Pollen Trapping Honey Bee Colonies in Minnesota

PART I: Effect on Amount of Pollen Trapped, Brood Reared, Winter Survival, Queen Longevity, and Adult Bee Population.[1,2,3]

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ABSTRACT

Four (4) experimental pollen trapping treatments (full-time, part-time, no-time, and control) were used to determine how pollen trapping affects honey bee colonies. The effect of pollen traps on several colony characteristics was measured. There were no significant differences in winter survival or queen longevity. More pollen was trapped per day from the part-time treatment than the full-time treatment in both 1984 and 1985. The full-time treatment colonies had significantly less brood than did the other 3 treatments in late summer of 1984, and in May, 1985. The full-time treatment also had significantly less brood than the no-time treatment in early spring of 1985. The full-time treatment had significantly fewer adult bees than the part-time or control treatments at the end of the experiment.

INTRODUCTION

BEEKEEPERS have been using devices to trap plant pollen for many years, and the effects of such pollen trapping on honey bee colonies have been studied by a number of investigators. Differences in location, duration, and experimental design have led to contradictory results.

Lavie (1967) and McLellan (1974) reported that pollen trapping had no significant effect on the amount of brood reared. Ibrahim and Selim (1974) and Moeller (1977), however, reported that continuous pollen trapping reduced the amount of brood reared.

McLellan (1974) reported a slight reduction in winter survival of colonies being trapped, but advocated that further studies were needed. Moeller (1977) found that winter survival of colonies that had been pollen trapped was seriously affected. He recommended that colonies not be trapped for prolonged periods.

McLellan (1974) found that colonies with traps had adult populations that were similar to untrapped control colonies except for a slight population reduction in August.

Thus, the debate continues on whether the use of pollen traps is detrimental to colonies, and if pollen trapping is profitable to beekeepers. Since the use of pollen traps on honey bee colonies has increased over the past few years, this study was conducted to determine the effects of pollen trapping in east central Minnesota.

MATERIALS AND METHODS

This study was initiated in May 1984 and was terminated in October 1985. It was designed to evaluate the effects of pollen trapping on honey bee colonies managed in a 2-year system. This management system used young queens and divisions during the first year and overwintered strong parent colonies during the second year. The management of colonies in this experiment was similar to that used by Sugden and Furgala (1983).

The bottom type trap selected was modeled after the original OAC trap developed by Smith and Adie (1963. This pollen trap (Honeybee Products, Rt. 1, Amery, WI 54001) is available commercially (Fig. 1).

On May 15, 1984, 28 queenless divisions were prepared. Each division contained approximately 5100 sq cm of brood and adhering adult honey bees in a standard Langstroth hive body. Clipped and marked Starline queens purchased from the same commercial source were introduced and established in the divisions. The details for making divisions and installing queens were described by Sugden and Furgala (1982, 1983). On May 31, 1985, 24 queenright divisions were moved to a University of Minnesota St. Paul Campus apiary.

Four (4) experimental pollen trapping treatments were used. The first treatment represented full-time trapping (FT). The colonies in this treatment were trapped from June 1 until frost the first season and from April 9 until frost the second season. The second treatment involved part-time trapping (PT). This treatment consisted of trapping pollen every other week. The trapping grids of the pollen trap could be disengaged to allow free movement of the bees on alternate weeks (Fig. 1). The third treatment was no-time trapping (NT). The colonies in this treatment were placed over pollen traps, but the grids were always disengaged to allow the bees unimpeded access into the hive. The fourth treatment was the control (C). Colonies in this treatment were not equipped with pollen traps.

The experiment was a complete randomized block with 3 circles of colonies. Treatments were randomly assigned to colonies with the restriction that each circle contained 2 colonies from each treatment (Fig. 2). The circular arrangement was used to reduced drift among colonies. All data were collected from the colonies at random. No data were collected from a colony after a supersedure or queen loss, but the colony remained in position for the duration of the experiment.

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