INTRODUCTION
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Chickpea is an important component of cropping system of substance farming in the Indian sub continent. Various nutritional attributes together with its ability to derive more than 70 per cent of its nitrogen from symbiotic nitrogen fixation makes chickpea a promising crop for the sustainable agriculture. Chickpea (Cicer arietinum L.) is suggested as the most suitable crop that can be grown after rice on residual soil moisture. It is known by a number of common names like Gram, Bengalgram, Egyptianpea, etc. The crop was cultivated in ancient times in the Mediterranean region, in the Middle East and in the Indian subcontinent. On global basis chickpea (Cicer arietinum L.) is the third important pulse crop after dry beans (Phaseolus vulgaris L.) and dry peas (Pisum sativum L.). Pulses occupy 68.32 million ha area and contribute 57.51 million tonnes to the world’s food production. India shares 35.20 percent area and 27.65 percent of the global production (Anonymous, 2002). India, Pakistan, Bangladesh and Nepal together account for the 76 percent of worlds chickpea production and 80 percent area (FAO, 1992).

It is estimated that population of India would be reaching 1.350 millions by 2020 AD, and the country would require minimum 30.30 million tonnes of pulses as against today’s production of only 13.35 million tonnes. To bridge this gap, an annual growth rate of 0.8 million tonnes needs to be achieved by improving production systems and by adopting better disease management practices and implementation. (Ali and Kumar, 2001). Chickpea is a leading pulse crop of India, grown in an area of 6.31 million ha with annual production of 5.08 million tonnes.
contributing 29 percent of area and 38.05 percent of pulse production (Anonymous, 2002). It belongs to family Leguminosae and sub family Papilionaceae. It is native of Indian Sub Continent and Central Asia.

Chickpea is a very important pulse crop having several uses in the food preparations. It contain 21.10 % protein, 61.50 % carbohydrate, 4.50 % fat (Singh, 1985) and forms an important part of Indian diet. It is the principal source of protein for a predominantly vegetarian population and is cultivated throughout the state of Chhattisgarh. It is widely grown in plains of Chhattisgarh, Northern hill regions and Bastar plateau. It is grown under both rainfed and irrigated conditions. In plains of Chhattisgarh, it is grown in Kanhar soils while in hilly areas, it is grown in acidic soils. The average yield of chickpea in Chhattisgarh comes to 515 kg/ha which is very low to its national average. A number of reasons have been assigned for such a poor yield in chickpea. One of the reason is the negligence in the adoption of plant protection measures against pest and disease (Chaure et al., 2003).

The gram pod borer, Heliothis armigera, is a polyphagous and notorious pest on many economical important crops like cotton, tomato, pigeonpea, chickpea, lablab, sorghum, maize, sunflower, lathyrus, etc. The serious losses caused by H. armigera have been reported from very early year by many workers all over the world. Due to excessive selection pressure by intensive use of chemical insecticides, the field population of H. armigera (Hub.) has developed resistance to many insecticides (Arms et al. 1992). Therefore emphasis has been given in the recent past on biological control involving a sound knowledge of ecology of the key pests so that their populations are kept below the level of economic injury through the judicious use of various pest control tactics. Synthetic pesticides can not be
considered ideal in pest management programme due to reasons of safety to human beings, environment, resurgence of minor pest etc. (Schmutterer, 1990).

Role of the biotic factors, viz., temperature, humidity, and light is recognized as limiting factors for the development of organism and population. On the other hand the conservation and augmentation of bio-agents has proved scientific and useful in controlling the insect pest because it not only manages the pest but also maintains the ecological balance of the nature. Biological control is an important component of integrated pest management. Under such situations attention has turned to develop pesticides i.e. NPV, B.t., entomopathogenic fungi etc. as an approach to manage this pest.

The ultimate source of the pest management may be determined not only by the method of control but the method and time of application as well. There seems a need of finding out as to how different methods can be used most effectively harmoniously in pest management programme. This also calls for the study of population fluctuations of the pest throughout the year. These studies may, therefore, reveal appropriate methodology for the application of control strategy before the pest reaches the active feeding stage. Different microbial pesticides and their combinations has to be worked out to see their effectiveness on the insect pest. Different doses of microbial pesticides needs to be tested to find out the efficiency of dose to *H. armigera* which is the major pod borer defoliator in this region.

Chickpea crop suffers due to different stresses. More than 50 pathogens have been reported to infect chickpea in different parts of world (Nene et al., 1989) but only few of them have the potential to devastate the crop. Out of several potentially damaging stem and root rot diseases wilt caused by *Fusarium oxysporum* f.sp.
Ciceri, collar rot by *Sclerotium rolfsii* and root rot by *Rhizoctonia* sp. are important fungal pathogens which are commonly designated as "chickpea wilt complex". Chickpea wilt complex are responsible to a greater extent for instability in yield of the crop in major production areas of the world (Mathur and Sinha, 1970, Shrivastava et al., 1984, Ahmed and Mohammad, 1986, Patel and Anahosur, 2000). Large areas are totally destroyed by this wilt and hectares of lands are unable to provide even minimum needful products. *Fusarium* wilt is prevalent in most chickpea growing countries and is a major disease. It is a seed and soilborne disease. The field symptoms of wilt are dead seedlings or adult plants, usually in patches. The disease can affect the crop at any stage.

Collar rot (*Sclerotium rolfsii*) is a widely prevalent disease and can cause considerable loss to plant stand when soil moisture is high and temperatures are warmer at sowing time. The incidence decreases with the age of the crop. Drying plants whose foliage turns slightly yellow before death, scattered throughout the field is an indication of collar rot infection.

Dry root rot (*Rhizoctonia solani*) is the most important root disease in chickpea and is prevalent in most of the chickpea growing countries. The disease generally appears around flowering and podding time in the form of scattered dried plants. The seedlings can also get infected. The susceptibility of the plant to the disease increases with age.

Most studies on biological control of plant pathogens have been done on the control of soil borne plant pathogens by using antagonistic rhizosphere and rhizoplane microflora. The fungi under genera *Trichoderma* are most widely studied as bioagents to control plant pathogens. *Trichoderma* species have long
been known as effective antagonist against plant pathogenic fungi. They are ubiquitous easy to isolate, grow rapidly on many substrates, affect a wide range of plant pathogens, as they are producers of antibiotics (Lederer et al., 1992, Wells, 1988). *Trichoderma harzianum, Trichoderma viride and Trichoderma virens* are the most commonly cited species in biological control. *Sclerotium and Fusarium* fungus attacks are very common in pulses and causes wilting of plants. Large areas are totally destroyed by this wilt and hectares of lands are unable to provide even minimum needful products. Thus, to overcome this wilt several species of *Trichoderma* are used to protect the wilt of plants. Since Chhattisgarh region has a wide range of natural microbial resources and huge area with various agro-climatic zones, there is a need to find and identify the location specific effective *Trichoderma* sp. to enhance gram – *Rhizobium* symbiosis by controlling fungal wilt disease.

Agriculture, in a broad sense, is not an enterprise which leaves everything to nature without intervention. Rather it is a human activity in which the farmer attempts to integrate certain agroecological factors and production inputs for optimum crop and livestock production. Thus, it is reasonable to assume that farmers should be interested in ways and means of controlling beneficial microorganisms as an important component of the agricultural environment. Agricultural crop growth and development are closely related to the nature of the soil microflora, especially those in close proximity to plant roots, i.e., the rhizosphere. Thus, it will be difficult to overcome the limitations of conventional agricultural technologies without controlling and exploiting microorganisms. This particular tenet is further reinforced because the evolution of most forms of life on earth and their environments are sustained by microorganisms. Most biological activities are influenced by the state of these invisible, minuscule units of life.
Therefore, to significantly increase the food production, with the help of low cost environmental friendly microbial inoculants, it is essential to search microbial strains with a higher level of environmental competitiveness, particularly under stress conditions of rainfed region like Chhattisgarh which is exposed to extreme dry and hot climate for prolonged period during summer.

To evaluate the various components for the control of pest and disease, the present studies was proposed on the following aspects:

(1) To study population dynamics of *H. armigera* and its natural enemies on chickpea.

(2) To evaluate the effective concentration of microbial pesticide (NPV) against *H. armigera* and on prevention of yield losses of chickpea under field conditions.

(3) To test the host specificity and safety of Nuclear Polyhedrosis Virus (HNPV).

(4) Isolation of *Trichoderma* species from soil of different parts of Chhattisgarh region.

(5) To study the effect of different isolates of *Trichoderma* spp. under *vitro* conditions and check the compatibility of different *Trichoderma* species with root nodule bacteria of gram.

(6) Field study at wilt affected areas on efficacy of screened out isolates of *Trichoderma* and *Rhizobium* for control of wilt complex of chickpea.