



Research Article

Power packed green lacewing feed (PPGF), its shelf life and effect on reproductive potential of *Mallada desjardinsi* (Navas) (Neuroptera: Chrysopidae)

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ABSTRACT: A semi-synthetic diet named as the power packed green lacewing feed (PPGF), comprising whey protein, soybean granules, proteinex powder and glucon mixed in equal quantity by weight, was developed for *Mallada desjardinsi* (Navas) for increasing its reproductive potential. The cost of 1000g PPGF was worked out to be Rs. 621.00 (approx. US \$14). It had a shelf life of four months at 5-10°C. The females of *M. desjardinsi* survived for 49 days when fed on the diet stored for eight weeks, on par with the control (58 days). Thereafter, survival declined to the lowest (16.8 days) when fed with the diet stored for 15 weeks. The predator laid maximum eggs (811.2 / female) on the diet stored for four weeks, on par with that on diet stored up to eight weeks (774 eggs / female) and the control (888 eggs / female). The fecundity declined to the lowest (220.6 eggs) on PPGF stored for 15 weeks. Per cent hatchability was on par for up to eight weeks and declined significantly, with 33% on the diet stored for 15 weeks. In PPGF+honey (20%) feed combination, another peak of egg laying was recorded in females after 4th week, whereas egg laying ceased in females that were fed with only 20% honey after the 4th week. The females survived for up to 9 weeks maintaining productive age of more than eight weeks. PPGF+honey (20%) offered to the adults of *M. astur* also enhanced the fecundity (668.0) as against the control (292.14). Besides, other biological attributes were not affected due to the feeding on PPGF. These studies suggest a great potential for commercialization of PPGF in order to promote cheaper production and field utilization of green lacewings.

KEY WORDS: PPGF, multiplication, *Mallada desjardinsi*, *M. astur*, shelf life

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INTRODUCTION

Chrysopids, commonly known as green lacewings (Neuroptera: Chrysopidae), have attracted considerable attention worldwide in recent years for mass production and use in biological control programmes. This is because of their widespread distribution and great potential in controlling a large number of insect pests and mites in different crops and cropping systems (Jalali and Singh, 1944; Gautam and Tesfaye, 2002; Gautam *et al.*, 2003; Pathan *et al.*, 2010). The larvae are predatory while adults feed on honeydew and a variety of flowers and thus get nutrition through nectaries and pollen grains. It may be noted that assured supply of pollen grains from plant sources is not only associated with seasonal dependence but also cumbersome (Gautam, 2008). Similarly, collection of honeydew from homopterans is practically not economical and advisable. Several semi-synthetic media, pollen grains and honey combinations advocated by various workers (Vanderzant, 1973; Gautam and Paul, 1988; Cohen *et al.*, 1998; Tesfaye and Gautam,

2002a; Ulhaq *et al.*, 2006; Senthilkumar and Gautam, 2007; Milevoj, 1999; Venkatesan *et al.*, 2000) do support the rearing of the predators with varying success. In view of that, a successful semi-synthetic diet was developed through a series of rigorous exercises to feed the green lacewing adults in the Plant Health Clinic of the Division of Entomology, Indian Agricultural Research Institute, New Delhi 110 012, India, and labeled as Power Packed Green lacewing Feed (PPGF). The cost of 1000g PPGF was worked out to be Rs. 621.00 (approx. US \$14) based on the price index for the year 2006.

Keeping in view its potential for commercialization, studies on the shelf life of PPGF and its effect on the reproductive potential (female longevity, fecundity and egg hatchability) of *Mallada desjardinsi* (Navas) were conducted. Besides, potential of PPGF to induce egg laying of the predator was also studied as normally females feeding on honey alone become unproductive and cease oviposition between 3rd and 4th weeks after emergence.