on alternate hosts. This past summer, a total of 15 species of native hosts was collected and reared for parasite recovery. Although new parasite species are recovered during the release season, there is no evidence to date of establishment.

Since 1970, an additional 20 permanent woodland study sites were established throughout the state for the purpose of developing an understanding of gypsy moth population dynamics as related to biological agents and the forest environment. These permanent sites were selected on the basis of being different as to gypsy moth population levels and forest types. Within each site are recorded the stand composition, tree mortality, site environmental factors, egg mass number, and biological control agents. In these study systems, a total of 500 larvae was collected each week through pupation.

Years of survey results indicate the establishment of seven species of parasites and one predaceous beetle. These species are the same as the imported species that were released and established in the New England states during the years 1905 through 1933. In addition, three native pupal parasites, five larval parasites, and four predaceous beetles have been found to attack the gypsy moth in varying degrees.

As a result of survey efforts, which have closely monitored the gypsy moth as it moves through New Jersey, the trends in parasitism as related to the different gypsy moth population levels have been recorded. In the pre-outbreak stage, the Tachinid larval parasite, *Compsilura concinnata,* was the first parasite observed. This parasite was established in New Jersey prior to the introduction of the gypsy moth, having been recovered on alfalfa caterpillar, imported cabbage worm, and other native hosts. In the outbreak or culmination years, the Tachinid larval parasite, *Blepharipa pratensis,* the Braconid larval parasite, *Apanteles melanoscelus,* and the pupal parasite, *Brachymeria intermedia,* attain the highest rate of parasitism. In the post-culmination years, the Tachinid larval parasites, *Parasetigena sylvestris* and *Compsilura concinnata* exhibit the highest percentage of parasitism and, thus, appear to be contributing importantly in the dampening or stabilizing of the gypsy moth population.

Other parasites acting less significantly in the stabilized areas are the Tachinid parasite, *Blepharipa pratensis,* and the Braconid larval parasite, *Apanteles melanoscelus.* The Ichneumonid larval parasite, *Phobocampe disparis,* and the predaceous beetle, *Caolsoma sycophanta,* are not widely established. The egg parasite, *Ooencyrtus kuwanae,* expresses maximum benefit during the year of gypsy moth collapse and years of stability.

Only continued years of monitoring will provide more complete answers, but present results indicate, in stable areas, that parasitoids are host density dependent and appear to be factors contributing to stability following the viral collapse of the gypsy moth population.

New Jersey Department of Agriculture
Division of Plant Industry
Trenton, New Jersey

ABSTRACT

Blaser, R.E. 1976. **Plants and de-icing salts.** American Nurseryman 144(12): 8-9, 50, 52-53.

De-icing salts are used in increasing amounts in the snow belt states because highway and park agencies encounter public pressure to remove snow and ice from roadways, walkways, and cycling paths. Along with mechanical snow removal, the use of salts is the most economical and reliable method for preventing accumulation and for removing ice and snow. There are opposing factions concerning the use of de-icing salts. One faction demands that the roadways and walkways be kept free of snow and ice. The other is strongly opposed to de-icing salt practices. The detrimental effects of de-icing salt are soil and water pollution that is harmful to plants and humans as well as water contamination, which makes water useless for certain industrial practices.