Social disease may control Mexican bean beetle

BELTSVILLE, Md. — A "social disease" is being tested by USDA scientists here as a biological weapon for controlling the Mexican bean beetle.

The social disease is actually a parasitic mite that lives on the beetle's body. One hundred times smaller than the beetle, the mite feeds on the undersides of its host's wings, and waits for an opportunity to crawl onto another beetle That chance arrives when the beetles mate.

If current experiments at USDA's Beneficial Insect Introduction Laboratory show that the mite can help control Mexican bean beetles in the U.S., scientists will already have an excellent dispersal system for the new bio-control--the beetles themselves.

The Mexican bean beetle is the worst insect pest of bean crops in the U.S. In 1974, farmers in Mid-Atlantic states spent over $5 an acres on insecticides aimed at the pest.

The parasitic mite does not occur naturally in this country. It was imported for quarantine study from Central America where USDA entomologist Floyd Smith observed that "in fields where the beetles were not destructive, close to one hundred percent of the bean beetles were infested with the mites."

USDA tests show the mite does not infect beneficial insects.

At the lab this spring, the mite passed a critical test, by overwintering. Smith and entomologist Robert F. Schroder infested beetles with mitees last fall and placed them in special field cages. Up to 75 percent of the beetles still had mites in the spring.

Now Smith and Schroder will find out if the parasitic mite can join the parasitic wasp in fighting bean beetles- yes, the parasitic wasp.

In 1973, USDA scientists imported a non-stinging wasp--another natural enemy of the beetle–from India. After research done by University of Maryland scientists, the wasp was unleashed.

It has done well, greatly reducing the need for spraying insecticides on bean beetles in many areas of Eastern states. But, the wasp does not survive winter.

Each spring, state agriculture departments in Maryland, Delaware, New Jersey, South Carolina and Virginia must redistribute the tiny beetle fighters. (In north and central Florida, and southern Georgia and Alabama, researchers predict that the wasp will have to be released every two or three years.)

The wasps lay their eggs in the larvae of the bean beetles and young wasps simple eat their way out, killing the larvae.

However, even with redistributions, Smith says, "you can't expect to have enough wasps in the field when the beetles emergy from hiberation. By the time the wasps increse their numbers sufficiently, the beetles have a head start."

Unlike the wasp–larvae relationship, the mite-beetle system is self-perpetuating.

The mites stay with the beetles through the winter and bio-control begins when spring's warmth wakes up the beetles. The mites suck the lifeblood of the beetles, reducing their vitality and ability to lay eggs.

The parasites are part of a growing arsenal of non-chemical methods form the USDA laboratory for controlling the Mexican bean beetle. USDA entomologists and plant breeders may soon realese soybean varieties that are resistant to the beetles, as well as to other soybean pests.

And, in a project just getting underway, scientists are looking at certain viruses that cause insect diseases, as possible bio-control agents against the beetles.

With man interfering with the beetle's sex life, diet and general health, one would think the critters would leave us our limas, snaps, and soybeans, and go elsewhere. At least, say USDA officials, the new control weapons should be safer and cheaper to use and that the Mexican bean beetle probably will become less of a nuisance to farmers.