Alternaria blight of mustard caused by *A. brassicae* (Berk) Sacc. is prevalent in Ranchi district with an intensity of 20.0 to 30.7 per cent. During the survey of the problem, the frequency of *A. brassicae* was higher (78.0 per cent) than *A. brassicicola* (22.0 per cent). In *in vitro* trials conidia of *A. brassicae* was observed to be 98.0-245.0 x 16.0-28.0 μm size with 36.0 to 106.0 μm beak length, whereas *A. brassicicola* measured 78.0-96.0 x 11.0-16.0 μm size with 0.0-28.0 μm beak length. *A. brassicae* was found to be more pathogenic (38.67 percent in seed inoculation and 25.33 per cent in foliar spray) than *A. brassicicola* to the crop in this region.

Richards' and glucose asparagines agar and their broth media favoured the growth of the pathogen, but Richards' and host extract agar and its broth were best for the sporulation of both the pathogen. The temperature 23.0 °C showed better growth and 23.0-25.0 °C favoured the sporulation of *A. brassicae* but in case of *A. brassicicola* temperature range 23.0-25.0 °C showed maximum growth and 23.0-27.0 °C favoured maximum sporulation. The pH range 5.0-6.0 showed the maximum growth and 6.0 gave higher number of spores per ml of *A. brassicae*, whereas, 6.0 was observed to be the best for growth and pH range 5.0-7.0 for higher sporulation in case of *A. brassicicola*.

The weather factors viz., the maximum and minimum temperatures and the maximum and minimum relative humidities showed impact on disease development. The maximum temperature range 20.6 to 27.1 °C showed maximum disease development per week. The disease intensity showed highly significant correlation with the maximum, minimum and average temperatures and positive correlation with the maximum relative humidity. The disease development per week showed significantly negative correlation with the maximum, minimum and average temperatures but positive correlation with the maximum, minimum and average relative humidities and rainfall. Age of plant was significantly positively correlated with disease intensity and disease development per week.

All the four independent weather factors viz., the maximum and minimum temperatures and the maximum and minimum relative humidities altogether contributed 92.5 per cent in the disease development for the year 2000-2001. Only minimum temperature and maximum relative humidity contributed 86.7 per cent. The maximum temperature and minimum relative humidity contributed 91.9 per cent in case of Logits transformed values and maximum temperature and maximum and
minimum relative humidities contributed 93.8 percent for Gompits transformed values. All the four weather factors contributed 87.2 per cent in disease development for the year 2002-2003 and only minimum relative humidity 79.9 per cent. the same trend was observed for logits and Gompits transformed values.

Among thirteen available cultivars none of the cultivar showed resistant or tolerant reaction against Alternaria blight. However cultivars viz., RN – 393, JM – 1, RL – 1359 Bio – 902 , RM – 30, Kranti, SCJ – 2 and Pusa bold showed moderately susceptible reactions and rest showed susceptible reaction in in vitro and in vivo evaluation of the cultivars.

Under lab conditions Lawsonia alba showed high inhibition per cent of A. brassicace followed by Datura stramonium, but D. stramonium showed high inhibition followed by L. alba in case of A. brassicicola. Azadirachta indica and Pongamia glabra also showed inhibition over the growth of both pathogen.

Indofil M – 45 and captan were highly effective in checking the growth of pathogen followed by Blitox – 50 and Ridomil under lab condition.

The least disease intensity and high percentage of inhibition of foliage as well as on silique were observed in the plots treated with Indofil M – 45 and captan under the field condition, Blitox – 50, Benomyl and Ridomil showed 70 per cent inhibition of disease over the control in foliar and silique disease intensity. Indofil M-45 gave high cost benefit ratio followed by Blitox-50. Among plant extracts L. alba showed minimum disease intensity on both foliage and on silique, followed by D. stramonium and A. indica. L. alba treated plots gave high yield and the benefit cost ratio followed by D. stramonium.