

**SEGREGATION FOR ROOT KNOT NEMATODE RESISTANCE GENE(S)
IN F₂ POPULATIONS FROM RESISTANT X SUSCEPTIBLE CROSSES**

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Abstract

One of the serious pest of upland cotton (*Gossypium hirsutum* L.) is the southern root knot nematode (RKN), *Meloidogyne incognita* (Kofoid and White) chitwood race 3 that causes severe yield losses to cotton. This study was conducted to identify mode of genetic inheritance of RKN resistance genes using two F₂ populations derived from two different crosses (Resistant Near Isogenic Line X Susceptible Near Isogenic Line) and (Resistant Near Isogenic Line X ST213). The segregation of resistant and susceptible genes in these two F₂ populations was determined using gall index ratios. All the plants were evaluated in a green house experiment for root galling index after being grown for six weeks in pots inoculated with nematode eggs. Root galling was rated using an indexed scoring system ranging from 1 (least galling) to 5 (severe galling). First, out of one hundred and twelve F₂ progenies obtained from a cross of (RNIL X SNIL), thirty-two scored resistant and eighty scored susceptible. Out of one hundred and ten F₂ progenies obtained from a cross of (RNIL X ST 213) twenty-nine scored resistant and eighty-one scored susceptible. The probability (p) values for the ratios (3:1) and (13:3) in both populations are greater than 0.05. These results indicated an approximate segregation ratio of 3:1 or 13:3 for susceptible and resistance in both F₂ populations, suggesting a single recessive gene or one dominant and one recessive gene may be involved in controlling the resistance trait. Further F₂ population is being screened using SSR primers.