

USDA develops solar-heated beehives

WASHINGTON — Instead of freezing to death over the winter, honeybees in cold climates can now stay warm and healthy in solar-heated beehives, thanks to a new type of beehive cover developed by the beekeeping industry and the U.S. Department of

Agriculture.

In USDA tests, survival rates were nearly 100 percent for honeybee colonies in hives protected by the covers during Wisconsin winters. That compared to losses in unprotected hives during severe winters of up to 50

percent.

The covers are box-like structures of translucent plastic that trap infrared rays from the sun like a greenhouse or a car with its windows up. They also help retain heat generated internally by the bees themselves.

"Natural sunlight and honey provide the fuel," said entomologist Eric H. Erickson of USDA's Agricultural Research Service. "The covers cost little to make and virtually nothing to operate."

According to Erickson, honeybee colonies in covered hives achieved their high winter survival rates while consuming 20 percent less honey than bees in uncovered hives.

"That means 20 percent more honey for commercial use, which should come as welcome news to beekeepers concerned over the economics of destroying colonies to avoid the cost of winter upkeep," he said.

"Up to now, beekeepers in cold climates have often had to choose between shipping their colonies south each winter or purchasing new colonies each spring," he said. "Either way, it could be an expensive proposition."

Erickson and his staff, who have been evaluating the covers for several years at the agency's bee research laboratory in Madison, Wisc., recommend the covers as a cost-saving to beekeepers in the northern half of the United States.

When he inspected the covered hive in midwinter, Erickson found that bees were moving about freely compared to the immobile clusters typical of uncovered hives.

"It's important for bees to avoid forming an overly tight cluster within a hive," he said. "Bees in uncovered hives have to huddle against the cold, and bees packed too densely often starve because they don't move about within a hive and don't find enough honey."

In addition to keeping bees warm, the plastic covers can keep

them dry. Without the cover, moisture will condense and freeze inside a hive during winter and then melt to soak the bees when the weather warms.

"Honeybees have hairy bodies and if they get wet they can chill quickly and become quite sick," Erickson explained. "With a plastic cover in place, moisture will condense on the cover itself and there won't be any frost or ice inside the hive."

Beekeepers have tried different types of covers in the past with varying degrees of success, according to the scientist. Rolls of insulation wrapped in tar paper were too costly because they gave more protection than necessary for beehives south of Canada. Covers made of styrofoam have worked well, but lack durability.

"Our covers will easily last five years, and probably 10," Erickson said. "You can make them from the kind of sheet plastic that's available anywhere building supplies are sold, and you can probably recover their cost with extra honey saved in just one winter."

He said that anyone who can build a box can build the beehive cover. "Make sure the plastic is translucent so that sunlight can get in," he said, "and that the box is just big enough to allow two inches or airspace on all sides of the hive."

"And don't forget that even during winter, bees need to get outdoors. You'll need to insert a short piece of one-inch diameter plastic pipe through the cover and directly into the top brood chamber. This will allow bees to leave the hive without getting lost under the cover."



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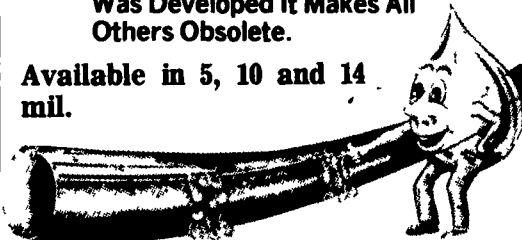
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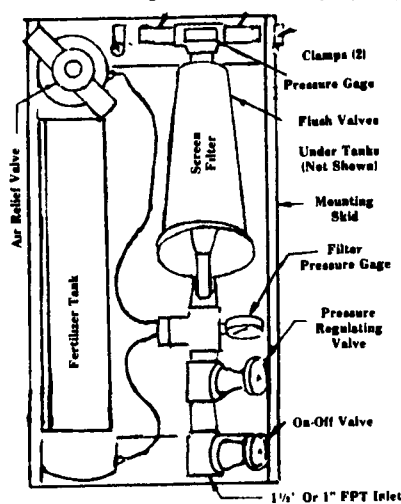
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