

RESEARCH ARTICLE

Effect of environmental factors on population dynamics of *Aphis gossypii* (Glover) (Aphididae ; Hemiptera), in cotton under agro-climatic condition of Madhya Pradesh

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ABSTRACT

Effect of environmental factors on the population of aphid, *Aphis gossypii* Glover on cotton variety JK-4 were studied during two consecutive cropping seasons of *Kharif* 2005-06 and 2006-07. The cotton aphid, *A. gossypii* was first noticed in the 27th SMW *i.e.* first week of July during both the years of study and remained up 47th SMW *i.e.* 4th week of November. The peak population 32.33 aphids / 3 leaves was observed during 33rd SMW *i.e.* 3rd week of August. The correlation study revealed that the aphid population had a significant negative correlation with maximum temperature ($r=-0.531$) and positive with minimum temperature ($r=0.654$), morning relative humidity ($r=0.665$), evening relative humidity ($r=0.662$) and wind velocity ($r=0.654$). Further multiple regressions computed for combined effect of eleven environmental factors on aphid population was $Y=-31.861 -1.456X_1 +1.152X_2 +0.557X_3 +0.216X_4 -0.146X_5 +1.106X_6 -0.118X_7 -0.858X_8 +8.314X_9 -3.726X_{10} -4.241X_{11}$ ($R^2=0.907$). Path analysis worked out also supported the above findings. The results revealed that cotton aphid population had the positive and highest direct effect on aphid population followed by wind velocity, morning relative humidity, minimum temperature, rainy days and evening relative humidity while spider population, green lacewing population, maximum temperature, and rainy day in a week had negative effect on aphid population.

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