63.1 % reported in cv Varuna at 130 DAS in Nov 19 sown crop (Table 4.8.5).

WR was appeared first on 48 DAS in Nov 19 and appeared till 110 DAS in Oct 01 sown crop. WR disease severity was maximum upto 44.0% in Nov 05 sown crop both in Varuna and Rohini. Maximum staghead was observed 44.4% in Nov 19 sown Rohini followed by Nov 05 sown both cultivars. Maximum yield (26.5 q/ha) was recorded in Oct 08 sown both cultivars (Table 4.8.6).

JAG

Experiments on epidemiological studies of PM and WR was laid out with cvs. Varua and DRMRIJ 31 with 8 dates of sowing started from 01 Oct to Nov 19 at weekly interval using recommended agronomic practices. PM was appeared first at 66 DAS on Varuna while at 70 DAS on DRMRIJ 31 in Nov 19 sown. WR first appeared at 48 DAS on DRMRIJ 31 sown on Nov 19. Optimum date of sowing for maximum seed yield seems between Oct 08 to Oct 15 sown crop (Table 4.8.7).

DOL

Experiment was laid out with cv. Varuna and Rajendra Suflam sown with 8 dates of sowing started from Oct 01 to Nov 19 at weekly intervals. AB was first observed at 41 DAS in Nov 19 sown on Varuna and 50 DAS on

Rajendra Suflam, while appeared late in early sown Oct 01 sown crop (90 DAS). The disease continued to progress on leaves up to 140 DAS on both the cultivars (Table 4.8.8).

4.9 Testing of IDM module for major rapeseed-mustard diseases

Locations: BPR, LDH, DOL, JAG, MOR, PNT, SHL, and SGN

The experiment was conducted in plot size 15x7m with 45x20 cm spacing in three replications. Variety DRMRIJ 31 was sown between 10-20 Oct using recommended fertilizer doses (80:40:40). After 100-days of sowing, 20 plants from each replication showing disease symptoms were tagged for observation and yield was assessed.

AB, WR, DM, PM, SR diseases were observed in the integrated disease management practices and farmer's practices to standardise the best integrated disease management module. Module includes seed treatment with *Trichoderma harzianum* @10g/ kg seed, soil application of *Trichoderma* (1 kg/ 50 kg FYM), basal application of zinc sulphate @ 15 kg/ h + S (dose as per location recommendation) + boron (10 kg borax/ ha), line sowing 45 x 20 cm spacing, no irrigation during 25th to 15th Jan. AB severity recorded from 18.2 % at MOR to 40.2% at PNT in module while in farmer's practices AB severity ranged from minimum 21.2% at JAG to highest at PNT (46.9%). Similarly, WR severity was recorded minimum 6.3 % at DOL and maximum 36.2 % at PNT in module while minimum at DOL (10.0%) and maximum 60.0% at BPR in farmer's practices. PM severity was observed in module between 19.3 % at Jag to 73.0% at SKN while in farmer's practices 15.9% at Jag to 75.5% at SKN. Mean SR disease was reduced from 23.3% in farmer's practices to 12.2% in module. Our results showed that the significant increase in yield upto 2034 kg/ha by using IDM module over 1650kg/ha in farmer's practices (Table 4.9.1-2).

Survey of farmer's field for disease outbreak

HSR

Survey was conducted for the appearance and severity of diseases in Indian mustard in major mustard growing areas of Haryana state. The first appearance of white rust disease was noticed during first week of January at farmer's field. The incidence of all the diseases remained quite low due to the prolonged cold climate throughout growing season. White rust disease severity ranged between 0-10 per cent at farmer's field, however up to 10-15 per cent white rust severity was noticed at some of the locations in district namely Hisar, Dadri, Bhiwani and Mahendragarh. However, incidence of Sclerotinia rot was noticed low in throughout state ranging between 2-4 per cent. Alternaria blight also remained low as disease severity recorded 0-5 per cent throughout the state. Bacteria stalk rot was noticed at some locations after first irrigation in low lying areas in mustard growing areas in state. Powdery mildew disease appeared in low intensity even in late sown conditions in Haryana.

MOR

Survey was conducted in adjoining areas of Morena district of MP to observe rapeseed-mustard diseases. AB first appeared on Dec. 24, WR on Nov. 30, staghead on Dec. 28, PM on Feb. 18 and Sclerotinia rot was first seen on Jan. 5 at farmer's field. Weather conditions were not much favorable to diseases at early stage of the crop but in month of Dec., Jan., Feb. and March, when winter rains came, all foliar diseases increased sharply. The staghead and Powdery mildew disease were observed in most of the fields which were sown late.

SHL

Survey was conducted on farmer's field in Nagaon, Morigaon and Nalbari districts of Assam. Alternaria leaf blight appeared/observed from the second fortnight of December'2019. During the crop season, the disease severity ranged from 4.7 to 39.5 % at the farmer's field. Sclerotinia rot was observed in the first week of January, 2020. The disease incidence was ranged from 2.5 to 4.7 %.

PNT

Downy mildew disease first appeared at cotyledonary stage on Oct 27, 2019, WR appeared on Nov 20, 2019 and AB disease on leaves was observed on Nov. 15, 2019 while on pod AB was appeared on Feb. 01, 2020. Sclerotinia rot was initially observed on Jan 12, 2020. The first appearance of bacterial blight disease was observed on Dec. 24, 2019. The weather condition was highly favorable to WR, AB and SR diseases. The WR disease was highly severe between Jan 20-25, 2020, while AB during Feb. 25-30, 2020. The staghead infestation was very high and observed in many plants. The SR was more severe during Feb. 15-20 2020.

DOL

Disease survey was conducted in West Champaran (Harinagar, Narkatiaganj), Sitamadhi (Riga), Sheohar, Gopalganj, Samastipur (Hasanpur), Darbhanga (Jale), Saran (Pahleja), Muzaffarpur and Vaishali districts of Bihar to observe the diseases of rapeseed-mustard. Highest AB severity (76.0%) was observed from TCA, Dholi Farm while lowest Ab severity (23.0%) was observed from Saran district. Although, SR incidence was highest (25.0%) in Vaishali and lowest (6.0%) in Gopalganj. The mean WR severity was less than 10% in Samastipur, Saran (Pahleja), Muzaffarpur and Vaishali districts.

JAG

A survey was conducted to observe severity of diseases of Indian mustard at different locations of south Chhattisgarh (Plateau of Bastar). AB appeared in the fourth week of February and disease severity was ranged between 0-35%. While, PM appeared in the first week of February and disease severity was 15-70% just after 10 days of rainfall. While, WR disease was appeared during second week of January with 0-15% disease severity.

SKN

Survey of four farmer's field for disease outbreak was conducted. Powdery mildew was observed in severe form on late sown crops. In timely sown crop, powdery mildew disease severity was observed between 10-20 per cent and white rust disease intensity between 20-40 per cent.

Table 4.1.1: Reaction of oilseed Brassica germplasm to Alternaria Blight (natural condition)

Code No.	Entries	% ABL (75 DAS)			% ABL (100DAS)											
		DOL	SHL	Mean	NDH	HSR	JHS	MOR	PNT	SGN	JAG	DOL	LDH	BPR	Mean	VAR
SBG-19-01	RGN 443	34.2	29.3	31.8	45.2	25.8	42.8	14.2	31.6	22.1	9.2	47.9	36.5	32.4	30.8	50
SBG-19-02	RH 1584	33.7	24.8	29.3	39.7	26.6	45.1	14.7	28.3	20.1	21.5	47.6	34.2	28.1	30.6	50
SBG-19-03	DRMR 2017-16	35.5	29.0	32.2	49.1	24.9	46.1	14.2	37.7	23.7	20.6	50.0	38.0	35.2	34.0	55
SBG-19-04	7IJ0003	32.9	25.4	29.1	38.8	28.9	46.7	15.0	31.6	24.3	25.8	47.1	35.3	39.2	33.3	60
SBG-19-05	AKGS 8217	29.6	26.0	27.8	41.8	16.8	47.0	6.0	28.3	26.0	0.0	56.9	28.1	33.8	28.5	35
SBG-19-06	SKM 1626	34.2	32.3	33.2	40.5	27.4	46.1	14.2	31.6	19.8	15.7	47.9	32.0	29.5	30.5	50
SBG-19-07	RH 1599-41	32.3	33.4	32.8	36.1	25.8	40.6	19.3	34.6	19.4	14.7	45.0	32.5	26.6	29.5	65
SBG-19-08	PHR 2	32.6	31.4	32.0	43.9	31.1	42.2	19.5	37.7	29.3	25.8	45.1	35.9	29.5	34.0	60
SBG-19-09	PT 303	38.6	33.4	36.0	38.8	38.6	40.3	15.2	50.7	23.0	14.7	57.2	36.9	29.5	34.5	100
SBG-19-10	PBR 385	35.1	31.8	33.5	49.5	28.1	37.4	21.4	36.2	17.0	17.4	49.6	39.4	29.5	32.6	50
SBG-19-11	SVJH 108	32.9	27.4	30.1	40.1	29.6	45.7	18.4	33.1	26.2	18.4	47.0	35.6	31.1	32.5	65
SBG-19-12	HNS 1102	29.5	22.9	26.2	35.1	16.2	42.6	5.4	37.7	28.1	0.0	42.7	32.3	37.9	27.8	70
SBG-19-13	YSB 9	33.4	30.7	32.1	26.0	34.0	47.8	14.2	37.5	23.7	0.0	46.7	41.4	29.5	30.1	100
SBG-19-14	RH (OE) 1706	32.8	30.4	31.6	38.0	26.9	43.5	21.2	39.2	29.3	14.7	44.8	43.7	29.5	33.1	60
SBG-19-15	PDZ 12	37.2	24.2	30.7	39.7	35.3	48.1	28.0	31.6	0.0	0.0	54.0	39.4	31.1	30.7	70
SBG-19-16	GSH 1699	24.7	26.0	25.3	36.6	18.4	45.3	8.0	24.7	20.5	14.7	35.6	26.1	24.9	25.5	30
SBG-19-17	PR 2016-4	30.0	23.5	26.8	38.1	31.1	40.9	14.2	34.7	28.0	14.7	43.4	31.6	28.1	30.5	60
SBG-19-18	DRMR 2017-15	28.8	29.2	29.0	41.6	32.5	43.1	15.2	37.7	28.1	16.4	42.6	38.3	28.1	32.4	70
SBG-19-19	AKMS 8141	24.5	21.8	23.1	43.1	17.4	43.8	8.1	33.2	18.8	20.6	35.5	25.4	33.8	28.0	50
SBG-19-20	PR 2016-8	29.4	27.6	28.5	46.9	37.9	48.6	23.6	33.1	23.9	12.9	42.5	30.3	29.6	32.9	60
SBG-19-21	LES- 59	24.1	29.8	27.0	44.4	29.6	47.1	28.6	37.7	45.0	21.5	34.9	31.5	30.9	35.1	70
SBG-19-22	DLSC 1	38.6	24.8	31.7	35.3	15.0	46.7	13.0	30.0	23.7	14.7	57.1	23.1	41.8	30.0	40
SBG-19-23	RH 1676	34.5	24.5	29.5	46.5	26.6	49.1	25.8	34.7	25.7	0.0	48.3	40.8	24	32.2	50
SBG-19-24	AKGS 8146	34.9	23.1	29.0	38.4	20.5	46.0	19.3	26.4	20.4	12.9	49.4	27.6	39.2	30.0	40
SBG-19-25	BIOYSR	34.7	30.6	32.7	43.9	35.3	47.2	23.6	33.2	24.0	17.4	49.9	36.6	39.2	35.0	60
SBG-19-26	DRMRIC 16-38	33.8	30.3	32.1	40.5	32.9	42.9	24.4	31.6	19.1	12.9	49.4	34.0	34	32.2	60
SBG-19-27	PDZ- 11	38.0	32.4	35.2	35.3	29.6	45.8	28.6	42.1	23.4	-	55.7	33.0	41.8	37.2	75
SBG-19-28	GSL 1	25.3	28.4	26.8	43.1	16.8	47.4	8.1	24.7	19.2	-	35.8	29.5	40.5	29.5	50
SBG-19-29	RH (OE) 1705	31.8	32.2	32.0	39.7	27.4	45.3	25.8	40.6	21.0	-	52.4	40.1	28.1	35.6	70
SBG-19-30	LES 54	32.4	32.9	32.7	36.1	32.2	49.2	28.6	33.2	21.4	-	46.6	35.0	48.2	36.7	60
SBG-19-31	GSH 1717	23.9	23.2	23.5	34.3	15.0	44.5	8.1	20.6	26.5	-	34.4	25.3	39.2	27.6	-
SBG-19-32	Rohini	23.6	27.2	25.4	46.7	34.6	42.1	24.6	36.1	36.3	-	34.3	37.3	48.2	37.8	-
SBG-19-33	RL 1359	24.9	33.1	29.0	48.6	37.9	37.0	23.5	36.1	29.0	-	35.5	34.1	46.9	36.5	-
CD (P=0.05)		2.19	4.9	3.5	3.0	4.7	7.2	1.3	8.5	5.7	6.5	4.1	3.8	4.9	5.0	-
CV (%)		3.39	8.4	5.9	-	8.3	8.5	3.4	12.2	11.8	23.0	4.3	5.5	6.8	9.3	-

Check: Rohini, RL 1359 (SC); PHR-2 (TC-AB); GSL-1, DLSC-1, BioYSR (RC-WR); YSB-9 (SC); PT-303 (RC-WR); RTM-314 (SC)

Table 4.1.2: Reaction of oilseed Brassica germplasm to Alternaria Pod Blight and SR (natural condition)

Code No.	Entries	% ABP (15 days before harvest)						% SR incidence				
		SHL	PNT	JHS	SGN	LDH	Mean	HSR	MOR	PNT	SGN	BPR
	RGN 443	26.2	28.3	33.8	18.9	28.6	27.1	29.6	15.7	13.3	11.8	48.4
SBG-19-01	RH 1584	18.7	24.2	36.4	18.6	27.3	25.0	37.8	0.0	9.2	0.0	29.6
SBG-19-02	DRMR 2017-16	24.1	31.6	38.0	20.6	29.6	28.8	37.0	12.9	9.2	21.4	19.3
SBG-19-03	7IJ0003	19.4	22.8	31.9	20.5	30.5	25.0	52.8	0.0	9.2	15.6	31.3
SBG-19-04	AKGS 8217	21.8	37.7	34.9	19.1	28.6	28.4	30.6	6.5	22.5	0.0	27.5
SBG-19-05	SKM 1626	26.7	24.7	31.4	13.8	26.3	24.6	44.2	0.0	9.2	0.0	34.2
SBG-19-06	RH 1599-41	26.9	34.7	31.6	17.3	26.9	27.5	45.4	0.0	29.9	27.4	17.2
SBG-19-07	PHR 2	27.9	28.3	33.3	22.7	28.4	28.1	42.9	0.0	22.5	12.4	33.7
SBG-19-08	PT 303	28.1	42.1	32.3	22.1	31.5	31.2	70.9	24.7	73.4	13.9	39.4
SBG-19-09	PBR 385	25.5	22.5	31.4	15.6	30.3	25.1	46.3	15.7	13.3	15.7	39.1
SBG-19-10	SVJH 108	20.9	34.6	35.1	21.7	29.9	28.4	44.2	18.4	23.1	16.9	42.8
SBG-19-11	HNS 1102	17.3	52.2	34.3	24.4	28.9	31.4	28.9	22.8	9.2	22.6	35.8
SBG-19-12	YSB 9	24.8	24.7	36.2	17.8	33.5	27.4	70.8	0.0	78.6	29.7	58.4
SBG-19-13	RH (OE) 1706	24.3	24.7	32.0	21.6	31.9	26.9	39.9	0.0	9.2	25.0	35.9
SBG-19-14	PDZ 12	18.5	33.1	34.7	0.0	28.9	23.0	42.9	12.9	45.0	20.5	35.1
SBG-19-15	GSH 1699	19.2	24.2	28.7	20.1	27.8	24.0	27.3	24.7	9.2	23.5	0.0
SBG-19-16	PR 2016-4	18.7	26.4	37.0	26.2	29.9	27.6	58.3	20.6	22.5	22.8	27.1
SBG-19-17	DRMR 2017-15	21.9	24.7	28.3	23.2	29.4	25.5	42.7	15.7	39.1	26.5	29.4
SBG-19-18	AKMS 8141	18.8	33.1	29.8	18.6	27.7	25.6	22.7	18.4	13.3	27.2	0.0
SBG-19-19	PR 2016-8	19.9	24.7	37.5	21.8	28.0	26.4	47.7	20.6	45.0	9.8	33.7
SBG-19-20	LES- 59	20.4	26.1	26.5	37.7	28.0	27.7	56.5	15.7	27.3	21.2	40.1
SBG-19-21	DLSC 1	19.9	20.6	28.7	19.2	15.9	20.9	25.5	0.0	9.2	26.8	53.8
SBG-19-22	RH 1676	18.5	22.5	32.9	17.1	29.5	24.1	44.5	0.0	22.5	9.9	32.6
SBG-19-23	AKGS 8146	19.8	34.6	27.4	18.8	27.6	25.7	31.8	0.0	0.0	23.1	33.0
SBG-19-24	BIOYSR	24.3	20.6	32.7	22.1	28.4	25.6	42.4	15.7	9.2	21.1	31.4
SBG-19-25	DRMRIC 16-38	21.4	15.7	29.0	20.3	27.5	22.8	46.1	12.9	13.3	0.0	46.3
SBG-19-26	PDZ- 11	23.6	29.9	35.9	19.4	27.6	27.3	45.1	0.0	48.0	14.8	34.3
SBG-19-27	GSL 1	19.7	34.7	32.4	17.3	29.1	26.6	38.9	0.0	0.0	11.6	25.6
SBG-19-28	RH (OE) 1705	22.3	24.6	34.6	18.6	30.2	26.1	50.8	0.0	45.0	12.9	37.6
SBG-19-29	LES 54	22.4	35.8	34.9	22.8	28.2	28.8	33.4	15.7	22.5	0.0	33.0
SBG-19-30	GSH 1717	17.7	39.2	28.6	25.6	27.4	27.7	20.6	0.0	9.2	17.3	29.7
SBG-19-31	Rohini	19.3	24.7	32.3	31.9	27.6	27.2	41.6	0.0	13.3	0.0	34.6
SBG-19-32	RL 1359	23.1	24.2	33.7	27.5	27.6	27.2	43.7	0.0	9.2	12.6	25.1
CD (p=0.05)		5.7	11.8	4.6	4.6	2.1	5.8	10.1	5.1	22.7	5.0	4.3
CV (%)		12.6	20.3	9.4	10.9	3.7	11.4	11.9	24.6	54.6	15.7	6.1

Table 4.1.3: Reaction of oilseed Brassica germplasm to WR (natural condition)

Entries	% WR severity (90 DAS)										% Staghead					
	NDH	HSR	JHS	MOR	PNT	SGN	JAG	LDH	BPR	Mean	JHS	MOR	PNT	SGN	LDH	Mean
RGN 443	28.9	33.2	25.9	35.8	33.2	49.2	12.5	30.5	48.2	33.0	25.1	24.0	19.6	30.7	7.6	21.4
RH 1584	26.6	35.3	28.1	37.5	28.3	0.0	14.0	34.5	45.7	27.8	21.4	22.2	19.9	0.0	10.3	14.8
DRMR 2017-16	26.1	32.9	24.3	37.3	33.2	21.3	27.5	31.9	48.2	31.4	24.5	26.8	24.0	12.8	9.9	19.6
7IJ0003	34.2	34.6	30.5	37.9	31.6	13.3	25.1	35.2	48.2	32.3	21.8	24.1	16.7	19.2	7.9	17.9
AKGS 8217	0.0	0.0	19.2	0.0	0.0	0.0	0.0	0.0	0	2.1	8.83	0.0	0.0	0.0	0.0	1.8
SKM 1626	29.6	33.9	33.1	37.8	31.6	21.3	20.8	29.3	43.1	31.2	23.9	21.4	26.5	0.0	9.5	16.3
RH 1599-41	28.1	33.9	22.4	35.5	34.7	27.3	0.0	30.4	49.5	29.1	22.9	24.7	14.5	13.1	11.2	17.3
PHR 2	31.8	30.1	27.3	38.1	36.3	37.4	0.0	22.9	45	29.9	25.6	30.7	22.7	19.4	10.4	21.8
PT 303	21.3	0.0	29.9	12.8	0.0	0.0	12.9	0.0	43.1	13.3	21.3	0.0	0.0	0.0	13.2	6.9
PBR 385	34.6	34.0	25.2	40.4	34.6	32.1	6.5	26.5	39.2	30.3	19.3	34.7	24.0	17.5	8.1	20.7
SVJH 108	31.8	33.2	23.4	41.6	26.4	39.1	14.7	25.6	45.7	31.3	19.1	34.2	7.5	15.0	8.1	16.8
HNS 1102	0.0	0.0	17.8	0.0	0.0	0.0	0.0	0.0	0	2.0	11.1	0.0	0.0	0.0	3.5	2.9
YSB 9	18.9	0.0	26	0.0	0.0	0.0	0.0	0.0	46.9	10.2	22.9	0.0	0.0	0.0	11.2	6.8
RH (OE) 1706	30.4	36.0	32.2	35.7	39.2	30.3	0.0	25.1	52.2	31.2	27.2	29.1	24.1	21.5	9.4	22.3
PDZ 12	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	50.8	7.5	8.59	0.0	0.0	0.0	0.0	1.7
GSH 1699	0.0	0.0	17.2	5.4	0.0	0.0	0.0	0.0	50.8	8.2	8.3	0.0	0.0	0.0	0.0	1.7
PR 2016-4	32.8	43.1	26.6	40.9	42.1	19.6	17.4	30.2	50.8	33.7	24.2	25.7	9.2	14.2	14.3	17.5
DRMR 2017-15	21.4	33.2	30.8	41.7	39.2	26.5	0.0	29.5	48.2	30.0	22	28.1	24.1	11.8	4.9	18.2
AKMS 8141	0.0	0.0	0.33	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0
PR 2016-8	35.3	37.9	30.7	42.2	37.7	27.2	0.0	30.5	50.8	32.5	21.1	31.0	18.4	15.6	12.5	19.7
LES- 59	29.6	34.6	27.4	37.9	40.6	20.6	14.7	26.2	52.1	31.5	22.3	38.9	24.0	0.0	4.1	17.8
DLSC 1	0.0	0.0	0.33	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0
RH 1676	39.9	35.3	31	41.6	50.7	29.2	0.0	30.3	45.7	33.7	19.1	24.1	21.3	20.0	7.4	18.4
AKGS 8146	0.0	0.0	14.4	0.0	0.0	0.0	15.7	0.0	0	3.3	7.2	0.0	0.0	0.0	0.0	1.4
BIOYSR	0.0	0.0	34.8	0.0	12.9	0.0	14.7	0.0	45.7	12.0	25	0.0	0.0	0.0	5.0	6.0
DRMRIC 16-38	28.8	33.9	33.4	39.1	34.7	20.8	0.0	31.8	50.8	30.4	27	30.0	26.5	14.6	7.0	21.0
PDZ- 11	0.0	0.0	0.33	0.0	9.2	0.0	-	0.0	52.1	7.7	0	0.0	14.5	0.0	2.0	3.3
GSL 1	0.0	0.0	13.9	0.0	0.0	0.0	-	0.0	0	1.7	8.6	0.0	0.0	0.0	3.5	2.4
RH (OE) 1705	30.0	18.4	17.2	19.3	28.3	26.4	-	22.5	46.9	26.1	8.1	30.2	12.8	0.0	8.5	11.9
LES 54	28.9	22.4	15	26.1	22.5	21.4	-	20.9	48.2	25.7	9.52	27.3	16.0	0.0	2.9	11.1
GSH 1717	0.0	0.0	0.3	0.0	0.0	0.0	-	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0
Rohini	37.3	45.0	33.5	40.4	33.1	35.6	-	27.4	46.9	37.4	22.4	37.3	18.2	23.3	11.9	22.6
RL 1359	38.9	38.6	32.0	38.7	31.4	47.6	-	32.4	46.9	38.3	20.6	26.1	33.2	35.7	10.6	25.2
CD (P=0.05)	3.3	3.4	3.0	1.0	8.0	4.5	11.7	4.2	4.0	4.8	1.7	5.3	9.9	3.2	6.6	5.3
CV (%)	-	8.1	10.6	0.3	17.4	13.4	74.5	11.8	5.7	17.7	10.1	14.5	35.6	18.5	49.8	25.7

Table 4.1.4: Reaction of oilseed Brassica germplasm to powdery mildew and downy mildew (natural condition)

Entries	% PM severity (100 DAS)						% DM severity (20 DAS)		
	JHS	SKN	MOR	JAG	BPR	Mean	JHS	PNT	Mean
RGN 443	36.2	67.5	35.7	23.0	37.9	44.6	15.0	42.7	28.8
RH 1584	31.9	74.3	37.5	27.3	33.9	46.5	11.3	42.1	26.7
DRMR 2017-16	32.4	65.3	38.6	33.8	33.9	44.9	29.1	46.4	37.8
7IJ0003	28.2	83.5	39.3	23.2	27.9	47.6	24.3	37.1	30.7
AKGS 8217	15.2	29.9	36.9	0.0	31.1	23.8	16.1	0.0	8.1
SKM 1626	12.0	60.1	37.5	26.2	36.6	38.8	20.3	46.4	33.4
RH 1599-41	22.3	63.4	51.4	6.46	31.1	39.7	14.7	30.8	22.8
PHR 2	13.5	74.3	45.5	8.73	36.6	42.2	10.5	39.8	25.1
PT 303	25.3	46.4	35.2	13.5	35.2	33.7	26.0	39.1	32.5
PBR 385	23.9	61.7	44.3	12.9	35.2	39.9	13.6	47.9	30.7
SVJH 108	23.6	63.4	38.6	13.5	31.1	38.9	35.0	44.4	39.7
HNS 1102	31.5	36.2	37.5	0.0	39.2	30.1	22.0	0.0	11.0
YSB 9	26.6	29.9	31.3	0.0	41.8	26.6	10.3	38.9	24.6
RH (OE) 1706	32.6	83.5	47.8	0.0	44.4	48.6	7.5	0.0	3.8
PDZ 12	23.0	63.4	45.5	0.0	44.4	40.0	23.4	39.1	31.2
GSH 1699	14.8	15.7	0.0	0.0	35.2	13.6	23.4	0.0	11.7
PR 2016-4	24.3	63.4	47.8	21.1	37.9	43.0	9.5	36.2	22.9
DRMR 2017-15	25.7	71.5	45.5	0.0	35.2	41.6	10.9	40.6	25.8
AKMS 8141	11.3	29.9	22.8	0.0	46.9	23.5	0.0	0.0	0.0
PR 2016-8	25.9	63.4	51.9	0.0	40.5	40.9	20.6	39.7	30.1
LES- 59	22.7	53.8	51.4	12.9	39.2	39.0	22.4	43.5	33.0
DLSC 1	30.5	0.0	0.0	0.0	36.6	11.2	0.0	0.0	0.0
RH 1676	31.9	63.4	52.5	0.0	45.7	42.8	25.0	47.9	36.4
AKGS 8146	16.5	9.2	0.0	10.8	33.9	13.3	13.0	0.0	6.5
BIOYSR	23.3	60.1	39.8	13.5	35.2	38.7	29.8	40.7	35.2
DRMRIC 16-38	31.8	67.5	47.4	0.0	37.9	42.0	33.1	33.1	33.1
PDZ- 11	27.2	53.8	40.9	-	46.9	44.5	0.0	39.2	19.6
GSL 1	27.8	22.5	38.4	-	45.7	31.4	10.0	0.0	5.0
RH (OE) 1705	24.9	67.5	40.4	-	41.8	48.4	24.3	31.6	27.9
LES 54	31.3	61.7	52.1	-	44.4	50.2	20.7	29.9	25.3
GSH 1717	29.5	0.0	0.0	-	39.2	13.7	0.0	0.0	0.0
Rohini	29.0	63.4	43.7	-	40.5	48.0	30.5	45.0	37.7
RL 1359	27.2	71.5	43.9	-	44.4	51.7	31.3	42.1	36.7
CD(P=0.05)	4.2	9.0	6.2	1.9	3.3	5.6	2.6	8.3	5.5
CV (%)	8.1	8.3	7.8	10.2	4.2	7.8	13.5	13.5	13.5

Table 4.1.5: Reaction of oilseed Brassica germplasm to Alternaria Blight (artificial condition)

Entries	% ABL severity (75 DAS)			% ABL severity (100 DAS)						% ABP (15 DBH)					
	DOL	SHL	Mean	PNT	HSR	DOL	LDH	JHS	Mean	HSR	LDH	JHS	PNT	SHL	Mean
RGN 443	38.0	35.1	36.6	40.7	25.8	51.5	40.6	42.4	40.2	23.3	29.6	33.8	26.4	28.9	28.4
RH 1584	38.2	30.1	34.1	36.2	26.6	51.8	38.9	45.2	39.7	24.2	28.6	36.4	30.0	24.6	28.8
DRMR 2017-16	36.8	34.7	35.8	34.7	24.9	54.2	41.2	46.1	40.2	21.5	30.1	38.1	33.1	27.8	30.1
7IJ0003	39.4	32.1	35.8	39.2	28.9	50.9	36.1	46.7	40.4	25.8	29.9	32.0	42.1	24.3	30.8
AKGS 8217	38.3	33.0	35.7	31.6	16.8	60.8	39.3	47.0	39.1	15.0	29.6	34.9	34.6	26.0	28.0
SKM 1626	36.3	38.9	37.6	33.1	27.4	51.8	45.8	46.1	40.8	23.3	28.3	31.4	37.7	30.8	30.3
RH 1599-41	33.7	37.2	35.4	40.7	25.8	48.7	46.5	40.6	40.5	21.5	30.0	31.7	42.1	30.6	31.2
PHR 2	35.1	37.4	36.3	33.1	31.1	48.9	42.7	42.3	39.6	26.9	31.1	33.3	39.2	32.2	32.5
PT 303	38.1	39.1	38.6	55.6	38.6	61.5	49.2	40.3	49.0	32.9	33.4	32.3	52.2	31.8	36.5
PBR 385	36.0	37.8	36.9	42.1	28.1	53.6	47.0	37.4	41.6	24.9	33.3	31.4	49.3	29.5	33.7
SVJH 108	36.0	34.2	35.1	37.7	29.6	51.5	46.4	45.7	42.2	25.8	30.3	35.2	37.7	24.8	30.7
HNS 1102	36.6	31.2	33.9	39.2	16.2	46.7	34.7	42.6	35.9	15.0	31.5	34.3	42.1	22.0	29.0
YSB 9	42.0	35.5	38.8	43.5	34.0	50.3	44.6	47.8	44.0	27.4	34.9	36.3	37.7	28.0	32.9
RH (OE) 1706	40.2	37.3	38.7	37.7	26.9	48.6	44.2	43.6	40.2	22.4	32.2	32.0	34.7	27.5	29.8
PDZ 12	39.0	30.8	34.9	42.1	35.3	58.1	45.8	48.1	45.9	28.1	30.1	34.8	46.4	22.1	32.3
GSH 1699	36.4	34.0	35.2	33.1	18.4	39.3	35.4	45.3	34.3	17.4	31.9	28.8	40.5	24.1	28.5
PR 2016-4	34.9	29.8	32.4	31.6	31.1	46.9	37.6	41.0	37.6	26.6	31.5	37.0	31.4	23.5	30.0
DRMR 2017-15	33.9	36.0	35.0	36.2	32.5	46.6	41.2	43.1	39.9	27.4	31.8	28.3	29.9	26.0	28.7
AKMS 8141	37.2	29.1	33.1	33.2	17.4	39.3	34.7	43.8	33.7	16.2	32.8	29.9	26.4	24.4	25.9
PR 2016-8	37.0	33.7	35.3	39.2	37.9	46.0	39.4	48.6	42.2	32.5	29.7	38.4	30.0	24.1	30.9
LES- 59	36.2	38.4	37.3	39.2	29.6	38.5	42.2	47.1	39.3	26.6	30.8	26.5	52.2	25.0	32.2
DLSC 1	40.5	34.1	37.3	31.6	15.0	61.0	27.6	46.7	36.4	12.9	16.5	28.7	15.7	26.5	20.1
RH 1676	35.1	32.6	33.9	36.3	26.6	51.6	40.6	49.2	40.8	23.3	30.6	32.9	26.4	25.7	27.8
AKGS 8146	28.4	31.7	30.0	36.3	20.5	53.3	34.1	46.0	38.0	19.0	31.4	27.5	31.4	24.8	26.8
BIOYSR	34.4	39.6	37.0	37.7	35.3	54.0	41.8	47.3	43.2	28.9	30.0	32.7	28.3	29.0	29.8
DRMRIC 16-38	33.3	36.7	35.0	43.5	32.9	53.3	38.3	42.9	42.2	26.9	30.1	29.1	31.6	26.1	28.7
PDZ- 11	33.0	39.2	36.1	52.2	29.6	59.8	48.2	45.8	47.1	24.9	29.0	35.9	42.1	28.1	32.0
GSL 1	29.0	37.4	33.2	31.6	16.8	40.1	40.1	47.5	35.2	15.7	31.7	32.5	37.7	24.0	28.3
RH (OE) 1705	30.7	39.7	35.2	45.0	27.4	56.7	48.6	45.3	44.6	23.3	32.5	34.6	43.5	26.9	32.2
LES 54	33.7	40.2	37.0	49.3	32.2	50.6	42.9	49.3	44.9	27.4	29.9	34.9	37.7	27.6	31.5
GSH 1717	27.8	29.4	28.6	33.1	15.0	38.3	33.9	44.5	33.0	12.3	31.4	28.5	36.1	23.0	26.2
Rohini	34.5	34.5	34.5	33.2	34.6	37.7	45.3	42.1	38.6	28.9	30.7	32.4	36.2	25.2	30.7
RL 1359	42.6	40.7	41.6	29.9	37.9	39.2	44.0	37.1	37.6	32.2	29.7	33.7	20.6	28.4	28.9
CD (P=0.05)	5.01	5.9	5.5	7.1	4.7	4.4	4.8	7.2	5.6	4.6	2.1	4.6	9.2	5.4	5.2
CV (%)	6.84	8.2	7.5	9.0	8.3	4.4	5.7	8.5	7.2	9.6	3.4	9.4	12.8	9.9	9.0

Table 4.1.6: Reaction of oilseed Brassica germplasm to WR, SR, DM and PM (artificial condition)

Entries	% WR severity (90DAS)					% SH				% Sclerotinia rot incidence					% DM (20 DAS)			% PM
	HSR	LDH	JHS	Mean	PNT	LDH	JHS	PNT	Mean	LDH	HSR	PNT	Mean	LDH Lesion (cm)	JHS	PNT	Mean	JHS
RGN 443	33.2	26.4	26.0	28.5	37.7	9.3	25.1	12.7	15.7	64.3	29.6	29.9	41.3	4.9	15.0	45.0	30.0	36.2
RH 1584	35.3	31.5	28.1	31.6	26.4	8.6	21.4	15.9	15.3	67.1	37.8	22.5	42.5	6.6	11.3	40.6	26.0	32.0
DRMR 2017-16	32.9	29.2	24.3	28.8	31.6	8.6	24.5	7.5	13.5	64.2	37.0	43.5	48.2	10.1	29.2	37.7	33.4	32.4
7IJ0003	34.6	29.8	30.5	31.6	29.9	11.4	21.8	16.7	16.7	57.3	52.8	39.1	49.7	4.5	24.3	0.0	12.1	28.3
AKGS 8217	0.0	0.0	19.2	6.4	0.0	0.0	8.8	0.0	2.9	28.3	30.6	13.3	24.0	2.0	16.1	47.9	32.0	15.2
SKM 1626	33.9	27.7	33.2	31.6	31.6	11.5	23.9	5.2	13.5	90.0	44.2	45.0	59.7	13.4	20.3	49.3	34.8	11.9
RH 1599-41	33.9	27.3	22.4	27.9	31.6	12.6	24.4	21.3	19.4	80.8	45.4	49.4	58.5	8.2	14.8	33.1	23.9	22.3
PHR 2	30.1	29.2	27.3	28.8	26.4	11.8	25.6	16.7	18.0	63.4	42.9	13.3	39.9	7.7	10.6	40.7	25.6	13.4
PT 303	0.0	0.0	29.9	10.0	0.0	13.1	21.3	0.0	11.5	49.0	70.9	57.1	59.0	2.3	26.0	34.7	30.4	25.3
PBR 385	34.0	24.5	25.2	27.9	31.6	4.5	19.4	20.8	14.9	80.8	46.3	22.5	49.9	7.0	13.6	50.8	32.2	23.9
SVJH 108	33.2	27.0	23.5	27.9	17.8	7.6	19.1	12.7	13.1	64.1	44.2	50.9	53.0	5.8	35.1	37.7	36.4	23.5
HNS 1102	0.0	0.0	17.9	6.0	0.0	5.5	12.9	0.0	6.1	70.4	28.9	38.7	46.0	13.0	22.0	0.0	11.0	31.6
YSB 9	0.0	0.0	26.0	8.7	0.0	8.3	23.0	0.0	10.4	56.1	70.8	22.5	49.8	2.7	10.4	0.0	5.2	26.6
RH (OE) 1706	36.0	24.1	32.3	30.8	37.7	11.9	27.3	5.2	14.8	80.8	39.9	28.8	49.8	4.5	7.5	0.0	3.8	32.6
PDZ 12	0.0	0.0	16.4	5.5	9.2	0.0	8.5	0.0	2.8	66.3	42.9	50.9	53.4	3.8	23.4	49.3	36.3	23.1
GSH 1699	0.0	0.0	17.2	5.7	0.0	0.0	8.5	0.0	2.8	60.9	27.3	13.3	33.8	3.0	23.5	39.2	31.3	14.9
PR 2016-4	43.1	29.2	26.7	33.0	37.7	11.1	24.2	0.0	11.8	67.0	58.3	31.0	52.1	8.1	9.6	37.7	23.7	24.3
DRMR 2017-15	33.2	30.1	30.8	31.4	36.3	4.5	22.1	7.5	11.4	71.5	42.7	13.3	42.5	5.4	10.9	40.6	25.7	25.6
AKMS 8141	0.0	0.0	0.3	0.1	0.0	0.0	0.3	0.0	0.1	53.2	22.7	22.5	32.8	4.2	0.3	37.7	19.0	11.3
PR 2016-8	37.9	24.1	30.7	30.9	42.1	11.8	21.2	5.2	12.7	69.4	47.7	25.8	47.6	6.3	20.7	33.2	26.9	25.9
LES-59	34.6	29.2	27.5	30.4	37.7	5.5	22.3	5.2	11.0	90.0	56.5	45.0	63.8	11.9	22.4	45.0	33.7	22.8
DLSC 1	0.0	0.0	0.3	0.1	0.0	0.0	0.3	0.0	0.1	80.8	25.5	13.3	39.8	8.9	0.3	42.1	21.2	30.5
RH 1676	35.3	26.1	31.0	30.8	40.7	7.8	19.7	5.2	10.9	70.4	44.5	9.2	41.4	4.5	25.0	47.9	36.5	32.0
AKGS 8146	0.0	0.0	14.5	4.8	0.0	0.0	7.3	0.0	2.4	63.0	31.8	0.0	31.6	6.2	13.1	33.2	23.1	16.4
BIOYSR	0.0	0.0	34.8	11.6	15.7	0.0	25.0	7.5	10.8	70.4	42.4	9.2	40.7	4.1	29.8	0.0	14.9	23.3
DRMRIC 16-38	33.9	32.3	33.5	33.2	40.7	4.9	27.0	19.9	17.2	60.1	46.1	9.2	38.5	2.0	33.2	26.6	29.9	31.8
PDZ-11	0.0	0.0	0.3	0.1	0.0	0.0	0.3	0.0	0.1	67.5	45.1	29.9	47.5	4.8	0.3	39.2	19.8	27.2
GSL 1	0.0	0.0	14.0	4.7	0.0	2.0	8.6	0.0	3.6	63.1	38.9	32.9	45.0	4.2	9.9	0.0	5.0	27.9
RH (OE) 1705	18.4	21.5	17.3	19.1	15.7	10.6	8.1	18.2	12.3	55.4	50.8	29.9	45.3	2.4	25.6	0.0	12.8	24.9
LES 54	22.4	20.0	15.1	19.2	22.5	9.1	9.6	5.2	8.0	76.7	33.4	13.3	41.1	10.4	20.8	38.9	29.8	31.4
GSH 1717	0.0	0.0	0.3	0.1	0.0	0.0	0.3	0.0	0.1	63.4	20.6	13.3	32.4	4.5	0.3	0.0	0.2	29.6
Rohini	45.0	26.1	33.6	34.9	17.8	5.8	22.4	5.2	11.1	75.0	41.6	16.6	44.4	40.1	30.6	40.6	35.6	29.1
RL 1359	38.6	23.9	32.0	31.5	24.2	11.9	20.6	27.6	20.0	64.2	43.7	13.3	40.4	3.0	31.4	43.5	37.4	27.3
CD(P=0.05)	3.4	3.8	3.0	3.4	10.1	6.8	1.7	13.5	7.3	NS	10.1	24.8	17.5	-	2.6	8.1	5.4	4.2
CV (%)	8.1	11.5	10.6	10.1	26.9	52.5	10.1	72.3	44.9	20.5	11.9	28.8	20.4	-	13.5	12.5	13.0	8.1

Table 4.2.1: Reaction of oilseed Brassica germplasm against Alternaria blight in UDN (natural condition)

Code No.	Entries	% ABL (75 DAS)				% ABL (100 DAS)									
		SHL	MOR	DOL	Mean	NDH	PNT	HSR	DOL	JAG	LDH	JHS	SGN	Mean	VAR
UDN-19-01	RMM-10-1-1	24.7	16.2	27.6	22.8	40.9	33.1	32.5	35.2	16.9	46.4	43.5	28.1	34.6	40
UDN-19-02	DRMRSJ-42	26.5	25.8	28.6	27.0	43.5	37.7	34.0	36.5	19.3	44.0	46.7	20.2	35.3	40
UDN-19-03	DRMR-4005	26.5	21.2	28.9	25.5	22.9	42.1	28.9	36.9	16.9	40.1	42.0	27.5	32.2	40
UDN-19-04	DRMRIJ-12-52	27.3	20.3	31.6	26.4	20.8	13.3	31.1	38.6	15.4	40.7	46.4	26.4	29.1	40
UDN-19-05	DRMRSJ-4	28.3	14.4	31.6	24.8	34.3	46.4	25.8	38.2	12.3	35.5	42.1	21.0	32.0	50
UDN-19-06	DRMRSJ-19	28.8	19.3	30.0	26.0	42.2	39.2	36.6	37.4	17.9	39.3	43.0	21.3	34.6	40
UDN-19-07	DRMRSJ-25	29.5	21.0	31.6	27.4	43.1	34.7	16.2	38.4	15.9	30.0	43.3	27.4	31.1	50
UDN-19-08	RL 1359	31.0	22.0	28.6	27.2	43.1	36.2	28.9	36.2	15.8	30.9	44.2	28.7	33.0	40
UDN-19-09	RMWR-09-2	33.3	20.1	33.6	29.0	43.5	36.2	33.9	40.8	15.7	38.9	46.0	22.1	34.6	50
UDN-19-10	DRMR 2017-8	32.5	21.2	27.9	27.2	40.1	33.1	35.3	35.5	16.4	36.4	47.1	19.9	33.0	40
UDN-19-11	DRMRSJ-26	28.4	25.9	33.6	29.3	39.2	34.7	29.6	40.5	11.2	37.1	33.7	24.6	31.3	50
UDN-19-12	DRMRSJ-22	27.6	27.5	30.2	28.4	45.2	37.7	32.9	36.7	9.8	34.7	46.1	21.8	33.1	30
UDN-19-13	DRMRDJ-3	28.1	28.0	34.1	30.1	42.0	45.0	27.4	40.1	12.8	41.9	49.4	21.4	35.0	50
UDN-19-14	PHR 2	28.3	25.8	27.3	27.1	44.4	36.3	28.9	33.3	12.9	42.3	48.1	30.4	34.6	50
UDN-19-15	RMT-10-15	28.4	23.6	34.8	28.9	27.3	45.0	33.2	40.7	14.2	46.3	47.5	23.7	34.7	80
UDN-19-16	NPJ-237	31.6	24.4	30.4	28.8	39.2	36.2	22.4	37.0	14.2	37.7	44.0	31.5	32.8	50
UDN-19-17	DRMRSJ-31	29.5	24.4	32.1	28.7	40.7	31.4	26.9	38.4	5.0	39.9	46.7	29.8	32.3	50
UDN-19-18	RMM-12-2-18	31.9	22.0	34.4	29.4	41.8	43.5	31.1	40.7	10.5	40.1	47.5	37.1	36.5	50
UDN-19-19	DRMR 5206	30.4	27.3	30.5	29.4	44.4	31.6	24.9	37.4	14.0	38.9	44.8	22.9	32.4	50
UDN-19-20	DRMRSJ-33	30.4	28.0	30.8	29.7	45.2	36.2	35.3	38.2	5.0	41.1	47.4	25.1	34.2	50
UDN-19-21	PAB-14-5	31.6	15.2	31.7	26.2	45.4	40.7	23.3	38.6	7.1	33.5	46.1	23.0	32.2	40
UDN-19-22	NPJ-238	33.5	23.4	33.7	30.2	42.6	34.6	28.1	40.2	9.8	37.2	47.7	20.2	32.6	50
UDN-19-23	DRMRSJ-20	32.2	24.6	34.3	30.4	45.6	40.7	33.9	40.5	0.0	41.4	46.3	27.7	34.5	50
UDN-19-24	RMM-12-3-18	30.3	27.3	35.6	31.1	48.2	37.7	25.8	41.4	12.7	45.8	41.8	36.5	36.2	50
UDN-19-25	DRMRDJ-1	28.0	28.6	24.9	27.1	41.6	45.0	36.0	32.6	4.1	46.3	47.7	28.4	35.2	50
UDN-19-26	GSL 1	24.8	29.2	25.4	26.5	41.4	30.0	16.8	32.0	0.0	35.9	47.2	20.4	28.0	30
UDN-19-27	DRMR 2018-37	28.0	30.2	30.5	29.5	43.1	36.3	24.9	37.6	12.9	37.9	46.8	40.1	34.9	40
UDN-19-28	DRMRSJ-18	30.0	28.6	28.8	29.1	43.5	43.5	33.2	35.6	10.8	44.6	47.2	25.6	35.5	45
UDN-19-29	DRMRSJ-32	30.2	28.0	30.7	29.6	43.5	39.1	38.6	37.7	13.5	38.9	45.1	32.8	36.2	50
UDN-19-30	RMM-12-1-18	25.2	30.7	30.0	28.6	45.2	36.2	27.4	36.7	10.0	40.3	46.9	28.0	33.8	40
UDN-19-31	DRMRSJ-7	27.6	28.6	30.1	28.8	43.5	42.1	25.8	37.1	4.1	40.0	42.5	22.0	32.1	45
UDN-19-32	PT 303	32.5	25.8	30.8	29.7	29.1	50.7	37.9	37.6	7.1	45.4	43.0	29.3	35.0	80
UDN-19-33	DRMR-M-163	32.4	29.2	33.5	31.7	43.9	39.2	28.9	39.9	9.0	34.2	49.6	22.4	33.4	45
UDN-19-34	DRMRSJ-34	33.2	25.8	32.5	30.5	42.0	40.7	27.4	39.2	15.3	36.4	44.1	28.6	34.2	50
UDN-19-35	DRMR 2018-44	28.1	29.3	34.5	30.6	42.6	43.5	31.1	40.4	13.2	39.5	44.9	29.6	35.6	50
UDN-19-36	PMW 18	34.1	30.1	29.1	31.1	40.9	43.5	22.4	35.4	11.2	43.6	42.2	19.7	32.4	40
UDN-19-37	BIOYSR	28.1	28.0	27.9	28.0	39.7	42.1	34.6	34.4	0.0	43.0	43.8	29.6	33.4	50
UDN-19-38	DLSC 1	22.4	28.0	30.2	26.9	45.0	29.9	16.2	36.8	4.1	24.6	42.2	29.9	28.6	30
UDN-19-39	PAB-14-25	34.0	27.3	29.4	30.3	49.5	49.3	21.5	35.4	18.7	34.2	48.0	20.7	34.7	40
UDN-19-40	DRMRSJ-21	33.4	28.0	30.8	30.7	44.8	42.1	39.2	37.9	12.9	33.5	45.8	27.5	35.5	40
UDN-19-41	DRMRSJ-1	29.2	29.9	30.2	29.8	48.6	43.5	27.4	37.1	9.2	34.0	43.5	37.7	35.1	50
UDN-19-42	DRMRDJ-2	31.5	30.1	31.9	31.2	43.9	46.4	24.9	38.8	14.7	34.1	43.3	25.4	33.9	60
UDN-19-43	DRMRPMJ-17	31.3	20.1	33.7	28.4	40.9	33.1	21.5	40.5	17.4	39.4	46.1	27.8	33.3	45
UDN-19-44	Rohini	31.7	25.8	34.6	30.7	42.2	34.6	35.3	41.2	8.2	40.0	47.5	35.2	35.5	50
UDN-19-45	DRMR 2018-35	33.1	28.0	34.6	31.9	43.5	43.5	25.8	41.0	16.8	41.3	44.5	22.8	34.9	45
UDN-19-46	DRMR 2018-41	28.2	26.6	32.5	29.1	36.6	45.0	32.9	39.5	10.8	42.6	38.2	21.2	33.3	40
UDN-19-47	PAB-14-10	33.5	28.1	25.6	29.1	46.9	46.4	28.1	31.6	15.2	40.1	42.8	28.1	34.9	30
UDN-19-48	PDZ-4	32.4	29.5	28.3	30.0	41.4	37.5	23.3	33.8	12.2	43.4	43.8	24.7	32.5	50
UDN-19-49	YSB 9	32.3	22.7	28.3	27.7	27.6	49.3	36.0	34.0	14.1	46.0	40.3	27.8	34.4	80
CD(P=0.05)		5.7	1.08	5.0	3.9	3.7	11.2	4.7	4.8	9.7	5.4	8.9	4.7	6.6	-
CV (%)		9.5	2.13	8.1	6.6	-	14.3	8.1	6.3	41.6	6.8	10.5	8.9	13.8	-

Check: Rohini, RL 1359 (SC); PHR-2 (TC-AB), GSL-1 (RC-WR); DLSC-1, BioYSR (RC-WR); YSB-9 (SC); PT-303 (RC-WR); RTM-314 (SC)

Table 4.2.2: Reaction of oilseed *Brassica* germplasm against *Alternaria* pod blight and SR in UDN (natural condition)

Code No.	Entries	% ABP (15 Days before harvest)							% SR incidence			
		PNT	HSR	LDH	JHS	SGN	SHL	Mean	MOR	PNT	SGN	Mean
UDN-19-01	RMM-10-1-1	22.8	28.1	32.9	31.4	21.9	24.0	26.8	0.0	45.0	0.0	15.0
UDN-19-02	DRMRSJ-42	28.3	31.1	32.7	23.1	17.3	24.7	26.2	12.9	57.1	13.0	27.7
UDN-19-03	DRMR-4005	30.0	25.8	30.0	25.1	19.0	24.0	25.6	0.0	39.1	14.2	17.8
UDN-19-04	DRMRIJ-12-52	38.9	26.9	30.1	28.8	18.8	23.7	27.9	12.9	0.0	15.8	9.6
UDN-19-05	DRMRSJ-4	43.5	22.4	28.9	24.4	19.2	26.9	27.5	24.7	9.2	20.3	18.1
UDN-19-06	DRMRSJ-19	22.5	32.2	30.0	32.1	19.3	27.0	27.2	12.9	42.0	11.8	22.2
UDN-19-07	DRMRSJ-25	24.7	15.0	26.3	22.1	20.1	27.9	22.7	0.0	0.0	19.9	6.6
UDN-19-08	RL 1359	24.2	124.9	27.1	26.4	23.4	27.1	42.2	0.0	18.4	21.8	13.4
UDN-19-09	RMWR-09-2	26.4	27.4	29.2	20.1	21.8	28.0	25.5	15.9	28.8	21.0	21.9
UDN-19-10	DRMR 2017-8	37.7	29.6	29.5	33.5	18.6	30.5	29.9	20.7	50.9	27.5	33.0
UDN-19-11	DRMRSJ-26	20.6	24.2	29.0	27.3	19.7	25.8	24.4	0.0	36.2	0.0	12.1
UDN-19-12	DRMRSJ-22	43.5	28.9	29.4	28.5	18.6	25.5	29.1	15.9	25.8	10.4	17.4
UDN-19-13	DRMRDJ-3	55.2	23.3	28.5	32.6	18.8	26.1	30.8	18.4	32.9	14.4	21.9
UDN-19-14	PHR 2	26.4	25.8	30.8	26.3	22.7	25.6	26.3	28.3	13.3	15.9	19.2
UDN-19-15	RMT-10-15	58.4	30.1	35.9	25.0	23.0	24.9	32.9	20.7	67.5	19.3	35.8
UDN-19-16	NPJ-237	31.6	19.0	29.2	27.7	20.8	25.8	25.7	22.8	22.5	10.6	18.6
UDN-19-17	DRMRSJ-31	24.7	22.4	28.9	20.7	27.2	32.9	26.1	22.8	9.2	20.0	17.3
UDN-19-18	RMM-12-2-18	22.8	26.9	27.5	31.8	21.0	27.6	26.3	28.3	13.3	19.4	20.3
UDN-19-19	DRMR 5206	39.1	21.0	29.4	25.9	32.1	26.6	29.0	0.0	48.0	20.2	22.7
UDN-19-20	DRMRSJ-33	36.1	32.2	28.6	22.3	20.0	26.1	27.5	18.4	13.3	24.6	18.8
UDN-19-21	PAB-14-5	11.4	20.0	28.0	34.0	18.9	28.0	23.4	20.7	9.2	18.6	16.2
UDN-19-22	NPJ-238	28.3	25.8	29.2	26.9	21.7	26.7	26.4	15.9	39.1	25.8	26.9
UDN-19-23	DRMRSJ-20	37.7	29.6	28.7	32.8	18.4	28.0	29.2	18.4	13.3	15.5	15.8
UDN-19-24	RMM-12-3-18	18.4	21.5	31.1	26.0	32.8	24.3	25.7	20.7	16.6	0.0	12.4
UDN-19-25	DRMRDJ-1	50.8	32.9	31.6	33.0	24.3	23.5	32.7	40.7	42.0	12.1	31.6
UDN-19-26	GSL 1	55.2	15.0	34.0	31.8	19.2	24.0	29.9	28.3	0.0	16.6	15.0
UDN-19-27	DRMR 2018-37	25.8	20.5	29.2	28.4	31.0	24.9	26.6	24.7	9.2	17.3	17.1
UDN-19-28	DRMRSJ-18	24.2	28.9	31.4	29.3	19.1	24.2	26.2	20.7	18.4	15.2	18.1
UDN-19-29	DRMRSJ-32	20.6	33.9	29.1	30.5	27.3	24.5	27.6	15.9	13.3	11.8	13.7
UDN-19-30	RMM-12-1-18	24.7	24.2	28.7	32.5	18.0	23.7	25.3	20.7	32.9	17.6	23.7
UDN-19-31	DRMRSJ-7	28.0	22.4	30.6	25.8	19.0	25.2	25.2	15.9	16.6	23.2	18.6
UDN-19-32	PT 303	50.9	33.2	34.7	21.0	22.9	26.9	31.6	46.4	39.1	30.3	38.6
UDN-19-33	DRMR-M-163	17.8	24.9	27.7	33.1	20.8	26.0	25.0	24.7	0.0	15.5	13.4
UDN-19-34	DRMRSJ-34	18.4	23.3	27.6	31.2	22.4	27.2	25.0	28.3	0.0	18.9	15.7
UDN-19-35	DRMR 2018-44	29.5	26.6	28.9	33.2	20.6	25.4	27.4	18.4	25.8	0.0	14.7
UDN-19-36	PMW 18	0.0	19.0	29.9	32.5	18.7	27.1	21.2	24.7	35.8	12.6	24.4
UDN-19-37	BIOYSR	34.6	31.1	30.3	32.1	24.7	23.3	29.4	46.4	9.2	14.3	23.3
UDN-19-38	DLSC 1	28.3	15.0	15.5	22.7	22.0	16.9	20.0	24.7	29.9	19.0	24.5
UDN-19-39	PAB-14-25	15.5	17.4	27.2	26.9	19.1	28.0	22.3	28.3	0.0	20.9	16.4
UDN-19-40	DRMRSJ-21	24.7	34.6	27.3	22.5	20.2	27.2	26.1	24.7	39.1	16.0	26.6
UDN-19-41	DRMRSJ-1	28.3	24.2	27.7	29.2	32.6	23.5	27.6	26.6	16.6	14.2	19.1
UDN-19-42	DRMRDJ-2	31.6	20.0	26.9	26.5	20.2	27.3	25.4	37.8	26.6	21.6	28.6
UDN-19-43	DRMRPMJ-17	28.3	16.8	28.9	29.0	20.1	25.4	24.8	20.7	25.8	23.6	23.4
UDN-19-44	Rohini	26.4	32.9	30.4	26.5	23.4	26.8	27.7	36.3	25.8	15.1	25.7
UDN-19-45	DRMR 2018-35	20.6	20.5	30.1	27.4	19.3	26.9	24.1	12.9	47.9	18.8	26.5
UDN-19-46	DRMR 2018-41	28.3	27.4	30.2	28.4	19.8	23.6	26.3	0.0	42.0	0.0	14.0
UDN-19-47	PAB-14-10	32.9	25.8	29.3	29.0	21.8	27.3	27.7	15.9	22.5	16.3	18.2
UDN-19-48	PDZ-4	24.7	18.4	30.1	25.3	20.3	26.9	24.3	18.4	32.9	19.3	23.5
UDN-19-49	YSB 9	42.1	28.1	34.4	29.9	19.1	26.9	30.1	20.7	40.7	23.4	28.3
CD(P=0.05)		12.2	4.6	2.4	5.7	4.6	4.9	5.7	6.1	22.6	4.7	11.1
CV (%)		20.5	9.1	4.0	15.5	10.6	9.3	11.5	14.9	44.6	14.3	24.6

Table 4.2.3: Reaction of oilseed Brassica germplasm to white rust under UDN (natural condition)

Entries	% WR severity									% SH					
	JHS	NDH	PNT	HSR	JAG	MOR	LDH	SGN	Mean	JHS	LDH	MOR	PNT	SGN	Mean
RMM-10-1-1	31.5	33.9	28.3	38.6	10.1	37.5	24.8	27.9	29.1	22.3	7.4	26.3	14.5	16.7	17.4
DRMRSJ-42	29.6	26.6	28.3	26.9	15.7	38.1	20.1	24.1	26.2	24.2	6.4	27.7	16.7	10.7	17.1
DRMR-4005	23.4	37.6	17.8	33.9	18.8	40.4	29.9	20.6	27.8	14.8	9.3	25.9	16.0	12.2	15.6
DRMRIJ-12-52	21.4	28.9	6.5	37.9	17.8	37.5	30.9	21.7	25.3	16.3	11.2	25.3	0.0	17.4	14.0
DRMRSJ-4	20.9	26.1	25.8	0.0	18.6	0.0	0.0	0.0	11.4	16.7	8.1	0.0	10.6	0.0	7.1
DRMRSJ-19	0.3	26.1	29.5	12.3	10.6	18.4	15.7	0.0	14.1	0.3	2.0	14.0	23.6	0.0	8.0
DRMRSJ-25	16.1	26.5	29.9	16.8	11.0	35.1	19.2	0.0	19.3	10.5	5.5	22.0	16.7	0.0	10.9
RL 1359	32.4	30.0	32.9	30.1	15.7	35.7	24.8	32.3	29.2	24.3	10.3	22.1	27.3	16.0	20.0
RMWR-09-2	19.8	35.6	34.6	34.0	9.2	40.4	29.2	18.9	27.7	17.5	6.9	22.9	30.9	0.0	15.6
DRMR 2017-8	23.0	28.1	28.0	31.1	13.6	35.8	29.8	19.2	26.1	14.8	16.1	19.8	24.8	0.0	15.1
DRMRSJ-26	19.1	23.2	24.2	12.9	9.2	10.5	4.1	0.0	12.9	11.3	2.9	0.0	7.5	0.0	4.3
DRMRSJ-22	0.3	27.7	22.5	17.4	20.4	13.7	18.8	28.9	18.7	0.3	2.9	0.0	7.5	18.1	5.8
DRMRDJ-3	31.5	0.0	0.0	9.6	21.5	5.4	0.0	25.7	11.7	23.8	0.0	0.0	0.0	27.6	10.3
PHR 2	31.5	35.2	29.9	40.5	17.4	36.1	24.2	21.2	29.5	25.6	5.8	26.2	16.0	10.0	16.7
RMT-10-15	17.5	25.3	15.7	0.0	9.2	13.1	0.0	24.9	13.2	13.2	14.4	0.0	0.0	17.8	9.1
NPJ-237	25.5	31.1	29.5	33.2	21.1	40.5	30.0	0.0	26.4	19.8	2.9	21.1	0.0	0.0	8.8
DRMRSJ-31	33.2	13.6	37.7	34.0	14.7	38.7	28.8	30.9	28.9	24.3	7.0	28.4	16.0	20.1	19.2
RMM-12-2-18	18.1	32.5	36.2	36.6	12.9	42.3	25.0	19.5	27.9	12.7	5.5	31.2	18.4	11.0	15.8
DRMR 5206	28.7	23.2	24.2	35.3	15.7	35.7	16.1	21.9	25.1	21.9	6.9	21.7	0.0	10.8	12.3
DRMRSJ-33	33.3	26.1	29.5	24.2	20.4	35.7	25.8	19.2	26.8	25.6	2.9	21.9	7.5	10.2	13.6
PAB-14-5	18.3	0.0	17.8	0.0	11.4	6.7	2.0	0.0	7.0	13.0	0.0	0.0	0.0	0.0	2.6
NPJ-238	16.8	31.1	31.6	37.9	17.0	36.8	30.1	22.3	28.0	10.7	4.1	26.9	14.5	14.6	14.1
DRMRSJ-20	24.3	23.6	31.4	18.4	6.5	35.8	25.3	20.8	23.3	18.1	2.9	23.5	14.5	9.8	13.8
RMM-12-3-18	24.2	32.9	36.1	26.6	23.2	35.8	22.4	0.0	25.1	18.4	7.0	27.0	12.8	0.0	13.0
DRMRDJ-1	28.3	0.0	9.2	0.0	9.2	0.0	9.6	23.8	10.0	20.3	0.0	0.0	7.5	21.3	9.8
GSL 1	30.5	15.5	0.0	0.0	6.5	0.0	0.0	0.0	6.6	21.3	4.9	0.0	0.0	0.0	5.2
DRMR 2018-37	0.3	17.8	9.2	17.4	17.8	0.0	0.0	0.0	7.8	0.3	2.9	0.0	0.0	0.0	0.6
DRMRSJ-18	0.3	23.6	28.0	36.6	8.2	34.5	20.0	0.0	18.9	0.3	2.0	21.5	15.0	0.0	7.8
DRMRSJ-32	26.5	38.3	22.5	30.1	17.4	35.7	30.6	21.6	27.8	18.4	4.1	23.2	5.3	13.4	12.9
RMM-12-1-18	29.4	26.9	22.5	20.5	20.8	35.8	26.1	27.9	26.2	21.0	5.5	23.3	16.0	22.9	17.7
DRMRSJ-7	0.3	0.0	19.7	0.0	0.0	11.5	2.0	0.0	4.2	0.3	4.9	0.0	9.2	0.0	2.9
PT 303	0.3	0.0	0.0	0.0	6.5	0.0	0.0	20.0	3.3	0.3	11.6	0.0	0.0	10.6	4.5
DRMR-M-163	0.3	35.9	19.7	39.2	22.7	39.9	25.4	22.1	25.7	0.3	0.0	28.6	19.9	13.4	12.4
DRMRSJ-34	0.3	36.6	24.2	26.9	18.4	23.6	17.7	30.2	22.2	0.3	2.0	17.4	9.2	21.5	10.1
DRMR 2018-44	29.6	37.9	31.6	35.3	15.7	40.4	29.6	34.4	31.8	23.1	8.3	24.1	24.1	12.5	18.4
PMW 18	0.3	28.5	10.5	12.9	0.0	11.5	0.0	30.9	11.8	0.3	0.0	0.0	5.3	12.6	3.6
BIOYSR	27.0	24.5	19.7	0.0	10.1	17.8	0.0	33.3	16.6	20.3	0.0	17.0	0.0	21.6	11.8
DLSC 1	0.3	0.0	0.0	0.0	22.4	0.0	0.0	19.5	5.3	0.3	0.0	0.0	0.0	13.7	2.8
PAB-14-25	0.3	36.9	28.0	20.0	9.2	17.6	22.1	28.1	20.3	0.3	2.0	14.4	0.0	14.6	6.3
DRMRSJ-21	26.4	15.0	31.4	16.8	9.2	18.4	16.2	25.2	19.8	16.8	3.5	15.3	15.0	23.1	14.7
DRMRSJ-1	23.8	0.0	22.5	0.0	6.5	7.7	0.0	18.8	9.9	15.1	5.5	0.0	19.6	17.3	11.5
DRMRDJ-2	0.3	36.3	22.5	16.2	18.4	8.1	15.2	20.8	17.2	0.3	2.0	0.0	10.6	13.8	5.3
DRMRPMJ-17	20.8	30.7	28.0	34.3	18.8	28.7	22.3	41.7	28.2	11.5	5.7	19.0	19.9	28.5	16.9
Rohini	22.6	38.6	32.9	43.1	9.2	40.4	26.5	38.8	31.5	15.7	5.5	24.3	20.8	16.9	16.6
DRMR 2018-35	0.3	28.8	22.5	23.3	10.1	28.1	22.0	33.2	21.0	0.3	7.9	11.9	18.4	13.9	10.5
DRMR 2018-41	17.7	37.9	25.8	0.0	17.4	19.5	0.0	33.1	18.9	14.1	2.9	0.0	14.4	20.1	10.3
PAB-14-10	15.5	23.6	18.4	0.0	17.0	16.4	4.1	30.3	15.7	11.1	0.0	0.0	0.0	24.7	7.2
PDZ-4	26.5	0.0	0.0	0.0	17.4	8.5	15.6	26.7	11.8	17.8	4.1	0.0	0.0	19.2	8.2
YSB 9	15.0	0.0	13.3	0.0	21.9	14.4	0.0	41.9	13.3	11.3	4.1	0.0	21.3	38.4	15.0
CD(P=0.05)	5.3	3.5	13.5	4.9	N/A	3.2	5.4	5.3	5.9	3.0	5.5	3.6	12.8	5.7	6.1
CV (%)	24.7	-	29.5	12.6	57.9	6.9	16.7	12.9	23.0	25.9	56.0	12.5	55.1	22.5	34.4

Table 4.2.4: Reaction of oilseed Brassica germplasm to Downy mildew and Powdery mildew (natural condition)

Entries	% DM severity (20 DAS)			% Powdery mildew severity (100 DAS)				
	JHS	PNT	Mean	SKN	JHS	JAG	MOR	Mean
RMM-10-1-1	12.5	44.1	28.3	71.5	26.5	20.3	45.1	40.8
DRMRSJ-42	9.7	39.2	24.5	80.8	33.0	10.1	43.7	41.9
DRMR-4005	13.6	37.7	25.6	67.5	28.7	24.7	38.1	39.7
DRMRIJ-12-52	25.4	34.7	30.1	60.1	28.1	22.8	37.4	37.1
DRMRSJ-4	13.0	31.6	22.3	74.3	28.7	0.0	45.0	37.0
DRMRSJ-19	0.3	39.2	19.7	71.5	25.9	0.0	53.8	37.8
DRMRSJ-25	21.9	37.7	29.8	67.5	27.7	0.0	46.1	35.3
RL 1359	11.3	37.7	24.5	60.1	29.4	20.6	45.9	39.0
RMWR-09-2	18.3	36.2	27.3	74.3	26.6	24.7	48.3	43.5
DRMR 2017-8	14.5	31.4	23.0	83.5	25.1	0.0	51.4	40.0
DRMRSJ-26	10.1	30.0	20.0	83.5	22.7	0.0	53.2	39.9
DRMRSJ-22	0.3	39.2	19.7	80.8	22.7	21.5	51.9	44.2
DRMRDJ-3	12.2	31.6	21.9	60.1	24.3	22.8	51.3	39.6
PHR 2	14.4	40.7	27.5	74.3	18.8	24.7	52.3	42.5
RMT-10-15	12.2	33.1	22.7	60.1	26.4	20.6	16.4	30.9
NPJ-237	12.5	39.1	25.8	60.1	17.6	20.6	39.8	34.5
DRMRSJ-31	20.0	34.7	27.4	71.5	23.4	25.8	53.8	43.6
RMM-12-2-18	13.0	36.1	24.5	69.4	19.9	26.5	52.1	42.0
DRMR 5206	11.8	40.7	26.2	67.5	29.8	21.8	50.9	42.5
DRMRSJ-33	8.6	34.7	21.7	67.5	21.1	22.8	53.2	41.2
PAB-14-5	24.2	37.7	31.0	58.4	29.5	18.4	53.0	39.8
NPJ-238	26.8	39.2	33.0	74.3	25.9	20.6	53.1	43.5
DRMRSJ-20	21.9	33.2	27.5	74.3	21.0	31.6	53.8	45.2
RMM-12-3-18	19.4	42.1	30.7	80.8	28.0	0.0	39.9	37.2
DRMRDJ-1	24.4	0.0	12.2	63.4	26.7	17.4	39.2	36.7
GSL 1	13.5	0.0	6.8	9.2	29.0	30.0	15.2	20.9
DRMR 2018-37	0.3	34.7	17.5	63.4	11.1	26.4	40.5	35.3
DRMRSJ-18	0.3	29.9	15.1	63.4	20.9	22.8	37.5	36.2
DRMRSJ-32	12.9	42.1	27.5	60.1	25.3	24.7	37.0	36.8
RMM-12-1-18	12.4	48.4	30.4	80.8	23.1	21.5	37.6	40.8
DRMRSJ-7	13.0	39.2	26.1	71.5	24.3	19.3	40.5	38.9
PT 303	0.3	28.3	14.3	42.1	25.7	24.7	13.1	26.4
DRMR-M-163	0.3	40.6	20.5	60.1	22.1	22.8	39.9	36.2
DRMRSJ-34	14.7	40.9	27.8	63.4	19.2	0.0	40.9	30.9
DRMR 2018-44	13.3	42.1	27.7	63.4	26.3	22.8	42.7	38.8
PMW 18	0.3	40.7	20.5	36.2	29.0	21.5	35.7	30.6
BIOYSR	10.9	37.7	24.3	60.1	24.3	20.6	35.7	35.2
DLSC 1	0.3	0.0	0.2	0	28.3	0.0	0.0	7.1
PAB-14-25	0.3	44.1	22.2	70.2	26.0	26.6	30.5	38.3
DRMRSJ-21	14.1	40.7	27.4	83.5	20.4	0.0	45.4	37.3
DRMRSJ-1	11.8	39.2	25.5	74.3	14.8	20.6	36.8	36.6
DRMRDJ-2	0.3	25.8	13.1	60.1	16.8	17.4	51.4	36.4
DRMRPMJ-17	15.8	24.2	20.0	80.8	27.7	17.4	51.5	44.4
Rohini	20.6	21.1	20.8	80.8	27.8	0.0	50.6	39.8
DRMR 2018-35	0.3	40.6	20.5	80.8	25.9	24.7	51.4	45.7
DRMR 2018-41	14.4	40.5	27.5	73.4	23.9	29.0	52.6	44.7
PAB-14-10	15.5	34.7	25.1	60.1	28.2	17.9	53.2	39.9
PDZ-4	9.5	36.2	22.9	67.5	31.0	0.0	40.4	34.7
YSB 9	12	30.0	21.0	56.8	21.9	22.5	35.7	34.2
CD(P=0.05)	2.6	10.9	6.7	14.6	6.1	5.9	1.17	6.9
CV (%)	28.6	15.5	22.0	11.1	20.8	16.8	1.35	12.5

Table 4.3.1: Reaction of oilseed Brassica germplasm against Alternaria blight in NDN for AB (natural condition)

Code No.	Entries	% ABL (75 DAS)					% ABL (100 DAS)					% ABP (15 Days Before Harvest)				
		SHL	MOR	DOL	Mean	VAR	PNT	DOL	LDH	HSR	Mean	PNT	LDH	HSR	SHL	Mean
NDN-19-01	DRMRSJ-1	26.7	30.1	32.4	29.7	40.0	34.7	38.2	45.8	37.9	39.2	26.4	30.4	34.0	25.1	29.0
NDN-19-02	DRMRSJ-34	27.5	30.1	32.4	30.0	45.0	33.1	38.2	45.9	32.2	37.3	18.4	31.5	27.4	24.6	25.5
NDN-19-03	DRMRSJ-4	28.8	30.7	31.8	30.4	50.0	34.7	37.4	46.8	33.2	38.0	24.7	31.4	26.6	24.9	26.9
NDN-19-04	DRMRPMJ-17	23.4	25.8	34.7	28.0	45.0	29.9	40.8	43.5	24.9	34.8	18.4	31.3	23.3	21.5	23.6
NDN-19-05	NPJ-217	28.6	28.6	31.9	29.7	50.0	36.2	37.4	45.3	28.1	36.8	24.7	30.8	24.9	24.5	26.2
NDN-19-06	BIOYSR (RC)	30.4	29.3	31.9	30.5	40.0	34.7	37.4	48.7	36.6	39.4	30.0	30.2	32.5	24.2	29.2
NDN-19-07	DRMR 5206	28.7	32.6	26.0	29.1	40.0	34.7	31.3	44.7	26.9	34.4	24.2	29.8	22.4	25.0	25.3
NDN-19-08	DRMRSJ-18	30.9	30.7	32.4	31.3	40.0	37.7	38.2	49.8	39.2	41.2	22.5	31.9	33.9	24.2	28.1
NDN-19-09	DRMR 2018-44	31.4	25.8	32.4	29.8	40.0	40.7	38.2	48.0	29.6	39.1	20.6	30.7	25.8	28.5	26.4
NDN-19-10	DRMRDJ-1	32.2	29.3	34.7	32.1	50.0	39.2	40.8	48.1	38.6	41.7	25.8	30.6	33.2	27.9	29.4
NDN-19-11	RMM-10-1-1	32.2	24.4	33.3	30.0	50.0	37.7	39.1	50.4	32.9	40.0	24.7	32.7	28.1	27.5	28.2
NDN-19-12	Rohini (SC)	31.6	22.5	37.1	30.4	40.0	40.7	42.8	53.1	28.9	41.4	22.5	34.0	26.9	24.8	27.0
NDN-19-13	DRMR 4005	29.9	25.4	33.7	29.7	45.0	37.7	39.4	47.1	25.8	37.5	28.3	31.7	24.2	24.7	27.2
NDN-19-14	DRMRSJ-21	32.2	30.7	33.7	32.2	30.0	39.2	39.4	48.1	33.9	40.1	28.3	31.0	27.4	25.3	28.0
NDN-19-15	DRMRSJ-42	28.7	24.4	32.7	28.6	50.0	43.5	39.1	49.5	32.5	41.1	28.3	32.2	28.9	24.4	28.4
NDN-19-16	DRMRSJ-25	30.0	25.1	31.6	28.9	50.0	37.7	37.4	49.2	28.9	38.3	20.6	31.3	24.9	26.3	25.8
NDN-19-17	DRMRDJ-2	29.6	23.9	33.2	28.9	50.0	40.7	39.1	50.4	32.5	40.7	30.0	30.7	28.1	24.9	28.4
NDN-19-18	DRMRSJ-32	27.5	24.4	26.0	26.0	35.0	40.7	31.3	48.0	32.2	38.0	24.2	31.9	24.2	23.9	26.0
NDN-19-19	RMM-12-2-18	29.0	22.7	33.5	28.4	40.0	40.7	39.1	50.5	33.2	40.9	28.0	32.0	26.6	23.7	27.6
NDN-19-20	DRMRSJ-20	28.8	26.4	31.9	29.1	30.0	34.7	37.4	49.3	34.0	38.9	20.6	31.6	29.6	22.3	26.0
NDN-19-21	DRMR 2017-8	29.5	28.6	32.4	30.1	40.0	42.1	38.2	48.0	36.0	41.1	28.3	32.3	30.1	23.0	28.4
NDN-19-22	DRMR 2018-37	29.7	27.5	34.7	30.6	50.0	34.7	40.8	50.6	30.1	39.1	28.3	33.0	24.9	23.6	27.4
NDN-19-23	DRMR-M-163	27.9	23.6	33.6	28.4	30.0	39.2	39.1	47.2	32.9	39.6	22.5	30.3	26.9	23.0	25.7
NDN-19-24	DRMRDJ-3	29.0	26.4	31.8	29.1	50.0	43.5	37.4	49.9	26.9	39.4	28.3	31.3	22.4	22.4	26.1
NDN-19-25	DRMRSJ-22	29.0	30.1	26.0	28.3	40.0	42.1	31.3	43.5	18.4	33.8	20.6	30.9	16.8	22.5	22.7
NDN-19-26	DRMRSJ-19	29.4	29.9	25.4	28.2	50.0	43.5	31.1	50.3	27.4	38.1	20.6	31.5	24.2	23.0	24.8
NDN-19-27	PHR-2 (TC)	30.0	32.6	26.0	29.5	40.0	39.1	31.3	49.2	34.6	38.5	15.7	30.3	28.9	23.4	24.6
NDN-19-28	PMW 18	30.5	31.8	31.8	31.3	40.0	34.6	37.4	52.3	37.9	40.6	22.5	32.8	30.1	23.1	27.1
NDN-19-29	DRMRSJ-26	27.7	31.2	31.8	30.2	50.0	37.7	37.4	46.5	35.3	39.3	42.1	30.7	31.1	21.4	31.3
NDN-19-30	DRMRSJ-33	29.2	28.0	26.5	27.9	40.0	39.2	31.3	48.3	31.4	37.5	34.7	30.2	26.9	22.3	28.5
NDN-19-31	DRMRSJ-31	29.3	27.3	26.5	27.7	40.0	37.7	31.3	44.6	32.2	36.5	30.0	29.9	25.8	23.0	27.2
NDN-19-32	RL 1359 (SC)	30.0	25.8	37.1	31.0	35.0	42.1	43.1	47.0	33.2	41.4	26.4	29.8	24.9	23.2	26.1
NDN-19-33	DRMR-M-177	30.2	27.3	26.5	28.0	40.0	46.4	31.3	44.8	28.1	37.6	24.7	29.7	23.3	22.9	25.1
NDN-19-34	RH 1599-40	32.9	28.6	26.5	29.3	50.0	40.7	31.3	51.7	33.9	39.4	39.1	31.6	27.4	25.5	30.9
NDN-19-35	DRMR 2018-35	33.7	30.7	25.4	29.9	50.0	36.2	31.0	48.7	31.4	36.8	24.7	30.9	24.2	26.1	26.5
NDN-19-36	DRMR 2018-41	29.1	30.2	26.7	28.7	50.0	39.2	31.8	45.8	37.9	38.7	26.4	29.5	31.4	22.5	27.5
NDN-19-37	RMM 12-1-18	30.0	30.8	25.4	28.7	40.0	40.7	31.0	49.9	26.6	37.0	20.6	32.2	21.5	23.4	24.4
NDN-19-38	DRMRSJ-7	29.3	31.2	25.4	28.6	50.0	43.5	31.1	46.9	28.9	37.6	26.4	31.5	23.3	22.9	26.0
NDN-19-39	PAB-14-5	28.4	21.2	31.8	27.1	40.0	36.2	37.4	49.3	34.6	39.4	10.5	30.6	27.4	22.3	22.7
CD(P=0.05)		3.5	1.01	4.9	3.1	-	7.6	4.0	3.6	3.6	4.7	9.0	1.6	3.6	2.5	4.2
CV (%)		5.7	1.8	7.8	5.1	-	9.6	5.5	3.6	5.6	6.1	17.7	2.5	6.6	5.2	8.0

Check: Rohini, RL 1359 (SC); PHR-2 (TC-AB), BioYSR (RC-WR)

Table 4.3.2: Reaction of oilseed Brassica germplasm against WR, DM, PM & SR in NDN for Alternaria blight (natural condition)

Entries	% WR (100 DAS)					% SH				% DM	% PM	% SR	
	MOR	PNT	HSR	LDH	Mean	MOR	LDH	PNT	Mean	PNT	MOR	MOR	PNT
DRMRSJ-1	0.0	19.7	0.0	0.0	4.9	0.0	3.8	18.2	7.3	40.6	37.5	0.0	16.6
DRMRSJ-34	14.4	22.5	26.9	22.8	21.6	0.0	2.0	14.4	5.5	44.1	39.9	15.9	16.6
DRMRSJ-4	7.2	0.0	0.0	3.5	2.7	0.0	5.2	0.0	1.7	37.7	41.6	15.9	39.1
DRMRPMJ-17	36.3	28.3	38.6	17.9	30.3	23.3	3.5	26.5	17.7	29.9	44.5	18.4	36.2
NPJ-217	35.7	31.6	33.9	29.0	32.6	22.2	7.6	30.7	20.2	40.7	43.2	0.0	50.7
BIOYSR	20.1	30.0	12.9	14.5	19.4	14.1	3.2	12.7	10.0	39.2	37.5	26.6	16.6
DRMR 5206	35.7	28.3	16.2	23.7	26.0	28.4	4.3	14.4	15.7	39.1	39.9	28.3	16.6
DRMRSJ-18	36.9	28.3	23.3	24.8	28.3	30.6	3.5	25.3	19.8	39.2	40.9	18.4	19.6
DRMR 2018-44	39.8	34.7	33.2	30.1	34.4	25.3	6.0	29.3	20.2	47.9	39.2	15.9	16.6
DRMRDJ-1	5.4	0.0	7.5	0.0	3.2	0.0	0.0	0.0	0.0	31.4	37.0	20.7	56.8
RMM-10-1-1	40.9	33.2	37.9	33.2	36.3	27.9	4.5	15.9	16.1	40.5	35.8	18.4	13.3
Rohini	41.1	31.6	43.1	32.4	37.0	26.0	7.3	19.6	17.6	40.6	35.7	30.0	13.3
DRMR 4005	38.1	33.2	34.3	30.1	33.9	26.7	9.5	21.3	19.2	45.0	46.3	28.3	45.0
DRMRSJ-21	20.3	31.6	0.0	21.7	18.4	0.0	2.0	19.9	7.3	34.6	53.8	20.7	18.4
DRMRSJ-42	36.3	29.9	21.5	34.1	30.5	21.1	2.5	9.2	10.9	37.7	47.8	0.0	16.6
DRMRSJ-25	35.7	31.6	27.4	23.1	29.4	20.5	3.2	25.3	16.3	36.2	49.5	15.9	0.0
DRMRDJ-2	16.4	24.2	12.3	14.6	16.9	0.0	5.6	10.7	5.4	33.1	40.4	15.9	45.0
DRMRSJ-32	35.7	22.5	16.8	27.8	25.7	22.8	6.4	7.5	12.2	39.2	48.4	18.4	15.0
RMM-12-2-18	38.1	29.9	28.1	27.5	30.9	25.2	6.3	16.7	16.1	39.1	48.2	37.8	30.3
DRMRSJ-20	37.5	28.3	24.2	26.8	29.2	26.6	2.0	9.2	12.6	42.7	49.0	28.3	26.6
DRMR 2017-8	36.9	31.4	30.1	33.6	33.0	18.9	21.6	41.1	27.2	29.9	43.7	15.9	28.3
DRMR 2018-37	8.1	0.0	28.9	0.0	9.3	0.0	0.0	0.0	0.0	43.5	47.4	28.3	50.9
DRMR-M-163	39.9	20.6	0.0	20.6	20.3	26.3	2.5	10.7	13.2	39.1	39.9	26.6	13.3
DRMRDJ-3	0.0	15.7	7.5	0.0	5.8	0.0	1.4	0.0	0.5	42.6	39.2	18.4	54.2
DRMRSJ-22	15.2	29.9	15.7	18.6	19.9	0.0	4.1	31.3	11.8	42.1	51.7	15.9	49.3
DRMRSJ-19	4.6	24.7	0.0	10.8	10.0	0.0	4.1	24.0	9.3	39.1	50.9	20.7	13.3
PHR-2	27.3	29.5	25.8	13.1	23.9	14.9	1.4	0.0	5.4	37.7	53.2	28.3	0.0
PMW 18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.9	51.9	18.4	28.4
DRMRSJ-26	6.0	22.5	12.9	13.3	13.7	0.0	2.9	7.5	3.5	36.1	48.4	20.7	48.0
DRMRSJ-33	35.7	20.6	26.9	25.1	27.1	25.0	3.5	16.7	15.0	45.6	50.1	0.0	58.3
DRMRSJ-31	35.2	28.3	37.9	35.5	34.2	24.8	7.0	34.2	22.0	37.7	50.8	20.7	16.6
RL 1359	37.5	29.9	38.6	30.1	34.0	19.5	11.1	33.1	21.3	34.7	43.7	20.7	9.2
DRMR-M-177	39.9	28.3	25.8	31.0	31.2	28.4	5.2	31.0	21.6	28.0	38.1	0.0	19.6
RH 1599-40	23.7	26.6	34.6	16.3	25.3	17.1	4.5	23.8	15.1	43.5	43.7	18.4	32.9
DRMR 2018-35	35.2	34.7	24.9	24.9	29.9	20.1	5.5	34.5	20.0	46.4	46.0	0.0	34.6
DRMR 2018-41	6.2	17.8	0.0	0.0	6.0	0.0	4.5	5.2	3.2	45.6	45.0	15.9	50.9
RMM 12-1-18	35.7	34.7	15.7	23.6	27.4	22.4	5.2	29.3	19.0	46.5	51.8	18.4	49.0
DRMRSJ-7	7.3	10.5	0.0	11.9	7.4	0.0	2.0	5.2	2.4	31.4	53.1	0.0	38.7
PAB-14-5	12.9	12.9	0.0	0.0	6.4	0.0	0.0	0.0	0.0	44.1	45.0	15.9	25.8
CD(P=0.05)	3.5	9.1	4.9	5.9	5.9	3.6	6.0	17.3	9.0	10.5	1.1	4.9	31.7
CV (%)	6.9	18.5	12.4	15.1	13.2	12.1	65.3	50.6	42.7	13.2	1.2	12.6	54.9

4.4.1: Reaction of oilseed Brassica germplasm against AB in NDN for White Rust (natural condition)

Code No	Entries	% AB severity (100 DAS)					% ABP (DBH)			
		MOR	PNT	HSR	SHL	Mean	PNT	HSR	SHL	Mean
NDN-19-40	DRMRSJ-9-1-1	24.4	36.3	32.9	32.9	31.6	33.1	24.9	24.8	27.6
NDN-19-41	DRMRIJ 12-50	22.7	46.4	26.9	34.0	32.5	28.3	21.5	24.8	24.8
NDN-19-42	DRMRSJ-34	28.0	39.2	31.4	33.2	33.0	29.9	25.8	24.8	26.8
NDN-19-43	DRMRIJ-16-94-1	29.3	37.7	34.0	33.4	33.6	25.8	26.6	24.4	25.6
NDN-19-44	DRMRIJ-16-131-1	28.7	40.7	30.1	32.8	33.1	30.0	23.3	23.4	25.6
NDN-19-45	DRMRCI 126	29.5	40.7	32.2	34.5	34.2	26.4	24.2	27.0	25.9
NDN-19-46	DRMRSJ-7	29.8	40.6	34.6	33.6	34.7	22.8	22.4	25.9	23.7
NDN-19-47	DRMRDJ-1	30.7	36.3	29.6	33.0	32.4	22.5	25.8	24.7	24.3
NDN-19-48	DRMRIJ 12-27	31.2	33.1	27.4	34.5	31.6	28.3	21.5	26.8	25.5
NDN-19-49	DRMRSJ-20	32.6	34.7	31.1	31.5	32.5	20.6	23.3	24.0	22.7
NDN-19-50	DRMRIJ 12-40	28.0	33.2	32.9	32.4	31.6	15.7	24.9	23.3	21.3
NDN-19-51	DRMRSJ-22	28.6	30.0	28.9	31.6	29.8	18.4	24.2	24.1	22.3
NDN-19-52	DRMR 2018-37	31.2	30.0	32.5	32.0	31.4	20.6	25.8	24.7	23.7
NDN-19-53	DRMRSJ-26	31.8	36.2	35.3	32.3	33.9	15.7	27.4	24.7	22.6
NDN-19-54	DRMRPJ-17	22.9	33.1	26.6	24.7	26.9	15.7	21.5	19.3	18.8
NDN-19-55	DRMRIJ 12-52	30.7	37.7	34.0	34.4	34.2	26.4	28.1	27.0	27.2
NDN-19-56	DRMRIJ 12-06	30.1	42.1	34.6	32.6	34.9	28.3	23.3	26.6	26.1
NDN-19-57	DRMR 2018-44	30.7	34.7	36.6	35.3	34.3	28.3	28.9	27.5	28.2
NDN-19-58	DRMRIJ-16-112-1	28.1	37.7	26.9	34.7	31.9	31.4	22.4	24.5	26.1
NDN-19-59	DRMRSJ-19	30.1	42.1	33.2	33.6	34.7	22.5	27.4	24.7	24.9
NDN-19-60	DRMRIJ 12-14	31.2	33.2	38.6	33.0	34.0	26.4	30.1	22.9	26.5
NDN-19-61	DRMRSJ-1	32.6	37.7	30.1	35.0	33.8	15.7	25.8	27.0	22.8
NDN-19-62	DRMRIJ 12-44	25.3	40.6	31.4	32.9	32.5	24.7	24.9	25.8	25.1
NDN-19-63	DRMRSJ-32	31.9	37.7	28.9	33.0	32.9	26.4	23.3	24.5	24.7
NDN-19-64	DRMR 2018-35	31.8	39.2	35.3	34.8	35.3	29.9	28.1	25.2	27.7
NDN-19-65	DRMRIJ-16-19-2	28.0	40.7	26.6	33.9	32.3	28.0	21.0	26.6	25.2
NDN-19-66	DRMRIJ-16-274-2	29.9	45.0	31.1	34.9	35.2	29.5	22.4	24.9	25.6
NDN-19-67	NPJ-218	28.6	34.7	36.0	34.8	33.5	29.9	27.4	27.3	28.2
NDN-19-68	DRMRSJ-21	24.4	40.7	38.6	35.9	34.9	30.0	33.2	26.4	29.9
NDN-19-69	DRMRSJ-42	25.3	36.3	33.9	32.3	31.9	28.3	25.8	25.8	26.6
NDN-19-70	DRMRDJ-2	28.1	42.1	32.9	32.6	33.9	31.4	24.9	25.6	27.3
NDN-19-71	DRMRIJ 12-41	28.7	40.7	31.4	33.6	33.6	34.7	23.3	26.4	28.2
NDN-19-72	DRMRSJ-33	29.3	34.7	35.3	33.1	33.1	20.6	26.9	25.3	24.3
NDN-19-73	DRMRSJ-25	31.2	37.7	28.1	34.5	32.9	30.0	24.2	25.2	26.5
NDN-19-74	DRMRIJ-16-124-1	31.4	36.3	36.6	33.6	34.5	28.3	28.1	25.5	27.3
NDN-19-75	NPJ-217	30.7	40.7	40.5	32.0	36.0	30.0	33.9	24.2	29.4
NDN-19-76	DRMRSJ-4	30.2	37.7	18.4	32.2	29.6	29.9	16.8	23.2	23.3
NDN-19-77	DRMR 2018-41	31.4	34.6	30.1	32.3	32.1	26.4	25.8	25.0	25.7
NDN-19-78	DRMRIJ-16-28-1	32.5	36.2	32.5	34.2	33.9	29.9	24.9	25.7	26.8
NDN-19-79	DRMRIJ-16-99-2	25.1	46.4	33.2	31.9	34.2	26.4	26.9	24.9	26.0
NDN-19-80	DRMRCI 125	30.7	33.2	34.3	32.4	32.6	31.6	24.2	24.5	26.8
NDN-19-81	DRMRDJ-3	30.8	39.2	36.0	32.5	34.6	28.0	27.4	24.8	26.7
NDN-19-82	DRMRIJ 12-48	22.7	34.7	37.9	36.6	33.0	26.4	25.8	27.2	26.5
NDN-19-83	DRMRSJ-18	23.5	37.7	33.9	35.2	32.6	24.2	28.9	26.0	26.4
NDN-19-84	DRMRSJ-31	31.9	31.6	28.9	32.8	31.3	24.7	26.9	24.1	25.2
NDN-19-85	DRMRIJ-16-7-1	30.7	40.7	32.5	33.0	34.2	24.7	28.1	24.9	25.9
NDN-19-86	RL 1359	30.8	31.6	36.6	32.0	32.7	29.9	29.6	24.4	27.9
NDN-19-87	RH-1462	25.8	34.7	32.2	32.1	31.2	31.4	27.4	24.0	27.6
NDN-19-88	PRD-17-3	30.7	34.7	25.8	25.4	29.1	20.6	20.5	18.8	20.0
NDN-19-89	RMM-12-3-18	28.1	40.7	34.3	27.6	32.7	20.6	25.8	22.1	22.8
NDN-19-90	PHR-2 (TC)	27.3	31.6	28.1	28.4	28.9	30.0	24.2	23.1	25.8
NDN-19-91	NPJ-219	28.0	34.7	32.9	34.1	32.4	24.7	22.4	25.7	24.3
NDN-19-92	RH 1590	29.2	36.3	35.3	32.7	33.4	28.0	26.6	23.1	25.9
NDN-19-93	PAB-14-17	30.7	36.3	31.1	29.3	31.8	28.3	24.9	22.5	25.2
NDN-19-94	RMM-10-1-1	29.5	37.7	32.2	32.5	33.0	28.3	21.5	21.0	23.6
NDN-19-95	DRMR 2017-8	26.7	46.4	34.6	35.2	35.7	30.0	27.4	23.6	27.0
NDN-19-96	Giriraj	26.6	45.0	28.9	32.3	33.2	24.7	23.3	24.1	24.0
NDN-19-97	RH 1400-1	28.6	40.6	32.5	32.5	33.6	31.4	21.0	24.9	25.8
NDN-19-98	RMM-12-2-18	28.1	31.6	32.5	34.0	31.5	31.6	26.9	25.3	27.9
NDN-19-99	PDZ-4	31.2	49.3	39.2	32.6	38.1	33.1	28.9	24.1	28.7
NDN-19-100	PRD-17-1	14.2	34.6	33.2	26.4	27.1	15.7	28.1	21.9	21.9
NDN-19-101	DRMR 4005	22.7	37.7	34.6	32.3	31.8	29.9	23.3	24.9	26.0
NDN-19-102	BIOYSR (RC)	28.6	37.7	36.6	33.9	34.2	20.6	29.6	25.9	25.4
NDN-19-103	RH 1638	30.1	33.2	28.1	34.8	31.5	31.6	24.2	26.8	27.5
NDN-19-104	PAB-14-5	27.1	34.7	31.1	34.2	31.8	13.3	25.8	26.8	22.0
NDN-19-105	Rohini (SC)	29.2	33.1	30.1	34.9	31.8	39.2	22.4	24.9	28.8
NDN-19-106	RH 1400	28.6	33.2	35.3	30.9	32.0	24.2	27.4	24.9	25.5
NDN-19-107	RH 1599-7	30.1	37.7	32.9	34.5	33.8	28.0	24.9	25.8	26.2
NDN-19-108	PRD-17-2	13.1	40.7	28.9	26.9	27.4	29.5	26.6	22.2	26.1
NDN-19-109	RMM 12-1-18	30.7	37.7	33.2	34.6	34.0	26.4	25.8	27.4	26.5
NDN-19-110	NPJ-220	31.2	34.7	32.2	34.4	33.1	30.0	27.4	26.3	27.9
CD(P=0.05)		1.13	7.5	4.6	4.6	4.4	9.7	4.7	3.8	6.1
CV (%)		1.98	9.8	7.2	6.9	6.5	18.2	9.4	7.8	11.8

Check: Rohini, Giriraj, RL 1359 (SC); PHR-2 (TC-AB); BioYSR (RC-WR); DBH= Days before harvest

Table 4.4.2: Reaction of oilseed Brassica germplasm to WR (artificial condition), DM, PM & SR (natural condition) in NDN for WR

Entries	% WR severity (100 DAS)				% Staghead			% DM	% PM	% SR incidence			
	MOR	PNT	HSR	Mean	MOR	PNT	Mean	PNT	MOR	MOR	PNT	Mean	
DRMRSJ-9-1-1	41.3	28.3	37.9	35.8	22.2	20.8	21.5	37.7	51.9	15.9	9.2	12.6	
DRMRIJ 12-50	9.5	4.1	12.9	8.8	0.0	7.5	3.7	42.1	52.6	20.7	46.4	33.6	
DRMRSJ-34	35.7	20.6	0.0	18.8	27.0	13.3	20.1	37.7	53.2	18.4	9.2	13.8	
DRMRIJ-16-94-1	8.1	12.9	16.8	12.6	0.0	0.0	0.0	37.7	48.0	12.9	39.2	26.1	
DRMRIJ-16-131-1	12.9	29.9	15.0	19.3	0.0	9.2	4.6	29.5	48.3	12.9	9.2	11.1	
DRMRCI 126	18.4	6.5	0.0	8.3	0.0	0.0	0.0	36.3	47.8	0.0	37.7	18.8	
DRMRSJ-7	0.0	25.8	17.4	14.4	0.0	9.2	4.6	45.0	51.4	15.9	18.4	17.2	
DRMRDJ-1	0.0	22.5	0.0	7.5	0.0	21.4	10.7	42.7	53.1	0.0	9.2	4.6	
DRMRIJ 12-27	25.6	24.7	0.0	16.8	18.5	18.4	18.5	36.2	41.6	18.4	13.3	15.9	
DRMRSJ-20	36.3	20.6	18.4	25.1	24.1	9.2	16.7	39.2	38.6	20.7	0.0	10.4	
DRMRIJ 12-40	7.7	0.0	0.0	2.6	0.0	0.0	0.0	28.0	50.8	0.0	13.3	6.6	
DRMRSJ-22	15.0	18.4	26.6	20.0	0.0	21.8	10.9	39.2	48.2	0.0	39.2	19.6	
DRMR 2018-37	8.1	12.9	0.0	7.0	0.0	0.0	0.0	40.5	51.2	20.7	39.1	29.9	
DRMRSJ-26	14.2	9.2	19.0	14.1	0.0	5.2	2.6	31.4	53.2	15.9	42.1	29.0	
DRMRPMJ-17	39.9	22.5	34.6	32.3	20.6	9.2	14.9	36.1	53.8	18.4	31.4	24.9	
DRMRIJ 12-52	36.8	22.5	12.9	24.1	20.7	10.5	15.6	34.7	47.8	18.4	26.6	22.5	
DRMRIJ 12-06	0.0	10.5	25.8	12.1	0.0	0.0	0.0	31.6	48.3	0.0	42.1	21.0	
DRMR 2018-44	38.8	34.7	38.6	37.4	23.0	28.8	25.9	36.2	47.8	20.7	37.2	29.0	
DRMRIJ-16-112-1	0.0	0.0	35.3	11.8	0.0	0.0	0.0	36.1	35.7	24.7	47.9	36.3	
DRMRSJ-19	7.7	22.5	0.0	10.1	0.0	26.1	13.1	39.7	51.3	22.8	42.0	32.4	
DRMRIJ 12-14	35.1	29.9	39.2	34.7	20.3	23.6	22.0	24.7	51.9	34.8	42.1	38.4	
DRMRSJ-1	16.4	4.1	0.0	6.8	0.0	0.0	0.0	31.6	51.8	37.8	0.0	18.9	
DRMRIJ 12-44	0.0	6.5	29.6	12.0	0.0	7.5	3.7	29.5	40.4	18.4	19.6	19.0	
DRMRSJ-32	40.3	22.5	26.6	29.8	28.2	15.9	22.0	39.1	45.0	30.0	54.2	42.1	
DRMR 2018-35	39.8	36.1	33.9	36.6	23.1	34.2	28.6	40.9	39.3	28.3	52.3	40.3	
DRMRIJ-16-19-2	0.0	10.5	9.6	6.7	0.0	14.4	7.2	32.9	38.1	31.6	37.7	34.6	
DRMRIJ-16-274-2	0.0	4.1	16.8	7.0	0.0	19.6	9.8	40.8	47.8	37.8	47.9	42.8	
NPJ-218	36.5	28.3	37.9	34.2	21.8	24.1	22.9	46.4	47.3	40.7	42.0	41.3	
DRMRSJ-21	26.7	25.8	19.0	23.8	16.6	22.5	19.6	42.1	53.8	20.7	16.6	18.7	
DRMRSJ-42	39.9	29.9	35.3	35.0	26.0	13.3	19.6	44.1	53.2	31.6	19.6	25.6	
DRMRDJ-2	8.1	10.5	25.8	14.8	0.0	12.7	6.4	39.1	50.7	30.0	50.7	40.4	
DRMRIJ 12-41	0.0	28.3	0.0	9.4	0.0	27.3	13.6	29.9	53.1	28.3	47.9	38.1	
DRMRSJ-33	23.5	29.5	21.5	24.8	13.4	29.7	21.5	31.6	47.8	30.0	13.3	21.6	
DRMRSJ-25	27.2	22.5	16.8	22.2	17.6	20.6	19.1	40.6	50.1	28.3	32.9	30.6	
DRMRIJ-16-124-1	0.0	6.5	24.2	10.2	0.0	21.9	11.0	43.5	50.7	31.6	32.9	32.3	
NPJ-217	35.1	29.9	36.0	33.7	18.9	32.2	25.6	39.2	35.7	24.7	45.0	34.9	
DRMRSJ-4	0.0	28.3	0.0	9.4	0.0	7.5	3.7	40.6	36.2	20.7	45.0	32.8	
DRMR 2018-41	0.0	42.1	0.0	14.0	0.0	21.9	11.0	39.7	36.3	22.8	39.1	30.9	
DRMRIJ-16-28-1	0.0	6.5	16.2	7.6	0.0	0.0	0.0	37.5	39.3	20.7	45.0	32.8	
DRMRIJ-16-99-2	21.0	15.7	20.5	19.1	12.5	7.5	10.0	40.5	35.7	30.0	56.8	43.4	
DRMRCI 125	8.1	15.7	0.0	7.9	0.0	19.9	10.0	45.6	51.9	39.2	52.3	45.8	
DRMRDJ-3	8.5	12.9	0.0	7.1	0.0	0.0	0.0	33.2	47.3	40.7	39.2	40.0	
DRMRIJ 12-48	6.0	13.3	9.6	9.6	0.0	21.3	10.6	40.6	46.3	31.6	47.9	39.7	
DRMRSJ-18	35.8	24.7	26.9	29.1	22.4	20.8	21.6	36.1	43.2	28.3	39.1	33.7	
DRMRSJ-31	35.7	22.5	41.2	33.1	22.2	0.0	11.1	40.6	40.5	0.0	35.8	17.9	
DRMRIJ-16-7-1	0.0	0.0	9.6	3.2	0.0	0.0	0.0	37.5	51.4	20.7	46.5	33.6	
RL 1359	35.8	15.5	42.5	31.2	20.3	19.7	20.0	43.5	50.9	24.7	0.0	12.4	
RH-1462	36.9	17.8	43.1	32.6	20.9	0.0	10.5	46.4	42.7	22.8	28.8	25.8	
PRD-17-3	38.2	33.1	28.9	33.4	23.3	26.2	24.8	40.6	35.7	0.0	0.0	0.0	
RMM-12-3-18	35.8	28.3	34.6	32.9	20.3	23.0	21.7	36.3	47.4	20.7	31.4	26.1	
PHR-2	39.6	36.1	30.1	35.3	25.4	30.9	28.2	34.7	52.1	18.4	29.9	24.2	
NPJ-219	35.7	29.9	35.3	33.6	20.5	20.8	20.6	38.1	48.4	20.7	34.6	27.7	
RH 1590	36.1	28.3	36.6	33.7	26.2	9.2	17.7	37.7	51.9	18.4	15.0	16.7	
PAB-14-17	9.8	6.5	20.0	12.1	0.0	18.2	9.1	32.4	52.4	26.6	29.9	28.2	
RMM-10-1-1	35.7	29.9	45.6	37.0	23.6	32.0	27.8	32.9	51.8	24.7	36.1	30.4	
DRMR 2017-8	36.1	19.7	39.2	31.7	21.5	20.7	21.1	39.2	52.5	33.2	39.1	36.2	
Giriraj	36.9	22.5	31.4	30.3	24.4	0.0	12.2	42.0	51.9	31.6	37.5	34.6	
RH 1400-1	0.0	10.5	0.0	3.5	0.0	17.3	8.6	37.2	51.5	37.8	11.4	24.6	
RMM-12-2-18	36.2	28.3	33.2	32.6	18.7	19.6	19.1	31.6	52.7	18.4	13.3	15.9	
PDZ-4	8.1	17.8	29.6	18.5	0.0	0.0	0.0	28.3	45.1	24.7	37.2	31.0	
PRD-17-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.2	53.8	28.3	22.5	25.4	
DRMR 4005	36.1	19.7	34.3	30.0	22.2	16.7	19.5	37.7	49.0	40.7	34.3	37.5	
BIOYSR (RC)	0.0	13.3	0.0	4.4	0.0	22.5	11.2	33.1	51.9	22.8	9.2	16.0	
RH 1638	39.6	33.1	42.5	38.4	25.8	0.0	12.9	40.6	53.8	20.7	13.3	17.0	
PAB-14-5	19.5	10.5	0.0	10.0	19.2	13.3	16.2	43.5	53.7	31.6	9.2	20.4	
Rohini (SC)	39.9	20.6	45.0	35.2	22.0	5.2	13.6	41.2	35.7	30.0	23.1	26.5	
RH 1400	0.0	4.1	0.0	1.4	0.0	27.6	13.8	39.1	39.8	28.3	16.6	22.5	
RH 1599-7	36.9	22.5	40.5	33.3	20.7	0.0	10.4	28.8	51.4	20.7	35.8	28.2	
PRD-17-2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.2	50.9	46.4	13.3	29.9	
RMM 12-1-18	38.5	24.7	36.6	33.3	24.4	14.4	19.4	36.2	48.3	34.8	33.2	34.0	
NPJ-220	36.9	26.6	30.1	31.2	27.7	23.6	25.7	36.3	50.9	18.4	39.1	28.8	
CD(P=0.05)	3.1	11.8	5.2	6.7	3.1	18.6	10.8	11.9	1.5	4.10	23.0	13.6	
CV (%)	7.5	16.0	12.5	12.0	13.2	67.4	40.3	15.9	1.6	8.73	40.4	24.6	

Table 4.4.3: Reaction of promising oilseed Brassica germplasm to WR (artificial condition), AB, DM, & SR (natural condition) in NDN for White Rust

Code No	Entries	% ABL				% ABP			% WR severity					% SH			% DM	% SR	WR at cotyledon	WR at cotyledon	WR at true leaf
		HSR	PNT	LDH	Mean	PNT	HSR	Mean	LDH	PNT	NBPGR	HSR	Mean	LDH	PNT	Mean	PNT	PNT	LDH	NBPGR	
NDN-19-111	DRMRIJ 12-39	-	39.2	51.0	45.1	31.4	-	-	18.8	13.3	34.6	-	22.2	0.0	0.0	0.0	37.7	16.6	+	29.9	36.2
NDN-19-112	DRMRMJA-35	-	42.1	45.8	43.9	26.4	-	-	0.0	0.0	15.7	-	5.2	0.0	0.0	0.0	45.6	31.0	+	65.8	15.7
NDN-19-113	DRMRIJ-12-26	-	40.7	52.1	46.4	33.1	-	-	0.0	0.0	9.2	-	3.1	0.0	0.0	0.0	40.7	13.3	+	0.0	53.8
NDN-19-114	DRMRIJ-12-21	-	33.1	42.4	37.8	31.6	-	-	24.0	15.7	45.0	-	28.2	10.4	0.0	5.2	34.3	0.0	+	18.4	50.9
NDN-19-115	DRMRIJ 12-28	-	53.8	42.9	48.3	25.8	-	-	0.0	6.5	45.0	-	17.2	0.0	5.2	2.6	37.5	40.6	-	15.7	5.7
NDN-19-116	DRMRIJ 12-37	-	39.2	51.6	45.4	29.9	-	-	0.0	4.1	29.9	-	11.3	0.0	13.3	6.6	39.2	50.7	-	0.0	0.0
NDN-19-117	DRMR-5206	-	49.4	43.4	46.4	22.8	-	-	0.0	0.0	22.5	-	7.5	0.0	0.0	0.0	37.5	60.1	-	29.9	12.9
NDN-19-118	PDZ 2	-	37.7	40.6	39.2	22.5	-	-	27.2	15.7	0.0	-	14.3	10.0	25.8	17.9	44.1	32.9	++	42.1	57.1
NDN-19-119	PDZ 3	-	39.2	43.0	41.1	15.7	-	-	29.9	15.7	6.5	-	17.4	9.6	0.0	4.8	35.8	43.5	++	58.6	32.9
NDN-19-120	PDZ 5	-	37.7	43.8	40.8	31.4	-	-	0.0	0.0	35.8	-	11.9	4.5	0.0	2.3	33.1	50.7	-	29.9	0.0
NDN-19-121	PDZ 7	-	36.2	51.4	43.8	28.3	-	-	0.0	18.4	24.2	-	14.2	0.0	13.3	6.6	24.7	28.8	-	47.9	0.0
NDN-19-122	BIOYSR (RC)	-	36.3	45.1	40.7	34.6	-	-	20.2	13.3	15.7	-	16.4	2.0	10.7	6.4	37.7	0.0	-	18.4	0.0
NDN-19-123	Rohini (SC)	-	37.7	45.5	41.6	22.5	-	-	34.4	15.5	12.9	-	20.9	0.0	0.0	0.0	25.6	0.0	+	34.6	0.0
NDN-19-124	RL 1359 (SC)	-	37.7	45.0	41.4	40.6	-	-	40.5	18.4	42.1	-	33.7	4.5	34.0	19.3	42.1	0.0	+++	0.0	47.8
NDN-19-125	Rohini (A4A5)-491	35.3	45.0	48.1	42.8	31.6	24.9	28.2	0.0	22.5	39.2	0.0	12.3	1.4	0.0	0.7	42.1	28.8	+	0.0	29.9
NDN-19-126	PB (A4A5)-842	17.4	45.0	44.1	35.5	26.4	15.0	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.9	0.0	++	0.0	0.0
NDN-19-127	PJK (A4A5)-21	30.1	39.2	41.2	36.9	22.8	24.2	23.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.2	43.5	-	0.0	0.0
NDN-19-128	Varuna (A4A5)-936-279	31.4	43.5	41.7	38.9	29.9	21.0	25.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	42.0	-	0.0	0.0
NDN-19-129	PJK	31.1	50.9	45.2	42.4	26.4	25.8	26.1	31.2	0.0	55.4	40.5	30.8	9.1	0.0	4.5	40.6	15.0	++	29.9	39.1
NDN-19-130	PB	27.4	49.4	41.9	39.6	29.5	19.0	24.3	32.9	0.0	34.6	44.4	28.3	10.2	0.0	5.1	42.7	42.1	++	67.5	34.6
NDN-19-131	Varuna (SC)	26.6	39.2	43.1	36.3	24.2	21.5	22.9	34.4	19.7	75.0	45.6	41.3	6.5	13.3	9.9	26.6	0.0	++	22.5	29.9
NDN-19-132	Rohini (SC)	24.9	39.1	41.9	35.3	31.4	17.4	24.4	33.3	26.6	47.9	45.0	36.6	11.7	12.7	12.2	34.6	0.0	+++	67.5	36.2
CD(P=0.05)		4.6	7.5	2.9	5.0	9.7	4.7	7.2	2.3	11.8	12.6	5.2	6.8	2.5	18.6	10.5	11.9	23.0		8.6	9.6
CV (%)		7.2	9.8	3.1	6.7	18.2	9.4	13.8	9.5	16.0	20.3	12.5	13.5	33.1	67.4	50.3	15.9	40.4		14.5	18.2

Susceptible check: Rohini, RL 1359, Varuna; Resistant check: BioYSR

Table 4.5.1: Reaction of oilseed *Brassica* lines against AB (natural condition) in NDN for Sclerotinia rot

Code No.	Entries	% AB severity (90 DAS)							% ABP (15 days before harvest)				
		PNT	HSR	LDH	BPR	SHL	Mean	VAR	PNT	HSR	LDH	SHL	Mean
NDN-19-133	EC 766609	34.7	35.3	45.9	32.4	27.5	35.2	30.0	31.4	33.2	29.3	21.9	28.9
NDN-19-134	DRMRSJ-25	34.7	30.1	40.2	28.1	29.4	32.5	40.0	24.2	27.4	28.6	22.4	25.7
NDN-19-135	DRMR 2017-8	39.2	37.9	40.7	29.5	29.7	35.4	40.0	20.6	32.5	28.2	23.6	26.2
NDN-19-136	Rohini (SC)	42.1	38.6	44.7	28.1	31.7	37.1	40.0	28.0	34.3	27.7	22.4	28.1
NDN-19-137	NPC 16	30.0	15.7	26.2	31.1	19.9	24.6	40.0	22.8	12.9	15.2	22.0	18.2
NDN-19-138	DRMRSJ-20	40.7	34.3	40.7	31.1	30.5	35.4	45.0	30.0	32.5	26.7	25.5	28.7
NDN-19-139	DRMRSJ-22	42.1	36.6	37.7	32.4	30.0	35.8	30.0	26.4	34.3	27.1	14.9	25.7
NDN-19-140	DRMRSJ-26	45.0	32.2	40.7	28.9	29.2	35.2	50.0	31.4	24.9	27.5	17.2	25.3
NDN-19-141	RMM-10-1-1	39.2	38.6	44.8	24.9	32.3	35.9	40.0	28.3	34.0	29.5	24.7	29.1
NDN-19-142	RMM-12-3-18	40.6	32.5	42.9	29.5	31.5	35.4	50.0	29.9	25.8	27.9	20.7	26.1
NDN-19-143	NRCYS-5-2 (SC)	55.2	36.0	49.4	32.4	31.2	40.8	80.0	49.3	27.4	30.9	23.4	32.8
NDN-19-144	DRMRSJ-9-1-1	42.1	33.2	42.9	29.5	24.0	34.3	50.0	33.1	24.2	28.8	22.3	27.1
NDN-19-145	DRMRSJ-31	34.7	28.9	39.5	31.1	32.5	33.4	50.0	36.1	26.9	27.6	22.7	28.3
NDN-19-146	RMM 12-1-18	39.2	35.3	40.1	31.1	29.3	35.0	40.0	26.4	32.2	28.1	24.6	27.8
NDN-19-147	DRMRSJ-21	37.7	36.6	35.8	44.4	31.1	37.1	40.0	18.4	34.0	27.1	24.5	26.0
NDN-19-148	DRMR 2035	40.7	31.1	36.6	32.4	27.7	33.7	40.0	20.6	28.1	29.2	23.5	25.3
NDN-19-149	RL 1359 (SC)	36.3	27.4	35.1	39.2	25.9	32.8	30.0	19.7	23.3	28.8	18.8	22.7
NDN-19-150	DRMR 5206	34.7	29.6	42.9	31.1	26.4	32.9	40.0	28.3	25.8	29.3	14.7	24.5
NDN-19-151	RMWR-09-1	40.7	25.8	45.2	29.5	23.6	33.0	60.0	20.6	22.4	29.4	20.7	23.3
NDN-19-152	RMM-12-2-18	37.7	23.3	42.5	31.1	29.4	32.8	40.0	24.2	21.0	28.8	21.2	23.8
CD (P=0.05)		8.5	5.2	2.5	3.9	2.5	4.5	-	10.9	5.3	1.8	5.9	6.0
CV (%)		10.3	7.8	3.0	5.4	5.3	6.4	-	18.7	9.0	3.0	13.0	10.9

Checks: Rohini, RL 1359, NRCYS-5-2 (SC); NPC-16 (TC)

Table 4.5.2: Reaction of oilseed Brassica germplasm to WR, SR, DM and PM under NDN for Sclerotinia rot

Entries	% WR (90 DAS)					% SH			% SR (artificial condition)							SR lesion length (cm)					% DM	% PM	
	HSR	LDH	BPR	PNT	Mean	PNT	LDH	Mean	LDH	PNT	HSR	SHL	BPR	DOL	Mean	PNT	HSR	LDH	SHL	BPR	Mean	PNT	BPR
EC 766609	25.8	24.1	44.4	17.8	28.0	0.0	0.0	0.0	63.0	54.2	38.8	81.1	33.1	68.9	56.5	9.8	8.8	4.4	13.8	30.8	13.5	36.2	43.1
DRMRSJ-25	32.5	25.1	43.1	28.0	32.2	14.4	4.1	9.2	73.6	73.4	44.4	90.0	38.8	66.1	64.4	13.5	6.1	3.9	15.9	18.3	11.5	39.2	43.1
DRMR 2017-8	16.2	23.7	46.9	25.8	28.2	37.2	11.4	24.3	59.0	60.1	49.5	81.1	38.7	15.0	50.6	13.6	8.9	3.7	8.8	9.9	9.0	42.1	41.8
Rohini	41.2	23.3	41.8	19.7	31.5	19.6	7.3	13.4	67.3	50.9	45.6	90.0	32.6	12.3	49.8	11.7	10.5	14.9	5.3	10.4	10.6	39.1	49.5
NPC 16	0.0	0.0	28.1	0.0	7.0	0.0	0.0	0.0	73.4	71.5	26.2	81.1	43.9	12.3	51.4	17.5	4.9	3.4	12.5	9.9	9.6	0.0	45.7
DRMRSJ-20	35.3	26.2	41.8	27.3	32.7	12.7	0.0	6.4	73.2	50.7	56.5	90.0	35.2	22.1	54.6	17.3	11.6	12.1	9.5	41.8	18.4	40.6	52.1
DRMRSJ-22	31.4	23.3	40.4	33.1	32.0	22.7	1.4	12.1	69.3	53.8	58.1	81.1	19.1	12.3	48.9	7.4	8.4	4.7	13.9	9.6	8.8	42.1	50.8
DRMRSJ-26	24.9	22.5	44.4	10.5	25.6	7.5	1.4	4.5	62.1	47.9	56.1	81.1	38.5	13.1	49.8	13.1	14.2	2.9	14.8	25.9	14.2	42.1	48.2
RMM-10-1-1	34.3	32.3	44.4	31.6	35.7	17.3	7.4	12.4	55.1	50.9	43.3	90.0	37.4	19.2	49.3	17.1	7.9	4.5	16.9	23.5	14.0	40.5	48.2
RMM-12-3-18	33.2	26.1	36.5	31.0	31.7	12.1	2.5	7.3	52.6	67.5	36.5	90.0	21.3	19.2	47.9	15.6	6.0	4.3	16.2	4.6	9.3	31.4	49.5
NRCYS-5-2	0.0	0.0	44.4	0.0	11.1	0.0	4.6	2.3	56.8	67.5	74.0	81.1	41.8	68.9	65.0	6.5	14.5	5.4	9.3	48.4	16.8	26.4	49.5
DRMRSJ-9-1-1	39.9	30.4	44.4	24.2	34.7	18.2	7.8	13.0	69.5	54.2	54.2	90.0	42.6	25.8	56.0	13.9	6.2	6.7	5.9	37.6	14.1	29.5	52.1
DRMRSJ-31	32.9	26.2	48.2	26.1	33.3	24.1	9.6	16.8	65.7	56.8	44.0	90.0	44.9	36.1	56.3	18.7	4.4	5.8	15.8	30.9	15.1	28.8	43.1
RMM 12-1-18	16.8	23.5	33.8	19.7	23.5	20.8	6.7	13.7	65.4	70.4	39.9	90.0	24.0	21.1	51.8	18.4	7.7	7.0	14.6	2.6	10.1	33.2	49.5
DRMRSJ-21	21.0	23.3	0	34.6	19.7	24.1	6.5	15.3	59.3	61.1	35.0	90.0	18.6	15.0	46.5	9.2	5.2	2.6	17.0	4.6	7.7	47.9	49.5
DRMR 2035	0.0	11.3	44.4	21.5	19.3	0.0	2.9	1.4	62.0	53.8	38.7	90.0	28.1	19.2	48.6	17.3	10.2	4.5	7.8	13.3	10.6	37.7	52.1
RL 1359	34.0	25.6	44.4	28.3	33.1	25.1	9.0	17.1	64.4	61.1	45.8	81.1	30.0	15.0	49.6	12.7	13.3	7.2	6.4	13.9	10.7	42.1	48.2
DRMR 5206	15.0	30.4	36.5	15.7	24.4	0.0	5.7	2.9	61.1	54.2	49.1	90.0	19.8	26.1	50.0	14.4	7.1	6.8	11.7	6.4	9.3	43.5	49.5
RMWR-09-1	26.9	12.2	46.9	19.1	26.3	9.2	3.9	6.6	61.2	61.1	67.8	90.0	31.9	38.8	58.5	16.7	11.6	6.2	16.5	18.5	13.9	42.1	50.8
RMM-12-2-18	30.1	19.3	46.9	26.1	30.6	18.5	5.7	12.1	62.5	53.8	55.5	81.1	21.1	40.4	52.4	17.5	9.3	5.5	5.0	6.2	8.7	43.5	48.2
CD (P=0.05)	4.7	7.4	5.5	11.5	7.3	14.0	4.4	9.2	N/A	N/A	9.0	NS	4.2	25.1	12.8	7.0	1.8	-	1.4	8.7	4.7	13.8	3.7
CV (%)	9.0	16.4	6.8	24.3	14.1	45.4	42.6	44.0	9.3	19.6	8.9	11.4	6.2	53.4	18.1	23.3	9.9	-	7.2	16.3	14.2	18.0	4.0

Table 4.6.1: Screening of IVT entries of Brassica against Alternaria blight (natural condition)

Code No.	Entries	% ABL severity (90 DAS)										% ABP (15 Days Before Harvesting)					
		DOL	MOR	DOL	SHL	PNT	HSR	SGN	LDH	Mean	JAG	PNT	HSR	LDH	SHL	SGN	Mean
SIVT-19-01	KMR(E) 19-1	34.7	23.6	40.7	31.4	40.6	30.1	24.8	42.4	33.5	14.8	28.3	25.8	29.8	23.3	23.7	26.2
SIVT-19-2	RH 1999-42	33.7	23.3	39.5	32.6	39.2	32.9	26.6	42.3	33.8	9.8	28.0	29.6	29.7	24.9	23.4	27.1
SIVT-19-3	Rasi 1605 (Hy)	34.7	31.2	40.7	31.3	40.7	34.6	26.7	40.6	35.1	17.4	31.6	32.5	28.8	24.4	22.9	28.0
SIVT-19-4	BAUM-08-14	33.3	29.9	39.1	33.1	39.2	26.9	27.5	40.6	33.7	24.7	28.3	21.5	30.1	24.4	23.6	25.6
SIVT-19-5	SKM 1621	33.3	22.7	39.1	33.5	34.7	31.1	29.9	36.6	32.6	26.9	28.3	27.4	29.6	24.8	28.0	27.6
SIVT-19-6	RH 1799-24	31.6	28.6	37.6	33.1	39.2	35.3	21.6	36.5	32.9	19.3	28.3	33.2	28.9	25.4	22.5	27.7
SIVT-19-7	NPJ- 231	34.7	29.2	40.7	32.2	39.2	36.6	25.6	37.1	34.4	21.5	31.6	32.9	28.5	23.4	18.9	27.1
SIVT-19-8	PRB- 15-2	33.3	29.9	39.1	31.7	37.7	32.5	22.2	39.5	33.2	21.1	28.3	28.1	30.1	23.8	19.7	26.0
SIVT-19-9	DRMR 2017-21	33.7	29.5	39.4	32.6	40.6	33.2	21.8	35.4	33.3	12.9	31.6	30.1	27.6	23.2	18.9	26.3
SIVT-19-10	PDZ- 13	37.1	29.2	42.8	33.1	46.4	38.6	44.5	46.4	39.8	19.8	20.6	35.3	31.4	23.8	38.0	29.8
SIVT-19-11	ACN- 184	31.8	29.5	37.4	32.4	45.0	39.9	40.1	46.3	37.8	23.9	34.7	36.6	31.8	23.5	30.9	31.5
SIVT-19-12	BAUM-08-17	31.8	30.7	37.4	34.1	40.7	37.9	36.3	44.1	36.6	24.3	24.2	28.9	30.9	25.9	29.2	27.8
SIVT-19-13	CS 2002-99	34.7	30.2	40.8	33.5	39.2	30.1	29.6	39.4	34.7	16.9	28.3	24.2	30.1	24.0	20.1	25.3
SIVT-19-14	DRMRCI 116	33.3	30.7	39.1	32.2	42.1	32.5	36.6	38.4	35.6	13.4	20.6	25.8	28.6	24.7	27.8	25.5
SIVT-19-15	TM 53	37.1	31.8	42.8	31.7	45.0	36.0	19.9	39.4	35.5	4.1	24.2	31.1	28.2	24.1	18.6	25.2
SIVT-19-16	ORM 41-3-5	33.5	31.2	39.4	31.3	43.5	33.2	25.8	40.6	34.8	8.6	28.3	29.6	28.3	22.6	19.1	25.6
SIVT-19-17	SKM 1712	33.5	29.9	39.4	31.7	40.7	38.6	29.0	40.7	33.5	10.5	26.4	32.9	28.6	23.9	21.6	26.7
SIVT-19-18	KMR- 19-3	33.3	28.6	39.1	32.1	33.2	32.9	29.6	38.8	33.8	16.9	31.4	26.6	28.2	23.5	23.2	26.6
SIVT-19-19	NPJ- 232	31.6	31.9	37.4	33.0	39.2	26.6	28.6	37.2	35.1	30.3	34.7	21.5	29.2	24.2	27.0	27.3
SIVT-19-20	AKMS- 19-2	33.3	28.0	39.1	32.6	31.6	33.2	23.6	35.9	33.7	0.0	32.9	28.9	30.0	24.2	21.4	27.5
SIVT-19-21	CS 2007- 165	26.0	28.0	31.3	32.1	40.6	31.4	23.7	36.5	35.4	13.4	36.1	24.2	28.2	23.4	20.5	26.5
SIVT-19-22	LES- 60	32.4	26.4	38.2	31.9	34.7	36.6	27.3	38.9	33.4	8.1	39.2	28.1	29.9	24.2	22.7	28.8
SIVT-19-23	PRE- 17-2	32.4	28.6	38.2	32.6	39.2	32.2	22.3	35.9	33.2	17.4	43.5	24.9	28.5	24.2	18.4	27.9
SIVT-19-24	NPJ- 230	31.8	28.7	37.4	34.1	43.5	27.4	28.4	36.6	32.1	9.8	31.4	23.3	29.4	25.4	23.4	26.6
SIVT-19-25	DRMRCI 117	34.7	26.6	40.8	32.3	43.5	36.0	22.3	40.1	31.2	22.8	24.7	29.6	29.3	26.1	19.1	25.8
SIVT-19-26	RH 1424	31.8	28.0	37.4	32.4	42.1	33.2	32.6	38.8	33.3	22.0	24.2	25.8	28.9	25.3	28.4	26.5
SIVT-19-27	RMM- 12-2-18	31.8	22.8	37.4	33.0	40.7	34.0	20.8	38.3	32.7	27.2	31.6	27.4	29.5	25.4	20.1	26.8
SIVT-19-28	CS 2009-313	26.0	25.8	31.3	33.5	40.7	32.9	19.9	35.9	33.5	27.8	28.3	26.9	28.6	26.2	18.6	25.7
SIVT-19-29	RH 1999-18	32.4	26.7	38.2	32.7	43.5	28.9	20.3	41.3	34.5	21.1	30.0	22.4	30.3	25.4	19.3	25.5
SIVT-19-30	RMM- 12-3-18	32.4	29.3	38.2	33.0	39.2	26.6	23.2	39.4	34.6	9.8	28.3	24.2	28.3	26.5	19.5	25.3
SIVT-19-31	RGN- 462	31.8	26.4	37.4	32.4	39.1	37.9	29.0	32.9	32.4	19.8	29.9	33.2	27.5	24.7	23.0	27.7
SIVT-19-32	TM 172-1	26.0	30.1	31.3	32.5	45.0	27.4	24.6	40.0	30.7	0.0	37.7	24.9	26.4	24.4	21.4	27.0
SIVT-19-33	LES- 61	25.4	28.6	31.1	32.3	42.1	34.6	23.7	40.1	33.0	9.8	34.6	26.6	29.0	23.6	20.1	26.8
SIVT-19-34	HUJM- 18-7	26.0	30.1	31.3	33.0	39.2	36.0	25.3	38.2	32.7	21.1	37.5	28.1	27.5	24.6	17.8	27.1
SIVT-19-35	JM-14-2	31.8	29.3	37.4	32.2	34.7	33.2	19.3	37.7	33.4	15.9	27.3	29.6	28.1	24.6	19.7	25.8
SIVT-19-36	CS 2005- 143	33.3	28.6	39.1	32.7	37.7	36.6	25.9	37.8	32.1	14.0	28.3	28.9	27.0	25.0	22.2	26.3
SIVT-19-37	RMM- 12-1-18	31.8	28.7	37.4	33.8	42.1	28.9	18.9	38.2	32.3	6.9	31.6	24.2	27.5	25.3	19.3	25.6
SIVT-19-38	NPJ- 229	32.4	28.0	38.2	32.8	42.1	30.1	32.9	36.5	32.4	19.3	31.6	23.3	29.1	25.2	32.2	28.3
SIVT-19-39	KMR 19-4	34.7	26.6	40.8	32.6	47.9	28.1	31.2	41.2	32.0	23.5	30.0	22.4	29.2	24.3	26.9	26.6
SIVT-19-40	BAUM-09-12-1	33.3	28.0	39.1	33.7	40.7	34.0	28.3	41.3	34.0	0.0	28.3	28.1	28.3	24.2	24.6	26.7
SIVT-19-41	PRE- 17-5	33.3	29.2	39.1	32.0	42.1	32.5	34.3	40.6	32.5	4.1	34.6	26.6	28.9	24.2	29.8	28.8
SIVT-19-42	TM 52	37.1	30.7	42.8	32.3	49.3	34.6	33.2	43.0	34.1	8.1	20.6	29.6	28.1	24.2	30.1	26.5
SIVT-19-43	DRMR 2018-25	35.0	31.1	40.8	32.4	37.7	37.9	23.6	38.0	35.4	23.2	22.5	24.9	27.4	24.8	19.7	23.8
SIVT-19-44	PR- 17-7	35.0	26.4	40.8	35.0	40.7	29.6	20.8	40.0	34.8	19.3	31.6	26.9	27.7	26.5	19.5	26.4
SIVT-19-45	DRMR 2017-26	32.2	24.4	37.9	32.5	37.7	32.5	23.7	37.1	35.4	16.4	24.2	24.2	29.5	24.9	19.3	24.4
SIVT-19-46	RH 1599-44	33.7	28.0	39.1	33.4	40.7	36.6	25.9	38.2	37.9	0.0	28.3	27.4	30.3	25.9	22.2	26.8
SIVT-19-47	NPJ- 236	33.7	22.7	39.1	33.3	36.2	24.2	30.8	36.0	34.6	15.3	22.5	22.4	28.8	24.4	26.7	25.0
SIVT-19-48	HUJM- 18-9	32.2	28.6	38.2	33.0	40.6	28.9	27.2	38.9	33.5	20.7	26.4	25.8	27.7	24.6	23.7	25.6
SIVT-19-49	NPJ- 233	32.2	28.0	38.2	32.5	37.7	31.1	36.6	35.3	32.3	12.9	24.7	26.9	27.1	23.8	28.3	26.2
SIVT-19-50	DRMRHJ 503 (Hy)	33.8	29.2	39.9	33.1	36.3	37.9	29.6	34.1	34.5	15.3	26.6	30.1	28.0	24.6	22.7	26.4
SIVT-19-51	BAUM-08-18	33.8	29.3	39.9	33.9	36.2	35.3	22.5	37.6	32.0	8.1	26.4	28.9	29.4	24.9	23.0	26.5
SIVT-19-52	RGN 471	33.7	30.1	39.1	33.7	34.6	34.0	28.9	39.9	33.4	0.0	30.0	24.2	29.3	24.5	23.0	26.2
SIVT-19-53	JC- 21	33.7	29.2	39.1	32.4	37.5	36.0	22.7	37.7	33.9	24.3	24.7	28.1	27.3	24.0	19.7	24.8
SIVT-19-54	Rasi 1604	33.3	30.8	39.1	33.3	37.7	28.1	21.0	36.5	34.2	12.9	22.8	22.4	27.6	24.1	19.9	23.3
SIVT-19-55	PBR- 396	33.8	27.3	39.5	33.4	36.3	26.6	42.3	37.2	33.6	0.0	28.3	21.5	28.5	25.9	38.8	28.6
SIVT-19-56	PRL- 16-5	31.8	29.2	37.4	32.9	36.3	25.8	22.7	36.0	34.2	0.0	31.4	23.3	29.0	23.3	21.0	25.6
SIVT-19-57	RH 1653	31.8	28.0	37.4	33.3	37.7	31.4	23.4	37.7	33.5	0.0	28.3	26.9	27.8	23.3	20.8	25.4
SIVT-19-58	DRMRSJ- 47	31.8	27.2	37.4	34.4	36.2	32.2	28.6	31.5	32.5	14.8	24.2	25.8	29.2	24.8	23.0	25.4
SIVT-19-59	TM 258	33.3	28.6	39.1	37.8	37.7	33.9	19.9	32.9	34.5	15.9	24.7	29.6	30.1	27.4	21.0	26.6
SIVT-19-60	SVJH- 008	33.3	31.2	39.1	35.9	47.9	34.6	24.9	35.9	31.5	18.4	16.6	24.9	27.5	27.3	20.8	23.4
SIVT-19-61	RH (OE)-1710	34.7	30.7	40.8	33.3	45.0	28.9	26.7	43.4	32.6	0.0	11.4	26.6	31.4	23.3	23.2	23.2
SIVT-19-62	KMR(L) 19-6	34.7	31.1	40.8	36.0	45.0	30.1	30.4	35.9	32.4	15.3	22.5	28.1	29.4	24.5	28.6	26.6
SIVT-19-63	RGN 476	34.7	31.2	40.8	36.8	40.6	32.5	23.6	35.3	32.9	15.3	26.6	24.2	27.3	26.5	20.8	25.1
SIVT-19-64	DRMRCI 118	33.3	30.8	39.1	34.1	39.2	32.9	24.9	38.8	35.4	18.9	24.7	28.9	29.7	25.5	20.3	25.8
SIVT-19-65	TM 263-3	31.8	27.1	37.4	33.7	39.2	31.1	37.0	40.3	35.4	16.9	20.6	27.4	28.5	24.6	29.0	26.0
SIVT-19-66	RB 106	33.7	28.7	39.1	33.6	37.7	33.2	28.9	36.6	35.5	17.4	28.3	30.1	27.8	25.3	23.9	27.1
SIVT-19-67	RHH 1902	33.7	29.3	39.1	33.2	46.5	29.6	34.2	41.9	34.5	6.9	33.1	23.3	30.3	24.2	29.3	28.1
SIVT-19-68	JC- 33	33.7	30.7	39.1	28.8	39.2	35.3	22.9	41.2	34.1	15.3	24.7	33.2	29.8	21.7	20.1	25.9
SIVT-19-69	MCB 1-2-3-2-4	37.3	27.2	43.4	24.7	13.3	21.0	23.2	27.5	34.7	0.0	13.3	19.0	15.0	16.8	19.9	16.8
SIVT-19-70	TM 134	37.3	28.0	43.4	33.8	43.5	26.										

SIVT-19-74	RMRHJ 1518	33.3	30.1	39.1	35.7	34.7	29.6	30.5	36.8	34.3	0.0	15.7	25.8	28.3	27.2	27.5	24.9
Code No.	Entries	% ABL severity (90 DAS)										% ABP (15 DBH)					
		DOL	MOR	DOL	SHL	PNT	HSR	SGN	LDH	Mean	JAG	PNT	HSR	LDH	SHL	SGN	Mean
SIVT-19-75	DRMRHT 19-283	32.2	28.6	38.2	32.9	36.2	33.9	26.4	40.1	33.6	16.9	33.1	32.5	28.7	24.5	22.3	28.2
SIVT-19-76	RH (OE)-1711	37.3	29.2	43.4	32.1	36.3	28.9	23.9	40.1	33.9	16.3	24.7	26.6	28.9	23.1	20.5	24.7
SIVT-19-77	PRL- 17-5	31.8	26.4	37.4	33.8	37.7	28.1	27.3	41.2	33.0	16.9	26.4	22.4	28.5	23.8	21.4	24.5
SIVT-19-78	KMR(L) 19-5	31.8	22.0	37.4	34.8	40.6	31.1	25.6	41.7	33.1	22.8	28.3	28.1	29.3	24.5	21.8	26.4
SIVT-19-79	RGN- 472	33.3	28.0	39.1	33.3	36.2	30.1	23.0	41.3	33.0	14.8	30.0	21.0	30.2	23.1	23.6	25.6
SIVT-19-80	PBR- 385	33.3	31.9	39.1	33.7	39.1	34.0	31.7	36.5	34.9	0.0	26.4	31.4	27.7	22.8	28.7	27.4
SIVT-19-81	DRMRHJ 817	33.3	31.2	39.1	34.3	42.1	28.9	22.2	38.9	33.7	20.7	24.7	23.3	27.8	23.3	19.7	23.8
SIVT-19-82	RB 108	32.1	32.6	37.9	32.7	40.6	26.9	24.8	41.2	33.6	0.0	31.4	25.8	29.2	23.9	16.2	25.3
SIVT-19-83	DRMRQ 5-2	37.3	31.9	43.4	33.2	42.1	35.3	26.4	35.4	35.6	18.9	28.3	30.1	28.4	24.7	22.9	26.9
SIVT-19-84	DRMRCI 115	31.8	31.9	37.4	32.9	45.0	33.2	38.8	38.8	36.2	0.0	26.4	28.9	27.2	24.0	34.0	28.1
SIVT-19-85	PHR- 3828	31.8	27.3	37.4	33.4	42.1	27.4	22.5	41.1	32.9	21.1	22.5	24.9	27.5	24.9	19.7	23.9
SIVT-19-86	CAU-RM 5-1	33.3	28.7	39.1	32.3	43.5	28.9	27.8	38.9	34.1	14.8	33.2	26.9	27.0	23.5	27.3	27.6
SIVT-19-87	RH 1799-24	33.3	28.0	39.1	31.9	42.1	31.4	28.4	39.4	34.2	16.3	22.5	24.2	28.7	23.7	24.3	24.7
SIVT-19-88	RGN- 463	31.9	30.7	38.2	32.7	36.1	34.3	22.3	36.3	32.8	15.3	31.6	28.1	29.6	23.6	19.9	26.5
SIVT-19-89	NPJ- 235	37.3	23.7	43.4	33.2	46.5	30.1	24.9	37.0	34.5	21.1	29.9	25.8	30.9	24.2	22.0	26.6
SIVT-19-90	RHH 1901	34.7	30.7	40.8	32.2	40.7	35.3	22.5	39.4	34.5	19.3	28.3	34.3	30.7	24.4	19.1	27.3
SIVT-19-91	91J5001	37.3	28.0	43.4	33.3	36.2	32.2	27.5	34.7	34.1	0.0	26.4	27.4	30.4	24.2	24.1	26.5
SIVT-19-92	17J039C	31.8	30.1	37.4	32.7	43.5	33.2	27.0	35.4	33.9	0.0	31.0	24.9	30.5	23.4	22.7	26.5
SIVT-19-93	7J157C	31.8	27.3	37.4	34.0	37.7	36.6	28.0	40.0	34.1	9.8	24.2	32.2	30.1	24.8	23.2	26.9
SIVT-19-94	PT- 2015-7	38.2	30.7	44.0	37.1	56.8	39.9	23.0	46.0	39.4	31.9	45.0	34.6	36.5	27.2	19.3	32.5
SIVT-19-95	RMT- 10-5-18	38.2	30.8	44.0	37.6	55.2	34.6	21.6	48.1	38.8	0.0	50.9	28.9	35.8	26.6	20.1	32.4
SIVT-19-96	CAU Toria 1-1	38.2	30.2	44.0	37.1	56.8	32.9	19.7	50.1	38.6	6.9	45.0	26.6	36.7	25.4	18.6	30.5
SIVT-19-97	71J0004	26.7	26.6	31.8	33.2	39.2	37.9	17.1	40.1	31.6	9.8	24.7	34.0	30.8	23.6	21.6	26.9
SIVT-19-98	TL 18 (ST-2)	37.3	31.2	43.4	36.8	46.6	39.2	23.9	43.2	37.7	16.4	25.4	33.2	31.7	25.3	21.0	27.3
SIVT-19-99	TKM 19-1	38.2	31.8	44.0	37.5	52.3	32.2	23.7	46.8	38.3	19.3	50.9	24.2	36.0	26.2	19.1	31.3
SIVT-19-100	CAU Toria 2	38.2	31.9	44.0	37.0	53.8	35.3	28.6	48.1	39.6	0.0	33.1	28.1	36.9	24.1	23.4	29.1
SIVT-19-101	TKM 19-2	38.2	33.2	44.0	37.6	55.2	33.2	25.6	47.0	39.2	0.0	35.3	25.8	34.7	26.7	17.8	28.1
SIVT-19-102	PT- 2015-6	37.1	32.6	43.1	37.0	56.8	32.2	26.7	46.9	39.1	0.0	46.4	24.9	36.1	24.5	24.3	31.2
SIVT-19-103	RMT- 04-18-18	37.1	33.1	43.1	37.0	55.4	36.6	26.9	45.9	39.4	8.1	40.5	33.2	35.8	25.4	25.1	32.0
SIVT-19-104	TL 19 (ST-3)	38.8	33.2	44.8	37.1	57.1	35.3	30.8	46.2	40.4	6.9	46.4	27.4	35.2	24.6	25.9	31.9
SIVT-19-105	ORT-17-6-16	38.8	31.2	44.8	37.2	58.4	32.9	38.7	46.4	41.1	12.9	42.1	26.9	36.5	23.2	34.2	32.6
SIVT-19-106	BAUT-08-06	38.8	28.6	44.8	36.8	56.8	38.6	24.1	47.5	39.5	4.1	39.2	35.3	36.3	25.1	20.1	31.2
SIVT-19-107	BAUT-08-07	37.1	30.7	43.1	37.1	52.5	34.0	32.2	45.8	39.1	8.1	40.6	25.8	36.0	23.7	28.3	30.9
SIVT-19-108	AKGS- 19-8	26.7	21.2	31.8	24.2	42.0	15.7	31.5	32.1	28.1	0.0	43.5	12.9	32.4	15.5	25.6	26.0
SIVT-19-109	JT 13-8	37.1	23.6	43.1	37.1	52.2	36.6	39.2	49.6	39.8	6.9	40.7	28.9	35.2	26.8	31.5	32.6
SIVT-19-110	AKGS- 19-14	25.4	20.3	31.0	24.9	43.5	16.8	43.8	28.9	29.3	6.9	50.8	15.7	31.3	17.6	41.3	31.3
SIVT-19-111	GSH-2180	25.4	14.2	31.0	24.2	30.0	12.9	39.2	29.0	25.7	9.8	47.9	12.3	31.6	16.8	36.7	29.0
SIVT-19-112	HNS 0702	26.7	13.1	31.8	24.0	40.6	15.0	35.7	27.6	26.8	4.1	43.5	12.9	31.6	16.0	33.5	27.5
SIVT-19-113	HNS 0901	25.4	26.6	31.0	25.1	40.7	16.2	39.5	30.3	29.3	4.1	52.3	15.0	32.0	16.6	41.4	31.5
SIVT-19-114	GSH- 1699	25.4	27.2	31.1	29.0	36.3	12.9	40.1	29.6	29.0	4.1	39.2	12.9	32.6	22.7	32.8	28.0
SIVT-19-115	Rohini	31.8	25.8	37.4	32.6	42.1	32.2	34.2	41.2	34.7	9.8	31.6	28.1	29.8	23.3	36.2	29.8
SIVT-19-116	RTM-1679	26.5	22.7	31.3	32.9	49.3	-	21.8	46.9	33.1	6.9	33.1	-	39.9	23.1	21.2	29.3
SIVT-19-117	GSH- 2196	31.8	21.2	37.4	27.4	41.8	15.0	24.3	31.5	28.8	8.1	38.9	12.9	32.9	22.5	19.9	25.4
SIVT-19-118	RTM-1726	26.5	26.6	31.3	33.3	0.0	-	21.4	49.4	26.9	8.1	0.0	-	40.2	24.7	20.3	21.3
SIVT-19-119	RTM-1624	26.5	28.0	31.3	33.1	49.4	-	22.3	51.0	34.5	8.1	39.2	-	39.3	23.4	22.0	31.0
SIVT-19-120	PT 303	37.1	28.6	43.1	37.0	49.4	35.3	27.7	49.2	38.4	6.9	37.7	31.4	36.2	26.6	25.8	31.5
SIVT-19-121	GSL 1	26.5	19.3	31.3	24.8	26.6	15.0	28.0	31.0	25.3	8.1	37.7	12.3	31.9	14.6	24.3	24.1
SIVT-19-122	BIOYSR	26.5	26.4	31.3	34.3	34.7	20.5	34.2	43.4	31.4	9.8	31.6	20.0	29.2	24.2	31.1	27.2
SIVT-19-123	DLSC 1	26.5	22.8	31.3	23.7	28.3	16.2	26.9	26.1	25.2	6.9	43.5	15.0	14.6	16.1	23.9	22.6
SIVT-19-124	PHR 2	25.4	31.2	31.0	33.6	40.7	22.4	20.8	42.4	30.9	8.1	30.0	19.0	28.7	22.8	19.7	24.0
SIVT-19-125	RTM 314	26.5	28.6	31.3	32.9	39.1	-	35.0	49.5	34.7	8.1	31.6	-	40.8	23.5	34.8	32.7
SIVT-19-126	Giriraj	27.1	31.2	32.1	33.6	34.7	34.3	26.9	40.7	32.6	8.1	28.3	33.2	29.2	25.3	24.9	28.2
CD(P=0.05)		3.9	1.1	3.2	3.6	12.2	4.7	5.5	3.2	4.7	4.1	13.4	4.6	1.85	3.2	5.5	5.7
CV(%)		6.0	1.9	4.2	5.5	15.0	7.7	10.1	4.0	6.8	17.0	22.1	8.8	3.1	6.6	11.6	10.5

Check: Rohini, Giriraj (SC), PHR-2 (TC-AB), BioYSR (RC-WR), (*B.juncea*), PT 303, GSL-1, DLSC (RC), RTM-314 (SC)

Table 4.6.2: Screening of IVT entries of Brassica against WR, DM, PM and SR (natural condition)

Entries	% WR severity (90 DAS)							% Staghead					% DM *	% PM (90 DAS)			% SR incidence		
	MOR	PNT	SGN	LDH	HSR	JAG	Mean	PNT	LDH	MOR	SGN	Mean		PNT	MOR	JAG	MOR	PNT	SGN
KMR(E) 19-1	35.8	22.5	28.1	20.3	35.3	26.2	28.0	21.3	10.4	25.3	12.6	17.4	37.7	74.3	51.4	20.2	12.9	42.1	0.0
RH 1999-42	42.2	31.4	20.7	30.1	38.6	19.8	30.5	16.7	14.4	20.9	10.8	15.7	40.1	83.5	48.4	0.0	0.0	45.0	0.0
Rasi 1605 (hy)	36.9	27.3	37.1	17.5	37.9	27.6	30.7	5.2	8.1	26.5	14.7	13.6	35.2	67.5	44.9	0.0	18.4	46.4	12.7
BAUM-08-14	40.5	27.3	28.6	19.5	32.5	33.8	30.4	16.7	7.0	19.2	10.4	13.3	36.1	67.5	42.7	27.2	15.9	9.2	0.0
SKM 1621	39.3	28.0	0.0	25.7	39.2	34.7	27.8	18.4	7.8	17.1	0.0	10.8	46.4	67.5	36.2	25.1	20.7	22.5	13.0
RH 1799-24	40.0	33.1	0.0	29.2	45.6	28.0	29.3	22.5	10.8	27.9	0.0	15.3	32.9	74.3	39.2	26.5	18.4	22.5	10.1
NPJ- 231	40.4	36.2	0.0	24.5	41.2	30.3	28.8	20.7	6.4	24.7	0.0	13.0	33.1	71.5	39.3	28.6	28.3	0.0	0.0
PRB- 15-2	39.3	32.9	26.4	31.6	36.0	31.3	32.9	32.0	9.6	20.9	9.5	18.0	37.7	71.5	40.9	29.2	15.9	11.4	0.0
DRMR 2017-21	35.8	20.6	29.6	11.2	39.9	24.3	26.9	19.9	10.2	25.7	14.4	17.6	34.7	65.3	35.7	26.5	18.4	36.2	14.4
PDZ- 13	0.0	0.0	0.0	0.0	0.0	28.6	4.8	0.0	2.0	0.0	0.0	0.5	41.2	67.5	36.2	0.0	36.3	36.2	11.9
ACN- 184	36.3	40.6	20.6	24.2	32.5	31.3	30.9	24.7	10.8	21.5	10.4	16.9	33.1	70.2	41.6	29.3	15.9	9.2	0.0
BAUM-08-17	39.3	22.5	28.0	28.9	34.6	33.8	31.2	19.6	9.0	28.3	18.0	18.7	45.0	80.8	43.9	0.0	20.7	39.2	14.6
CS 2002-99	36.2	33.1	22.2	21.8	36.6	27.3	29.5	22.5	10.0	23.8	10.0	16.6	41.2	83.5	36.9	30.6	33.2	27.3	14.3
DRMRCI 116	35.7	21.1	21.6	12.5	34.3	24.3	24.9	15.9	8.3	26.3	10.1	15.1	45.0	71.5	36.3	0.0	18.4	42.1	12.4
TM 53	35.2	11.4	25.1	23.7	39.2	22.8	26.2	9.2	7.6	21.7	9.7	12.0	43.5	71.5	35.7	0.0	0.0	58.4	9.7
ORM 41-3-5	36.9	23.1	20.7	27.6	35.3	25.8	28.2	21.3	12.5	26.2	14.2	18.5	45.0	71.5	38.6	26.6	15.9	32.9	10.0
SKM 1712	39.9	28.3	39.0	29.7	31.4	25.1	32.2	34.2	8.5	25.6	15.7	21.0	42.1	74.3	43.2	25.4	20.7	34.6	0.0
KMR- 19-3	39.8	25.8	29.0	23.4	36.0	27.3	30.2	33.0	6.4	25.1	13.9	19.6	43.5	83.5	51.9	29.0	24.7	0.0	12.1
NPJ- 232	36.3	24.2	34.3	23.2	30.1	37.4	30.9	28.7	11.2	19.1	17.8	19.2	36.1	80.8	50.4	0.0	0.0	9.2	16.4
AKMS- 19-2	40.9	24.7	23.4	13.2	37.9	0.0	23.3	24.0	8.6	26.3	12.5	17.8	34.7	67.5	46.8	0.0	30.0	25.8	14.6
CS 2007- 165	40.4	24.2	20.7	23.1	42.5	26.9	29.6	36.2	13.3	26.2	0.0	18.9	37.7	83.5	53.1	32.2	0.0	29.9	0.0
LES- 60	39.3	45.0	35.0	30.3	38.6	21.9	35.0	10.7	2.0	23.5	14.8	12.8	40.5	65.3	46.7	0.0	31.6	26.6	14.3
PRE- 17-2	35.7	19.7	20.5	23.6	36.6	28.6	27.4	29.9	11.5	26.3	10.5	19.6	42.1	63.4	35.7	26.4	28.3	31.4	15.0
NPJ- 230	40.5	13.3	35.7	22.7	33.2	25.4	28.5	7.5	8.1	28.0	18.1	15.4	38.2	60.1	35.5	0.0	22.8	50.9	10.3
DRMRCI 117	39.3	27.3	34.8	23.2	44.4	31.3	33.4	27.1	7.6	21.7	13.7	17.5	42.1	65.3	30.7	0.0	20.7	9.2	0.0
RH 1424	40.4	19.7	35.0	18.1	37.9	30.0	30.2	7.5	9.8	25.2	14.4	14.2	45.6	60.1	35.7	0.0	40.7	11.4	14.4
RMM- 12-2-18	39.1	29.5	35.3	18.4	45.0	39.8	34.5	18.2	7.0	28.9	9.5	15.9	39.2	67.5	51.4	28.6	15.9	0.0	20.4
CS 2009-313	37.3	27.3	22.2	23.0	36.0	39.8	30.9	14.4	13.2	24.0	9.7	15.3	47.0	71.5	50.8	25.1	12.9	13.3	15.5
RH 1999-18	40.9	10.5	20.5	29.8	34.6	29.0	27.5	10.7	9.5	21.7	10.5	13.1	34.7	67.5	47.4	0.0	12.9	49.4	12.9
RMM- 12-3-18	35.8	25.8	34.7	16.6	24.2	22.4	26.6	0.0	6.4	23.4	21.6	12.9	42.1	67.5	50.9	0.0	20.7	9.2	12.9
RGN- 462	36.9	33.1	19.7	26.1	31.4	28.6	29.3	37.2	8.3	22.7	0.0	17.0	42.6	67.5	44.5	28.6	18.4	0.0	9.3
TM 172-1	35.2	15.7	21.4	21.8	28.9	0.0	20.5	10.5	11.8	25.2	12.1	14.9	28.0	67.5	41.6	0.0	28.3	37.5	0.0
LES- 61	40.3	19.7	26.7	21.1	39.9	24.3	28.7	7.5	4.1	27.1	13.9	13.1	36.2	80.8	46.1	0.0	31.6	13.3	0.0
HUJM- 18-7	39.9	27.3	19.9	23.7	37.9	29.7	29.7	0.0	4.9	26.9	9.7	10.4	34.3	71.5	43.4	0.0	18.4	9.2	15.6
JM-14-2	36.9	28.0	24.1	25.8	36.6	26.9	29.7	32.6	13.2	25.0	13.3	21.0	36.3	71.5	37.9	28.0	20.7	9.2	22.4
CS 2005- 143	39.8	27.3	19.9	28.6	45.0	22.8	30.6	25.1	11.8	25.3	10.0	18.1	42.1	71.5	40.4	22.0	30.0	0.0	29.6
RMM- 12-1-18	35.2	28.8	21.2	27.2	32.5	22.8	28.0	30.9	7.0	25.0	10.4	18.3	42.1	67.5	40.9	0.0	31.6	0.0	21.3
NPJ- 229	39.9	19.7	21.2	26.3	34.6	30.0	28.6	20.8	9.0	22.7	14.5	16.8	31.4	69.4	38.1	0.0	34.8	13.3	29.2
KMR 19-4	36.2	32.9	35.1	19.4	31.1	32.9	31.3	31.7	4.1	21.4	17.3	18.6	42.1	63.6	37.9	28.1	36.3	0.0	9.9
BAUM-09-12-1	36.9	25.8	30.5	22.8	37.9	0.0	25.6	18.2	10.4	22.8	9.9	15.3	34.6	72.1	42.5	0.0	28.3	16.6	12.1
PRE- 17-5	36.9	33.1	30.8	22.1	36.0	25.4	30.7	17.3	11.1	16.6	14.3	14.8	41.2	80.8	35.7	0.0	40.7	16.6	0.0
TM 52	35.7	13.3	18.9	21.0	38.6	22.4	25.0	9.2	3.5	23.3	0.0	9.0	34.7	70.2	41.6	21.1	37.8	34.3	9.9
DRMR 2018-25	3.6	15.7	21.6	13.3	0.0	33.8	14.7	7.5	2.0	0.0	7.3	4.2	37.7	70.2	42.7	0.0	40.7	13.3	0.0
PR- 17-7	35.8	33.9	33.6	27.0	34.0	31.0	32.5	25.1	9.0	22.7	15.5	18.1	40.5	71.5	46.3	30.3	28.3	15.0	22.2
DRMR 2017-26	38.6	25.8	31.2	23.0	36.6	27.3	30.4	5.2	5.0	25.9	10.6	11.7	36.2	71.5	37.5	29.0	31.6	50.7	18.6
RH 1599-44	36.9	27.5	23.2	24.6	42.5	0.0	25.8	26.6	6.9	21.4	12.6	16.9	37.7	67.5	38.2	27.6	37.8	39.1	10.1
NPJ- 236	8.1	19.7	21.2	26.2	18.4	27.6	20.2	0.0	5.7	0.0	14.1	5.0	39.1	71.5	43.2	26.5	34.8	0.0	0.0
HUJM- 18-9	35.7	23.1	22.2	27.8	30.1	33.2	28.7	29.3	2.9	23.1	10.2	16.4	28.3	63.4	43.1	0.0	37.8	15.0	0.0
NPJ- 233	39.1	15.7	37.4	17.7	33.2	29.0	28.7	14.4	5.7	23.6	10.5	13.6	36.3	71.5	41.0	0.0	20.7	33.2	21.4
DRMRHJ 503	36.8	26.1	35.5	15.8	33.9	30.0	29.7	12.7	8.6	25.7	9.7	14.2	40.7	65.3	43.2	0.0	24.7	0.0	15.3
BAUM-08-18	35.7	37.5	33.8	22.4	38.6	18.9	31.1	19.6	8.5	26.6	14.4	17.3	31.6	60.1	45.0	20.2	33.2	29.9	0.0
RGN 471	36.9	31.4	21.0	27.5	35.3	0.0	25.4	26.8	10.2	26.6	7.0	17.6	38.1	60.1	44.5	26.2	34.8	25.8	22.0
JC- 21	8.1	10.5	33.8	19.2	0.0	35.0	17.8	0.0	2.0	0.0	14.0	4.0	29.9	71.5	42.8	0.0	31.6	13.3	21.1
Rasi 1604	36.3	23.1	36.3	24.7	34.3	26.9	30.3	10.5	5.7	26.6	9.7	13.1	37.7	67.5	42.2	0.0	33.2	11.4	16.7
PBR- 396	35.8	25.8	43.6	13.8	24.9	0.0	24.0	16.7	3.5	18.4	22.9	15.4	30.0	67.5	41.6	22.8	15.9	0.0	19.1
PRL- 16-5	35.1	24.2	40.9	27.2	32.5	0.0	26.7	9.2	4.5	21.6	19.8	13.8	39.1	67.5	44.0	0.0	37.8	0.0	25.6
RH 1653	35.2	21.5	39.4	23.8	34.6	0.0	25.7	0.0	4.1	24.7	15.5	11.1	39.2	63.4	45.0	0.0	36.3	0.0	23.8
DRMRSJ- 47	36.3	25.8	34.4	23.4	41.2	29.3	31.7	7.5	4.9	24.9	13.9	12.8	34.6	60.1	46.0	20.7	37.8	9.2	19.8
TM 258	38.2	13.3	20.7	21.8	32.5	27.3	25.6	22.5	7.4	24.5	0.0	13.6	31.6	60.1	43.2	25.8	24.7	0.0	21.7
SVJH- 008	37.0	9.2	42.7	30.7	33.2	26.9	29.9	5.2	5.5	26.1	14.3	12.8	36.2	80.8	43.7	24.6	31.6	29.9	17.6
RH (OE)-1710	35.8	16.6	43.5	17.1	34.0	0.0	24.5	10.7	5.4	23.4	15.3	13.7	31.6	67.5	45.5	27.3	22.8	32.9	16.9
KMR(L) 19-6	39.9	21.5	0.0	16.4	36.0	28.0	23.6	18.4	9.8	21.7	0.0	12.5	29.9	63.4	46.8	0.0	40.7	13.3	12.6
RGN 476	36.2	19.7	36.9	28.0	30.1	2													

CAU-RM 4-1	36.1	18.4	34.4	19.9	28.9	29.7	27.9	32.0	10.5	21.7	11.1	18.9	31.6	56.8	40.4	0.0	18.4	29.9	19.6
RMRHJ 1518	40.0	17.3	43.8	29.2	35.3	0.0	27.6	30.9	9.6	28.1	13.9	20.6	39.2	56.8	40.8	21.1	15.9	29.9	13.9
Entries	% WR severity (90 DAS)							% Staghead					% DM	% PM (90 DAS)			% SR incidence		
	MOR	PNT	SGN	LDH	HSR	JAG	Mean	PNT	LDH	MOR	SGN	Mean	PNT	SKN	MOR	JAG	MOR	PNT	SGN
DRMRHT 19-283	39.8	37.5	22.5	26.8	44.4	27.3	33.0	37.2	10.5	24.9	10.0	20.7	37.5	60.1	35.7	24.7	24.7	9.2	14.3
RH (OE)-1711	35.8	24.6	35.0	23.0	32.9	29.7	30.2	27.7	8.9	25.9	22.6	21.3	32.9	60.1	42.7	0.0	20.7	16.6	12.0
PRL- 17-5	39.3	28.8	33.8	26.6	29.6	25.5	30.6	28.8	5.7	22.2	14.4	17.8	34.7	71.5	45.1	0.0	30.0	16.6	16.0
KMR(L) 19-5	36.8	23.7	20.3	27.2	34.3	35.0	29.5	10.7	3.5	25.9	10.1	12.6	43.5	67.5	46.3	22.3	24.7	13.3	10.1
RGN- 472	38.6	29.5	31.9	26.5	40.5	27.3	32.4	21.4	7.4	23.1	12.3	16.0	45.0	67.5	51.4	26.9	40.7	32.9	9.8
PBR- 385	35.7	27.3	33.1	19.2	37.9	0.0	25.5	24.0	4.1	24.9	15.0	17.0	43.5	63.4	47.2	0.0	37.8	0.0	13.0
DRMRHJ 817	38.6	22.5	36.7	15.8	41.2	32.6	31.2	12.7	2.9	22.1	18.4	14.0	37.7	63.4	47.4	29.9	34.8	9.2	16.8
RB 108	35.7	19.7	37.8	21.8	30.1	0.0	24.2	14.4	6.4	28.7	24.1	18.4	34.6	60.1	50.7	0.0	28.3	16.6	16.7
DRMRQ 5-2	35.2	19.7	35.8	11.7	0.0	27.6	21.7	21.3	7.4	22.1	10.1	15.2	38.9	60.1	39.1	29.3	43.6	39.1	12.3
DRMRCI 115	36.8	17.8	35.3	21.9	36.6	0.0	24.7	18.4	5.7	27.5	11.2	15.7	44.4	56.8	38.6	0.0	42.1	42.1	18.2
PHR- 3828	39.9	24.7	28.4	18.0	34.6	30.0	29.3	7.5	7.0	26.2	15.4	14.0	43.5	67.5	45.0	26.2	52.2	13.3	24.3
CAU-RM 5-1	37.2	15.7	19.7	24.3	36.0	26.5	26.6	12.7	7.6	26.0	9.8	14.0	43.5	70.2	39.4	22.7	34.8	13.3	0.0
RH 1799-24	41.6	31.6	35.0	29.4	39.9	30.3	34.6	34.1	11.1	25.3	14.9	21.3	36.1	60.1	37.5	28.6	43.6	0.0	18.3
RGN- 463	40.9	29.5	33.6	13.6	32.5	26.9	29.5	31.9	2.9	22.2	12.7	17.4	36.3	67.5	36.9	28.0	42.1	0.0	10.2
NPJ- 235	39.9	15.7	21.4	26.9	33.9	30.0	28.0	14.4	11.3	26.6	10.9	15.8	34.7	67.5	42.7	28.3	20.7	29.9	10.9
RHH 1901	39.4	20.6	22.7	17.3	20.0	30.3	25.0	27.6	6.4	23.1	11.8	17.2	34.6	63.4	42.2	30.0	33.2	22.5	15.5
91J5001	8.1	0.0	21.0	12.2	0.0	0.0	6.9	0.0	0.0	0.0	10.4	2.6	37.7	67.5	43.9	0.0	33.2	16.6	19.9
17J039C	36.9	4.1	22.9	19.8	21.0	0.0	17.4	7.5	4.9	20.1	9.8	10.6	42.1	60.1	43.2	0.0	31.6	45.0	15.7
7J157C	0.0	0.0	14.7	12.4	0.0	25.8	8.8	0.0	0.0	0.0	0.0	0.0	34.6	67.5	41.6	24.7	33.2	45.0	15.1
PT- 2015-7	7.2	6.9	20.7	0.0	0.0	35.6	11.7	0.0	6.9	0.0	0.0	1.7	31.6	67.5	19.3	29.4	46.4	19.6	19.1
RMT- 10-5-18	20.3	6.5	19.9	0.0	0.0	0.0	7.8	0.0	12.2	12.5	0.0	6.2	34.6	60.1	18.6	26.9	58.4	16.6	12.9
CAU Toria 1-1	0.0	0.0	22.2	0.0	0.0	17.4	6.6	0.0	8.1	0.0	10.7	4.7	29.9	60.1	11.5	26.2	80.9	13.3	10.7
71J0004	40.4	24.6	24.4	22.7	25.8	22.8	26.8	22.5	6.4	29.7	11.9	17.6	33.2	56.8	45.3	24.3	37.8	39.1	13.3
TL 18 (ST-2)	8.1	4.1	23.2	0.0	0.0	28.3	10.6	0.0	6.4	0.0	14.0	5.1	31.4	60.1	13.1	28.3	52.2	56.8	0.0
TKM 19-1	6.5	10.5	19.9	0.0	0.0	30.3	11.2	0.0	12.9	0.0	9.3	5.6	26.4	60.1	13.3	29.0	49.3	56.8	22.2
CAU Toria 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	2.0	30.0	53.8	18.4	19.3	50.8	56.8	0.0
TKM 19-2	7.7	4.1	19.7	0.0	0.0	0.0	5.2	0.0	15.1	0.0	0.0	3.8	39.1	63.4	17.6	25.8	28.3	58.4	23.0
PT- 2015-6	8.1	10.5	0.0	0.0	0.0	0.0	3.1	0.0	7.4	0.0	0.0	1.9	34.7	60.1	14.2	23.9	31.6	53.8	21.3
RMT- 04-18-18	14.4	6.5	21.8	0.0	0.0	13.5	9.4	0.0	10.8	0.0	0.0	2.7	28.3	53.8	18.4	23.9	37.8	54.2	10.0
TL 19 (ST-3)	15.7	15.7	19.9	0.0	0.0	0.0	8.5	0.0	9.0	0.0	0.0	2.3	28.0	67.5	15.2	26.9	26.6	59.0	12.3
ORT-17-6-16	16.4	15.7	0.0	0.0	0.0	26.2	9.7	0.0	10.7	0.0	0.0	2.7	36.3	60.1	14.2	27.6	28.3	57.1	17.7
BAUT-08-06	7.7	10.5	10.5	0.0	0.0	14.7	7.2	0.0	6.4	0.0	0.0	1.6	31.0	67.5	14.4	24.5	33.2	59.0	22.6
BAUT-08-07	8.1	10.5	23.4	0.0	0.0	19.3	10.2	0.0	13.8	0.0	14.6	7.1	33.1	0.0	13.1	19.3	55.2	59.0	23.4
AKGS- 19-8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	1.4	0.0	53.8	11.8	23.5	31.6	9.2	15.4
JT 13-8	0.0	0.0	0.0	0.0	0.0	14.7	2.4	0.0	5.4	0.0	0.0	1.3	33.2	0.0	15.2	0.0	28.3	62.0	15.0
AKGS- 19-14	0.0	0.0	0.0	0.0	0.0	18.4	3.1	0.0	4.9	0.0	0.0	1.2	0.0	0.0	10.9	22.1	43.6	9.2	11.7
GSH-2180	0.0	0.0	0.0	0.0	0.0	25.5	4.2	0.0	7.9	0.0	0.0	2.0	0.0	6.5	13.1	25.1	15.9	9.2	0.0
HNS 0702	0.0	0.0	0.0	0.0	0.0	20.7	3.4	0.0	0.0	0.0	0.0	0.0	0.0	26.6	13.3	0.0	34.8	33.2	0.0
HNS 0901	0.0	0.0	0.0	0.0	0.0	18.9	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	26.5	15.9	22.5	12.4
GSH- 1699	0.0	0.0	0.0	0.0	0.0	18.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	74.3	14.2	19.8	15.9	9.2	0.0
Rohini	40.4	36.3	0.0	19.8	43.1	25.8	27.6	27.7	9.9	27.4	0.0	16.3	34.6	15.7	45.1	0.0	18.4	0.0	0.0
RTM-1679	0.0	0.0	0.0	0.0	0.0	22.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	40.7	46.6	18.8
GSH- 2196	0.0	0.0	0.0	0.0	0.0	20.7	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	22.7	18.4	9.2	0.0
RTM-1726	0.0	0.0	0.0	0.0	0.0	17.9	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0	43.6	90.0	0.0
RTM-1624	0.0	0.0	0.0	0.0	0.0	18.9	3.1	0.0	5.5	0.0	0.0	1.4	0.0	60.1	15.2	0.0	45.0	62.0	14.0
PT 303	17.8	15.7	34.0	0.0	0.0	19.3	14.5	16.7	4.5	0.0	11.7	8.2	22.5	22.5	16.4	20.7	24.7	60.1	15.0
GSL 1	0.0	0.0	0.0	0.0	0.0	22.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	67.5	22.7	0.0	31.6	9.2	0.0
BIOYSR	18.2	15.7	29.5	22.6	12.3	25.8	20.7	21.3	2.0	0.0	12.0	8.8	31.4	0.0	39.9	27.2	20.7	0.0	14.1
DLSC 1	0.0	0.0	24.6	0.0	0.0	26.2	8.5	0.0	0.0	0.0	10.4	2.6	0.0	71.5	22.0	0.0	0.0	29.9	23.9
PHR 2	39.9	31.0	0.0	18.0	0.0	26.2	19.2	22.5	6.1	28.7	0.0	14.3	30.0	22.5	38.7	0.0	18.4	22.5	12.8
RTM 314	0.0	0.0	0.0	0.0	0.0	25.1	4.2	0.0	0.0	0.0	0.0	0.0	0.0	71.5	14.2	0.0	49.3	60.1	12.0
Giriraj	39.3	24.6	31.9	20.3	39.2	24.3	29.9	27.6	6.4	26.8	12.3	18.3	45.0	74.3	51.4	25.5	18.4	32.9	16.3
CD (P=0.05)	1.7	14.2	3.9	5.5	3.9	1.7	5.2	13.5	5.8	5.3	3.0	6.9	10.2	10.3	1.3	4.2	4.7	23.8	3.9
CV (%)	3.0	38.0	8.7	16.1	7.9	4.0	12.9	48.0	42.6	15.3	20.9	31.7	15.8	8.6	1.7	13.8	8.3	47.7	16.0

*DM at 20 DAS

Table 4.7.1: Disease Reaction of *Albugo candida* isolates on Indian mustard genotypes at PNT, HSR, LDH and NBPGR

Coding	Genotype	WR disease reaction of different <i>A. candida</i> isolates at different locations								
		LDH				HSR			PNT	NBPGR
		Ac-BPR	Ac-PNT	Ac-NDH	Ac-LDH	Ac-HSR	Ac-PNT	Ac-BPR	Ac-PNT	Ac-NDH
WRHD-19-01	BioYSR	S	S	S	S	R	S	R	S	S
WRHD-19-02	EC-399299	R	S	S	S	S	S	R	S	S
WRHD-19-03	EC- 399301	S	R	R	R	R	R	R	S	S
WRHD-19-04	DRMRAB-753	S	S	S	S	S	S	S	S	S
WRHD-19-05	DRMRIJ-12-28	R	R	R	R	S	S	S	S	S
WRHD-19-06	DRMRIJ-12-40	S	S	S	S	S	S	S	S	S
WRHD-19-07	DRMR-2035	R	S	S	R	R	S	R	S	R
WRHD-19-08	Basanti	R	NG	NG	NG	R	R	R	R	S
WRHD-19-09	RLC-3	S	R	R	S	S	S	S	S	R
WRHD-19-10	RH-30	R	S	R	R	R	R	R	S	R

Ac=*Albugo candida* isolate

Table 4.7.2 Artificial screening of differentials against *A. candida* (Delhi isolate) under National Phytotron Facility, ICAR-IARI New Delhi

Code No.	Entry	White Rust Severity (%)		
		Cotyledonary Leaf*	True Leaf*	Field Screening**
WRHD-19-1	BioYSR	35.0 (36.2)	15.0 (22.5)	7.5 (15.7)
WRHD-19-2	EC-399299	55.0 (47.9)	22.5 (27.3)	15.0 (22.5)
WRHD-19-3	EC- 399301	70.0 (57.1)	0.0	7.5 (15.7)
WRHD-19-4	DRMRAB-753	7.5 (15.7)	35.0 (36.2)	75.0 (60.1)
WRHD-19-5	DRMRIJ-12-28	5.0 (12.9)	0.0	0.0
WRHD-19-6	DRMRIJ-12-40	55.0 (47.9)	35.0 (35.8)	7.5 (15.7)
WRHD-19-7	DRMR-2035	0.0	0.0	0.0
WRHD-19-8	Basanti	15.0 (22.5)	7.5 (15.7)	17.5 (24.2)
WRHD-19-9	RLC-3	0.0	10.0 (18.4)	15.0 (22.5)
WRHD-19-10	RH-30	0.0	0.0	0.0
11	GSL-1	0.0	0.0	-
12	RL 1359	65.0 (53.8)	45.0 (42.1)	-
13	Pusa Jaikisan	75.0 (60.1)	87.5 (69.4)	72.5 (58.4)
14	Varuna	75.0 (60.1)	77.5 (61.7)	82.5 (65.3)
C.D. (P=0.05)		10.9	11.6	5.73
SE(m)		3.6	3.7	1.82
C.V.		17.1	22.5	10.3

Table 4.8.1: Epidemiology of downy mildew, and white rust (PNT)

Date of sowing	First appearance	% DM severity (DAS)					First appearance	% WR severity (DAS)						
		35	42	56	63	70		DAS	58	65	77	84	91	97
Varuna	DAS						DAS							
Oct. 01	27	13.0	15.0	0.0	0.0	0.0	50	1.0	5.0	5.0	10.0	20.0	25.0	10.0
Oct. 08	20	12.0	20.0	0.0	0.0	0.0	50	1.0	5.0	5.0	15.0	20.0	25.0	10.0
Oct. 15	18	15.0	25.0	0.0	0.0	0.0	44	0.0	2.0	10.0	20.0	25.0	30.0	10.0
Oct. 22	14	25.0	35.0	0.0	0.0	0.0	42	0.0	0.0	5.0	20.0	30.0	40.0	10.0
Oct. 29	11	0.0	50.0	20.0	0.0	0.0	41	0.0	0.0	5.0	15.0	40.0	45.0	15.0
Nov. 05	10	0.0	0.0	40.0	30.0	0.0	41	0.0	0.0	5.0	30.0	50.0	50.0	20.0
Nov. 12	10	0.0	0.0	70.0	30.0	0.0	38	0.0	0.0	0.0	10.0	15.0	25.0	30.0
Nov. 19	11	0.0	0.0	0.0	75.0	35.0	38	0.0	0.0	0.0	5.0	10.0	5.0	25.0
Kranti														
Oct. 01	27	10.0	15.0	0.0	0.0	0.0	50	1.0	5.0	2.0	5.0	15.0	20.0	15.0
Oct. 08	20	10.0	20.0	0.0	0.0	0.0	50	1.0	1.0	5.0	10.0	15.0	25.0	20.0
Oct. 15	18	15.0	20.0	0.0	0.0	0.0	44	0.0	1.0	5.0	15.0	20.0	30.0	10.0
Oct. 22	14	20.0	30.0	0.0	0.0	0.0	42	0.0	0.0	5.0	20.0	30.0	40.0	10.0
Oct. 29	11	0.0	0.0	30.0	25.0	0.0	41	0.0	0.0	5.0	15.0	40.0	45.0	15.0
Nov. 05	10	0.0	0.0	40.0	30.0	0.0	41	0.0	0.0	5.0	30.0	50.0	50.0	20.0
Nov. 12	10	0.0	0.0	65.0	30.0	0.0	38	0.0	0.0	0.0	10.0	15.0	25.0	30.0
Nov. 19	11	0.0	0.0	0.0	70.0	30.0	38	0.0	0.0	0.0	5.0	10.0	5.0	25.0

Table 4.8.2: Epidemiology of Alternaria blight disease (PNT)

Date of sowing	First appearance	% ABL severity (DAS)											First appearance	ABP severity (%) (DAS)							Yield q/ha	1000 seed wt. (g)			
		53	60	74	81	88	102	109	123	130	137	144		151	DAS	80	87	111	118	125			132	139	146
Varuna	DAS													DAS											
Oct. 01	46	1.0	1.0	1.0	1.5	10.0	45.0	45.0	50.0	60.0	60.0	60.0	0.0	120	0.0	0.0	0.0	0.0	10.0	25.0	35.0	40.0	16.0	3.2	
Oct. 08	39	1.0	1.0	1.0	1.5	15.0	50.0	45.0	55.0	60.0	60.0	60.0	0.0	118	0.0	0.0	0.0	10.0	25.0	35.0	40.0	40.0	13.3	3.6	
Oct. 15	53	0.0	0.0	1.0	1.0	10.0	45.0	50.0	60.0	60.0	65.0	70.0	0.0	118	0.0	0.0	0.0	25.0	40.0	45.0	50.0	50.0	10.6	3.0	
Oct. 22	56	0.0	0.0	0.0	0.0	5.0	30.0	30.0	50.0	60.0	65.0	70.0	70.0	109	0.0	0.0	0.0	25.0	35.0	40.0	50.0	60.0	9.3	2.6	
Oct. 29	49	0.0	0.0	0.0	0.0	5.0	40.0	40.0	45.0	50.0	60.0	65.0	70.0	102	0.0	0.0	0.0	30.0	40.0	40.0	50.0	65.0	8.0	2.5	
Nov. 05	46	0.0	0.0	0.0	0.0	5.0	25.0	30.0	40.0	50.0	50.0	55.0	65.0	95	0.0	0.0	0.0	25.0	35.0	40.0	45.0	55.0	10.6	3.0	
Nov. 12	53	0.0	0.0	0.0	0.0	0.0	10.0	15.0	25.0	35.0	40.0	55.0	65.0	88	0.0	0.0	0.0	15.0	20.0	25.0	35.0	45.0	9.3	3.3	
Nov. 19	52	0.0	0.0	0.0	0.0	0.0	0.0	5.0	25.0	40.0	50.0	50.0	50.0	81	0.0	5.0	0.0	10.0	20.0	30.0	35.0	45.0	6.6	3.4	
Kranti																									
Oct. 01	46	1.0	5.0	5.0	15.0	20.0	45.0	50.0	55.0	60.0	60.0	60.0	0.0	120	0.0	0.0	0.0	0.0	10.0	25.0	35.0	40.0	17.3	3.0	
Oct. 08	39	1.0	1.0	5.0	15.0	25.0	50.0	55.0	60.0	60.0	60.0	60.0	0.0	118	0.0	0.0	0.0	10.0	25.0	35.0	40.0	40.0	14.6	3.2	
Oct. 15	53	0.0	0.0	1.0	5.0	10.0	50.0	55.0	65.0	65.0	65.0	70.0	0.0	118	0.0	0.0	0.0	25.0	40.0	45.0	50.0	50.0	13.3	3.0	
Oct. 22	56	0.0	0.0	0.0	0.0	5.0	30.0	50.0	60.0	65.0	65.0	70.0	70.0	109	0.0	0.0	0.0	25.0	35.0	40.0	50.0	60.0	10.6	2.5	
Oct. 29	49	0.0	0.0	0.0	0.0	5.0	30.0	50.0	65.0	70.0	70.0	70.0	70.0	102	0.0	0.0	0.0	30.0	40.0	40.0	50.0	65.0	10.6	2.4	
Nov. 05	46	0.0	0.0	0.0	0.0	5.0	25.0	35.0	45.0	50.0	55.0	55.0	65.0	95	0.0	0.0	0.0	25.0	35.0	40.0	45.0	55.0	12.0	3.0	
Nov. 12	53	0.0	0.0	0.0	0.0	0.0	10.0	15.0	35.0	45.0	50.0	55.0	55.0	88	0.0	0.0	0.0	15.0	20.0	25.0	35.0	45.0	10.7	3.2	
Nov. 19	52	0.0	0.0	0.0	0.0	0.0	0.0	5.0	25.0	30.0	35.0	50.0	55.0	81	0.0	5.0	0.0	10.0	20.0	30.0	35.0	45.0	8.0	3.2	

Table 4.8.3: Epidemiology of Alternaria blight disease (SHL)

Date of sowing	First appearance	ABL severity (%)											First appearance	ABP severity (%)										Yield (q/ha)	1000 seed wt (g)
		Days after sowing												Days after sowing											
Varuna	DAS	40	50	60	70	80	90	100	110	120	130	140	DAS	70	80	90	100	110	120	130	140				
1-Oct		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08 Oct.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 Oct.	57	0	0	6.1	8.7	10.5	13.2	17.2	21.1	23.9	0	0	110	0	0	0	0	0	8.9	14.2	0	0	12.8	3.62	
22 Oct.	53	0	0	6.9	11.3	15.9	17.3	21.5	24.7	29.3	0	0	108	0	0	0	0	7.9	10.2	0	0	16.4	3.69		
29 Oct.	43	0	6.5	8.1	12.3	16.3	18.1	22.9	30.2	0	0	0	97	0	0	0	6.8	14.2	18.1	0	0	17.2	3.87		
05 Nov.	41	0	6.7	8.9	14.3	17.9	21.3	26.9	35.2	0	0	0	92	0	0	0	8.9	16.3	21.7	0	0	14	3.75		
12 Nov.	39	0	6.9	11.7	15.2	18.2	25.3	30.1	0	0	0	0	87	0	0	7.3	9.1	12.6	25.7	0	0	8.93	3.65		
19 Nov.	38	3.9	7.2	12.9	18.5	25.1	29.7	37.8	0	0	0	0	85	0	0	10.2	18.2	21.7	0	0	0	8.27	3.53		
TM 2																									
1-Oct		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
08 Oct.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15 Oct.	56	0	0	6.5	10.2	16.1	19.7	22.3	24.7	30.1	0	0	110	0	0	0	0	0	9.9	15.2	0	0	10.53	3.03	
22 Oct.	51	0	0	7.2	11.1	17.9	21.2	23.1	25.3	32.8	0	0	106	0	0	0	0	8.9	11.1	0	0	11.86	3.07		
29 Oct.	49	0	0	8.3	12.2	19.1	23.2	25.1	27.8	34.9	0	0	93	0	0	0	7.7	17.1	19.3	0	0	12.93	3.18		
05 Nov.	40	0	7.5	9.2	14.3	19.9	25.4	29.7	35.2	36.9	0	0	89	0	0	0	8.7	18.8	21.3	0	0	11.47	2.99		
12 Nov.	37	0	7.9	11.6	15.3	20.6	27.1	33.3	40.3	0	0	0	87	0	0	7.9	10.1	19.1	25.2	0	0	8.53	2.91		
19 Nov.	36	4.6	8.2	12.7	17.2	23.7	35.1	39.2	0	0	0	0	83	0	0	12.3	17.9	22.6	0	0	0	8	2.76		

Table 4.8.4: Epidemiology of Powdery mildew (SKN)

Date of sowing	Date of PM appearance	Powdery mildew severity (%)											Yield (q/ha)
		Days after sowing											
Varuna		81	84	88	91	95	98	102	105	109	112	116	
01 Oct.	100							0.8	4.1	7.5	12.1	17.5	16.2
08 Oct.	96						2.9	8	13	18	25.5		15.4
15 Oct.	89				3.2	7.5	14.5	22.5	34				14.9
22 Oct.	85			3.1	8.1	18	31.5	44	56				12.4
29 Oct.	83		4.6	10.6	22	38	49.5	69					10.3
05 Nov.	82		5.5	16.5	30.5	49.5	70.5	87					8.7
12 Nov.	79	8.5	24	39	52	77.5	94						7.6
19 Nov.	78	11	18.5	28	49.5	77.5	99						6.9
GM-2													
01 Oct.	102							0.3	2.3	6.2	10.5	15	17.1
08 Oct.	97						2	6.5	15.5	20.5	23		16.2
15 Oct.	89				3.3	8.1	15.5	23	30.5				15.3
22 Oct.	85			3	8.2	14.7	27.5	41	53.5				13.4
29 Oct.	82		4.1	9.1	21.5	32.5	45	65.5					11
05 Nov.	80		6.5	15	27	46	69	85.5					9.3
12 Nov.	80	8.5	22	35.5	49.5	73	93.5						9.1
19 Nov.	79	8.1	14.5	25	43	71.5	97						7.1

Table 4.8.5: Epidemiology of AB and PM (MOR)

Date of sowing	Disease appearance	ABL severity (%)					Disease appearance	ABP severity (%)						Disease appearance	Powdery mildew severity (%)					
		Days after sowing						Days after sowing							Days after sowing					
Varuna	DAS	70	80	90	100	110	DAS	80	90	100	110	120	130	DAS	80	90	100	110	120	130
01 Oct.	92			1.3	3.1	7.6	112				1.3	2.2	2.7	110				4.4	26.7	33.3
08 Oct.	91			1.8	5.8	6.7	110				1.3	2.7	3.1	105				6.2	27.6	34.3
15 Oct.	85		1.8	5.3	6.2	10.2	100			2.7	7.6	8.9	10.2	98				6.7	29.3	35.1
22 Oct.	80		2.2	6.7	11.1	16.4	91			3.6	8.0	9.1	10.7	96				7.6	36.9	39.6
29 Oct.	75	1.3	1.3	4.4	5.2	15.1	90		1.8	4.0	8.0	9.3	11.1	87				8.0	38.7	41.3
05 Nov.	72	2.7	6.7	16.9	24.0	26.7	81	1.8	2.7	3.6	7.6	10.2	11.6	83			6.2	9.3	39.1	54.2
12 Nov.	70	1.3	8.9	21.3	26.7		80	1.3	2.2	3.1	8.4	11.1		80		10.2	11.1	13.3	40.9	62.2
19 Nov.	70	1.8	5.3	22.2	26.7		80	2.7	3.6	7.6	12.4	13.8		80	11.1	14.7	15.3	23.1	41.3	63.1
Rohini																				
01 Oct.	92			3.6	6.7	8.0	110				1.3	1.8	3.3	110				2.7	2.70	10.2
08 Oct.	91			2.2	3.1	6.2	110				1.8	2.2	2.7	105			2.2	2.7	6.70	25.3
15 Oct.	85		1.8	3.6	7.6	9.3	100			1.3	1.8	2.7	5.3	100			6.7	11.3	16.0	28.4
22 Oct.	80		1.3	6.7	8.0	11.1	91		1.3	1.8	2.7	4.9	6.7	96			10.2	13.3	26.0	29.3
29 Oct.	75		2.2	4.0	4.4	12.9	95	1.8	2.2	3.1	4.0	8.4	10.0	90		2.2	11.3	18.2	26.2	32.4
05 Nov.	72	1.3	2.7	3.6	8.4	9.3	80	1.8	2.7	3.1	5.3	9.3	16.6	83	2.2	6.7	8.9	22.2	29.3	35.1
12 Nov.	70	2.7	7.1	3.0	21.3	21.3	80	1.3	2.7	5.3	8.9	12.4		80	2.7	10.2	15.1	24.0	30.2	42.2
19 Nov.	70	1.3	6.7	22.2	24.0		80	2.7	3.1	6.7	9.3			80	8.4	14.7	20.0	26.2	33.3	59.1

Table 4.8.6: Epidemiology of WR (MOR)

Date of sowing	Disease appearance	% WR severity (DAS)								Disease appearance	% Stag head (DAS)					Seed yield (q/h)	1000-seed wt (g)
		40	50	60	70	80	90	100	110		90	100	110	120	130		
Varuna	DAS	40	50	60	70	80	90	100	110	DAS	90	100	110	120	130		
01 Oct.	90						1.3	1.8	2.2	130					14.3	20.5	4.51
08 Oct.	81					1.3	2.2	3.1	4.4	120				9.3	22.2	26.5	5.10
15 Oct.	70				1.3	2.2	2.7	3.6	4.4	110			22.3	18.2	23.5	25.4	5.28
22 Oct.	70				3.1	10.2	21.3	31.6	36.0	110			20.0	31.3		23.1	4.80
29 Oct.	60			7.6	11.6	20.4	29.8	43.1	9.0	110			35.3	23.5		21.5	4.22
05 Nov.	55		2.7	11.1	22.2	34.2	34.7	44.0	43.6	100		9.3	31.3	35.0		19.6	3.90
12 Nov.	48	3.6	13.8	31.6	34.2	37.8	42.7	43.1	44.0	92	9.3	33.3	31.6			16.8	3.60
19 Nov.	48	6.2	12.4	29.8	33.3	41.3	43.1			90	20.0	26.7				12.7	3.40
Rohini											Rohini						
01 Oct.							1.8	2.7	4.4	130					25.0	19.9	4.22
08 Oct.						1.8	2.7	4.0	5.3	120					14.3	26.1	4.85
15 Oct.					1.8	2.2	3.1	4.4	6.7	110				12.5	18.2	25.2	4.76
22 Oct.					3.6	11.1	16.4	20.4	22.2	110			27.3	30.8		22.9	4.40
29 Oct.				4.0	16.0	19.6	28.0	30.2	39.1	110			15.4	23.5		21.2	3.27
05 Nov.			8.9	16.4	18.2	21.8	31.1	42.7	43.1	100			20.0	20.0		19.5	3.21
12 Nov.		4.4	11.1	20.9	28.4	32.4	41.3	42.2		92	15.4	21.4	41.6			16.6	3.10
19 Nov.		5.8	16.4	19.6	28.4	33.3	42.7			90	25.0	44.4	42.9			12.5	3.07

Table 4.8.7: Epidemiology of PM and WR (JAG)

Date of sowing	First appearance	Powdery mildew severity (%)						First appearance	White rust severity (%)						Yield q/ha	1000 seed wt. (g)
		Days after sowing							Days after sowing							
		70	80	90	100	110	120		50	60	70	80	90	100		
Varuna	DAS							DAS								
01 Oct.		0	0	0	0	0	0	86	0	0	0	0	2	4.5	9.4	4.36
08 Oct.	110	0	0	0	0	0	15	84	0	0	0	0	4.5	8.6	14.7	4.98
15 Oct.	105	0	0	0	0	6	20	79	0	0	0	4.4	16.2	22.2	14.3	4.52
22 Oct.	94	0	0	0	2	30	50	72	0	0	0	5.6	18.6	24.5	13.6	4.12
29 Oct.	85	0	0	4	25	45	70	66	0	0	2.8	12.6	20.5	28.6	11.3	4.25
05 Nov.	80	0	0	4	30	50	70	62	0	0	6.6	16.3	25.8	37.8	11.3	4.36
12 Nov.	73	0	10	35	60	75	80	58	0	4.4	15.6	22.4	32.6	40.4	11.4	4.26
19 Nov.	66	5	25	50	60	75	80	52	0	6.8	14.8	28.4	34.6	38.2	8.6	4.35
DRMRIJ 31																
01 Oct.	0	0	0	0	0	0	0	82	0	0	0	0	5.6	12.8	10.2	4.65
08 Oct.	0	0	0	0	0	0	0	78	0	0	0	0	8.8	15.6	13.7	5.36
15 Oct.	103	0	0	0	0	6	10	76	0	0	0	2.5	8.3	14.6	14.4	5.23
22 Oct.	98	0	0	0	2	10	25	68	0	0	2.8	8.6	16.4	22.4	12.6	5.34
29 Oct.	88	0	0	4	10	20	40	65	0	0	4.2	6	12.8	16.8	12.5	5.28
05 Nov.	85	0	0	4	30	30	50	58	0	0	6.2	12.6	28.4	33.3	12.5	5.37
12 Nov.	74	0	2	5	20	30	60	52	0	3.4	12.6	18.6	33.5	42.6	10.2	5.24
19 Nov.	70	5	10	30	50	50	60	48	0	7.5	17.3	22.6	38.4	8.4	5.21	

Table 4.8.8: Epidemiology of Alternaria blight (DOL)

Date of sowing	First appearance	% AB severity (DAS)											
		50	60	70	80	90	100	110	120	130	140		
Varuna	DAS												
Oct, 01	90	0	0	0	0	1.1	9.1	16.6	29.9	35.6	40.0		
Oct, 08	83	0	0	0	0	11.1	16.6	22.2	28.9	35.6	45.6		
Oct, 15	76	0	0	0	7.7	16.6	28.9	36.6	42.8	48.8	51.1		
Oct, 22	69	0	0	1.1	7.7	16.6	23.3	31.4	36.6	42.2	48.9		
Oct, 29	62	0	2.2	9.1	16.6	23.3	29.9	32.2	36.6	40.0	45.6		
Nov, 05	55	0	7.7	13.3	16.6	21.1	28.9	32.2	35.6	40.0	45.6		
Nov, 12	48	2.2	9.1	16.6	22.2	28.9	32.2	35.6	38.9	41.1	45.6		
Nov, 19	41	9.1	12.2	16.6	23.3	31.4	35.6	37.7	40.0	42.8	45.6		
Rajendra Suflam													
Oct, 01	99	0	0	0	0	0.0	1.1	7.5	16.6	23.3	31.4		
Oct, 08	92	0	0	0	0.0	0.0	4.4	12.2	22.2	28.9	37.7		
Oct, 15	85	0	0	0	0.0	5.5	11.1	16.6	23.3	32.2	45.6		
Oct, 22	78	0	0	0	4.4	13.3	22.2	28.9	31.4	40.0	48.9		
Oct, 29	71	0	0	0	5.5	12.2	16.6	24.4	29.9	36.7	41.1		
Nov, 05	64	0	0.0	7.7	9.1	12.2	16.6	24.4	29.9	36.7	41.1		
Nov, 12	57	0	5.5	9.1	13.3	16.6	22.2	28.9	31.4	40.0	41.1		
Nov, 19	50	1.1	7.7	11.1	16.6	21.1	23.3	29.9	31.4	35.6	40.0		

Table 4.9.1: AB and WR diseases reaction in IDM and farmer's practices

Treatment	ABL (%)									ABP (%)					% WR								SH (%)				
	DOL	JAG	LDH	MOR	PNT	SHL	SGN	BPR	Mean	LDH	PNT	SHL	SGN	Mean	DOL	LDH	MOR	PNT	BPR	SGN	JAG	Mean	SGN	MOR	SKN	LDH	Mean
IDM-SD (Trichoderma) +SA (Trichoderma+ Zn, S, Boron, FYM)	19.7	21.4	33.4	18.2	40.2	22.7	21.4	21.4	24.8	27.4	30.9	12.4	16.8	21.9	6.3	29.1	20.6	36.2	25.9	31.9	27.3	25.3	12.3	18.7	36.9	8.0	19.0
Farmer's Practice	67.7	21.2	36.5	24.4	46.9	34.3	40.6	28.8	37.6	30.5	38.2	26.0	32.5	31.8	10.0	32.7	45.2	47.9	60.0	35.5	28.1	37.1	20.3	35.8	41.3	9.0	26.6
CD (5%)	16.7	NS	1.5		4.5			8.1	7.6	NS	5.6			5.6	1.5	NS		7.7	5.6		NS	4.6			2.3	NS	2.3
CV %	10.1	5.5	1.2		2.7			6.0	4.9	3.9	4.3			4.1	5.0	4.9		4.9	3.8		12.0	6.7			1.6	5.8	3.7

Table 4.9.2: PM, DM, SR and seed yield diseases reaction in IDM and farmer's practices

Treatment	PM (%)					DM (%)	% SR									Yield (kg/h)									
	JAG	MOR	SKN	BPR	Mean	PNT	DOL	JAG	LDH	MOR	PNT	SHL	SGN	BPR	Mean	DOL	JAG	LDH	MOR	PNT	SKN	SHL	SGN	BPR	Mean
IDM-SD (Trichoderma) +SA (Trichoderma+ Zn, S, Boron, FYM)	19.3	25.1	73.4	34.2	38.0	28.8	8.0	10.0	13.1	15.0	21.2	4.8	16.6	8.9	12.2	1765	1332	1897	2685	2392	1952	1170	2625	2490	2034
Farmer's Practice	15.9	44.1	75.5	51.1	46.7	36.2	26.7	10.5	17.9	48.3	27.8	6.0	29.5	19.8	23.3	1425	732.28	1725	2113	2008	1830	1030	2103	1880	1650
CD (5%)	3.6	-	NS	3.0	3.6	4.3	8.6	NS	4.0	-	1.9	-	-	5.0	4.8	48	441	180	-	2.6	NS	-	-	484.9	168
CV %	5.4	-	2.5	2.1	4.0	3.5	13.1	4.0	6.8	-	2.0	-	-	4.1	6.5	0.79	11.3	2.6	-	3.2	9.5	-	-	5.8	5