# Performance of a Kerkhof Beehive

### Is it really that much better?

First off, what is a Kerkhof beehive? In a nutshell, a Kerkhof hive is a two queen hive with exceptional ventilation and walls that are somewhat insulating. Bees in a Kerkhof hive tend to produce more and tend to over winter better.

### History

The history of the Kerkhof hive is a little sketchy, at least to me. I first found out about them when I saw one in a friend's bee yard. He told me what it was and I decided I had to find out more. I spent many, many hours on the Internet trying to find anything I could. All I was able to find was the original patent – no other information whatsoever. So I'm relying on what I've been told by my friend who owns three, and the local dealer who has sold hundreds.

Herman Van De Kerkhof was granted Canadian patent #1055313 on May 29th, 1979. He produced the hives out of a factory in Vancouver, BC, Canada and sold them in Canada and the U.S. I haven't been able to tell if they were also sold in other countries. Locally, they were sold by Ed Weiss in Wilton, CT. Ed tells me he sold sometimes a hundred at a time to commercial guys. Clearly many beekeepers saw the tremendous benefits of this design. Unfortunately, Herman Van De Kerkhof's company went out of business about 10 or 15 years ago, right around the time the patent ran out. I haven't been able to find out why. The Kerkhof hive has been unavailable since.

### A Little More Detail

So, in a little more detail, here's how a Kerkhof hive is designed: Essentially, this is an updated version of the Langstroth hive we all know so well. It works on the same basic principals – boxes stacked on top of each other containing frames of comb. In fact, the same frames are used in a Kerkhof as are used in a Langstroth.

The bottom board is fairly simple. A large platform with two large openings and a ramp for the bees to more easily reach the frames. There are screened vents on the sides to provide ventilation when you have the main entrance closed. The two entrances face in opposite directions.

On top of the bottom board are two stacks of three brood chambers – six all together. On the front of these boxes is a small opening through which the workers can come and go. The two stacks face in opposite directions according to where the main entrances are. The outer walls of the boxes are double wall allowing for beespace between (I will explain the benefits of this later). The wall adjacent to the other stack is single wall. The two stacks of three boxes house essentially two separate colonies, each with their own queen. The frames in these boxes run lengthwise to the box and six regular Langstroth medium frames are used in each.

On top of these two stacks is a queen excluder. Next come the honey supers, which are double the size of the lower chambers and a single unit covers both stacks. The frames in the supers run perpendicular to the frames in the lower boxes and again are standard mediums. This arrangement allows the workers from both hives access to the common super space, while keeping the queens in the lower boxes.

Now, at first thought you may think that letting both colonies into the same space would cause the death of both colonies. Not so. It turns out the two coexist quite nicely. In fact, according to my friend who has three of these, the arrangement seems to set up a competition between the two colonies and they tend to produce more honey than two separate Langstroth colonies combined. The double wall arrangement in the lower boxes is continued in the supers.

The picture above is of the hive that Ed Weiss keeps in his store as a souvenir. It does not have a top feeder but if you had one, it would go next. Again, the vented walls would continue.

Then comes the outer cover. That's right, no inner cover. Ventilation is built into the cover such that an inner cover is not needed.

So, what are the benefits of all this double queen, double wall, double stack stuff? Well, let's have a look...

### Kerkhof Hive Benefits

**Exceptional ventilation.** The double wall arrangement combined with the bottom and cover vents provides exceptional ventilation throughout the hive. The small space between the walls creates a convection current much greater than that which would be created in the main hive area. In the summer, especially on hot days, this convection current pulls the heat out of the hive. A cooler hive means the workers don't have to work as hard creating air flow, nor do they have to bring in as much water, which is normally needed to provide cooling. This means they can spend more time producing honey and less time cooling the hive.

In the winter, this convection carries moisture out of the hive. The air flow is necessary to remove the moisture but, if there is too much air flow past the bees themselves they end up having to work harder to keep the cluster warm. Eating up additional stores in the process. The convection current in a Kerkhof hive occurs primarily between the inner and outer walls thus keeping the bulk of the draft away from the bees. The cluster stays warmer while the humidity within the hive is reduced.

**Lower humidity.** Efficient ventilation means more moisture is carried out of the hive. Lower humidity in the summer means the workers spend less time fanning their wings to evaporate the nectar and the honey cures faster. Lower humidity in the winter means less chance of condensation on the ceiling of the hive and thereby better survival rates.

**Warmer clusters.** Obviously in any beehive, since they are only made of wood, there is heat loss through the walls. A Kerkhof hive is essentially two hives placed right next to each other. With this configuration, there is only heat loss through three walls instead of four. That means significantly less heat loss, which means more retained heat for the cluster.

The air current between the walls is quite slow. This space, therefore also, albeit quite minimal, acts as a tiny amount of insulation. Hey! Every little bit counts!

Every seasoned beekeeper knows that bees can take a lot of cold, as long as the humidity is low enough. But think about it. The warmer a cluster stays through the winter, the less they have to eat to keep warm and the more stores are left over to get them going in the spring. Anything we can do to help the cluster stay warm makes a difference in both their survival and their spring performance.

**Easier cluster movement.** The main advantage of an eight frame hive over a ten frame hive is it means the cluster needs to do less horizontal movement to reach their winter stores. It is fairly common in colder climates for a colony to die over the winter with plenty of stores in the hive, simply because it was too cold for them to move horizontally to reach the food that was right beside them. The brood chambers in a Kerkhof hive are only six frames. This means a decent size cluster would require very little horizontal movement, if any. They only need to move up to reach their stores, which is much easier. The less they have to break cluster to reach their winter stores, the better off they are.

**Less winter losses.** Lower winter humidity, warmer clusters and easier cluster movement add up to substantially better odds of surviving through the winter. Lower winter losses means lower cost of colony replacement.

**Less swarming.** There are many reasons for swarming but, the two main reasons are over crowding and over heating. The overcrowding is up to your management skills. So sorry, the Kerkhof hive doesn't solve that problem for you. What it does do, as discussed earlier, is reduce the over heating issue.

**Better honey production.** There are several reasons for this. My friend thinks that the two colonies mingling in the super area sets up a competition between them and they work harder. But there are more obvious and logical reasons.

A cooler hive with lower humidity in the summer means the workers can spend more time foraging and less time beating their wings to produce air

flow and hauling water to evaporate for cooling.

A warmer and dryer cluster in the winter means more of the bees survive to spring. The higher the population in the spring, the more foraging they are able to do right off the bat. From there, you know how it works. Essentially, the higher the population in the spring, the higher the population come honey flow time. The higher the population at honey flow time, the more honey you get.

Less swarming also contributes to better honey production. After all, if a hive swarms, you just lost half your work force. And what's left isn't going to make much more than what they need for the winter.

### The bottom line

With all this together, a Kerkhof hive outperforms a common Langstroth hive hands down. Better winter survival and better honey production. Who wouldn't want that?

### Now for the problem

You'll recall I mentioned near the beginning of this article that the Kerkhof hives are no longer available. So all I've done with this article is make you drool over something you can't have. Is this cruel and unusual punishment?

Well, you're in luck. I lied, sort of. It's true that the Kerkhof factory has been closed for some time. And up to this point they have not been available. The good news is, an updated version of the Kerkhof hive is now being manufactured by a beekeeper in Brewster, NY. The new hives have all the features and benefits of the old hives, with “new and improved” added. There are enough new features that it has been given a new name. It's called the **Harvey Heritage Hive** – $H_3$ for short.

### So, what's new?

The main difference is the bottom board. The original Kerkhof hives where built before we had the mite problem in this country. Therefore they didn't have a screened bottom board. The $H_3$ hives do. The new BB also includes better ventilation control and a built-in inspection board.

**Better quality.** While the old hives where very well constructed, they used particle board for the bottom board and inner walls. I feel this is unacceptable since any unit left out in the rain uncovered would be badly damaged. The new $H_3$ hives use exterior grade plywood for the inner walls.

The new $H_3$ hives have bigger handles. This is a relatively minor thing, but the easier the boxes are to handle, the happier you'll be.

You can check out the new $H_3$ hives at RusticElementBees.com. You'll be glad you did.