ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 6, Issue, xx, pp.xxxx-xxxx, December, 2014

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

SUCCESSFUL REARING OF BUMBLE BEE, *BOMBUS HAEMORRHOIDALIS* SMITH YEAR ROUND IN HIMACHAL PRADESH IN INDIA

***Avinash Chauhan, Rana, B. S. and Sapna Katna**

Department of Entomology, Dr Y S Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, India

ARTICLE INFO

Article History:
Received xxxxxxxxxx, 2014
Received in revised form
xxxxxxxxxxxx 2014
Accepted xxxxxxxxxx 2014
Published online xxxxxxxxxxxxx 2014

Key words:
Bombus haemorrhoidalis, Biology, Mating, Diapause, Year round rearing.

ABSTRACT

Bombus haemorrhoidalis Smith is a native bumble bee pollinator exhibits an annual life cycle but for commercial rearing, year round rearing is intended. Colonies of *B. haemorrhoidalis* first reared under laboratory conditions and then shifted in the field for further development. Sexual forms were isolated and mating was done artificially in the laboratory. Laboratory mated queens were allowed to start the progeny under controlled conditions. Out of total experimental queens, 83.33 per cent queens started rearing brood and raised the population upto 150-180 workers and thus for the first time in the country successfully reared the bumble bees for more than fifteen months without undergoing hibernation. Different pests were also recorded.

INTRODUCTION

Bumble bees are pollinators, belong to tribe Bombini and Genus *Bombus* found mainly under temperate to subtropical regions of the globe. While some perennial species of these pollinators are found in the tropical places also (Amir and Michener, 1977). These are considered as efficient pollinators because of long working hours, buzz pollination of crops, works well under adverse conditions of temperature and humidity (Corbet *et al.*, 1988 and Erikson and Buchmann, 1983). In addition, due to low population and shorter flight range, these bees are very suitable for pollination under protected cultivation, especially solanaceous and cucurbitaceous crops (Velthuis and van Doorn, 2006; Shipp *et al.*, 1994; Chauhan, 2011). Different *Bombus* species like *B. terrestris*, *B. impatiens*, *B. accidentalis* etc have been utilized for commercial pollination of different crops in Turkey, Holland, Japan, China, U.K., U.S.A. and many other countries (Kwon and Saeed, 2003; Velthuis and van Doorn, 2006; Klein *et al.*, 2007). These species are quite costly to import for crops pollination (Asada and Ono, 2000). Their introduction can also cause different problems like competition in the local species and spread of diseases and pests which might be new to our environment (Couvillon *et al.*, 2010; Stout and Goulson, 2000; Whittington and Winston, 2003). Worldwide only five species of bumble bees are commercially reared and in North America only two species, *B. impatiens* and *B. accidentalis* are used for pollination (Velthuis and van Doorn, 2006). Commercial enclosed farming has increased the use of the bumble bees as economically important pollinators for high economic return and offseason crops. Indigenous bumble bee species has been considered important to rear and use for pollination services than imported bumble bees to avoid possible environmental and pest problems. In India, *B. haemorrhoidalis* is natively available major bumble bee species spread from low lands to high altitude region of Himalayas (Saini and Ghattor, 2007) and attempts for its rearing have been made from last one decade (Dayal and Rana, 2004; Thakur, 2006; Chauhan, 2011). Partial success in domestication under laboratory conditions have been achieved but rearing throughout the year was not realized because of lack of diapause studies and unavailability of culture till onset of winters due to pests and diseases attacks (Chauhan *et al.*, 2013). Successful attempt was made and present studies were formulated to study diapause for year round rearing of bumble bees.

MATERIALS AND METHODS

The present investigations were carried out during 2012-2014 in the laboratory and experimental farm of the department of Entomology, Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India at an altitude (1250m amsl), longitude of 77^0 11' 30" E and a latitude of 30^0 52' 30" N subtropical areas.

Corresponding author: Avinash Chauhan,
Department of Entomology, Dr Y S Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, India.