



Making Beehive Winter Wraps

*It's not too late to wrap your hives.
The major benefit of wrapping is in late winter and early spring.*

In cold climates, beekeepers seek out wintering locations that are slightly elevated, sunny and well sheltered from prevailing winds. Most also use some kind of insulation to moderate temperature swings inside the hives and to protect the hives from draughts. Not only do wraps protect the cluster from sudden temperature changes during the winter, but also they can be very beneficial in the spring when brood rearing starts and the hives need to regulate cluster temperature more closely.

Kept on hives until gardening season, good wraps can mean the difference between life and death for weaker colonies, and between poor build-up and good development in the rest. Some years the benefit of wrapping is questionable, but in other years -- especially in years with a long, cold spring -- wrapping can make a huge and very positive difference in survival and hive condition.

Ideally, for maximum benefit, hives should be wrapped well before the first day of winter. Most beekeepers wrap their hives in mid-fall, as soon as the supers are off and feeding is finished and before snow makes access to the bees difficult. Nonetheless, assuming the bees are not disturbed too much in the process, it is never too late to wrap. In the far north, beekeepers even wrap package bees that they purchase and install in April or May, with significant benefit.

Deciding on a design

Hives can be wrapped singly, in groups, or in rows. Which wrapping style works best in a particular situation depends on how many hives are to be wrapped on a site, and on the peculiarities of each beekeeper's management methods.



Four-packs, on standard grocery pallets or special hive pallets with hive floors built in, are suited to forklift-equipped operations, but they are a compromise between easy moving and ideal wintering because -- given a choice -- beekeepers always prefer to face wintering hives south to get full benefit of the sun. In a four-pack, each pair of hives must face out in opposite directions.



South-facing rows work well, but drifting can be a problem in spring.



Singles use up more insulation material per hive than other methods, but singles are easier to work during early spring management.

No matter which configuration is chosen, the wraps should be strong, snug and able to stand wind, rain and snow. They should also be able to breathe a bit to let out moisture. Good wraps exhibit some animal resistance too, but most wraps can't stand much rubbing, pushing or chewing by cattle and horses, chewing and burrowing by mice and squirrels, or scratching by skunks and raccoons, so other protection from these threats must be planned.

Wraps may be purchased from manufacturers or made at home. While manufactured wraps may be a bit fancier and more durable than the wraps that we can easily make at home, the large difference in convenience, cost and control over design details makes home-building an attractive option for the beekeeper.

Making wraps can be as simple as you like. Many beekeepers just tack, tape or screw some Styrofoam® onto the hives, allow for upper and lower hive entrances, and that's it. Others just wrap Fibreglas® onto the hive and cover it all with tarpaper held on by twine. These methods work, but can be messy and ill fitting. Sometimes such improvised wrapping can blow off in winter. A nicely made wrap looks good, stays on the hive all winter, is easy to put on and take off, will last for years, and is easy to store over the summer. A well-made wrap will contain and protect the insulation from weather and handling, fit the hive(s) snugly, and look good. In this article we'll discuss methods of making cheap, durable, attractive, and effective wraps from common 6-mil black plastic and Fibreglas®, Kodel® or other bat insulation.

Choosing and Finding Materials

Six-mil black plastic is available at all building stores and is usually, if not always, UV resistant. Be sure to ask, though. UV resistance is important if you want the wraps to last for years outdoors. Black plastic comes in various widths and lengths, and costs very little. White 6-mil UV resistant plastic is available too, but we choose black to draw the heat from the sun. White would reflect it.

Fibreglas® is probably the cheapest insulation available, other than straw and shavings. These latter materials are shapeless, hard to contain, and have other drawbacks. Fibreglas® is available everywhere, at building centres, and is easy to handle. The major disadvantage of Fibreglas® is that it packs, is itchy to work with, and it is attractive to mice, however, depending on handling and storage, a Fibreglas wrap should be good for ten years or more.

Kodel® is an industrial batting that is commonly used in the large tarpaulin-covered blankets concrete workers use to keep fresh concrete from freezing in winter. Kodel® is a polyester fibre mat, much like quilt batting. For that matter, common quilt batting – or any other insulation -- can be used if Kodel® or a similar batting cannot be located, but Kodel® is coarser and has the advantage over all other materials in that it sheds water; water just runs out of it. Kodel lasts pretty well forever and will outlast the plastic outer covering we'll be putting on it. Mice don't seem to care for Kodel® at all. After using thousands of Kodel®-filled wraps for many years, I can't recall ever seeing a mouse nest in a Kodel® side wrap. I've seen lots of nests in Fibreglas® wraps. Kodel® comes in 60 inch rolls and typically has an R factor of around four for a 1-1/2" bat (which is, for some unknown reason, actually about an inch thick).

R4 is quite adequate for the sides of hives -- even in the North -- although common Fibreglas® bats are higher than that. Some beekeepers think that more is better and use a double thickness of Kodel®. No matter; I've tried thin and thick and see little difference. Any insulation that can stand some moisture and which will keep its shape is fine, and in my opinion, the R factor on the sides – as long as it is R4, or more -- is not very important.

What is important is the R factor on the top, and many beekeepers use as high as R20 bats in a well sealed 6-mil plastic bag under the lid. Garbage bags might sound perfect, but they are thin, and are not UV resistant. Besides, bees can chew through garbage bags and we don't want glass fibres in our hives.

Ironing is the best way to seal the wraps permanently. There are tapes on the market that might look promising, but many that stick well at room temperature simply fall off when the temperatures drop. Duct tape looks good initially, but rapidly weathers and ultimately falls off, leaving just the glue.

Types of wraps

Belt wraps: Wraps can be made in many shapes, but the most popular and straightforward style, for singles or four-packs, are made like a belt that is as wide as the hives are high, measuring from floor to lid. The wrap is made long enough to go around the hive -- or entire group of hives -- and fastens at the overlap. The ends should overlap by at least several inches. A foot or more of overlap -- depending on the number of hives in each wrap -- is not excessive. Too much overlap is better than too little.

Fastening at the overlap can be by rope or twine, staples, or a vertical strip of wood lathe (1" X 1/4" X 18") held on by several nails driven right through the wooden strip and the wraps. This last method is very quick and secure. Duplex nails or drywall screws can be used for ease in putting the wrap on and off. A few punctures in the wrap from nails won't hurt. Although any wrap should be reasonably windproof, a few *small* holes, here and there, permit some air movement and allow moisture to escape. We actually punch a few nail holes around the bottom of our wraps, to ensure breathing and drainage.

Blankets: Blankets are another popular design and are used over rows or four-packs. They simply go over the whole group and are folded in at the corners like Christmas wrap.

Sleeves: The last design that works well is the 'sleeve'. It looks like a giant hand muff and just pulls down over an individual hive. It is basically a belt wrap that is pre-joined.

Although, in Europe, many beekeepers winter without any top entrance or upward ventilation, the consensus in North America is that wintering hives must have some type of ventilation at or near the top of the hive. Although some wintering methods employ a baffle system in a special wintering inner cover, the most common approaches are to use an auger hole in the top brood chamber or to have a notch in the winter lid to allow moisture-laden air to escape. Such simple, direct openings have the added advantages of allowing easy bee flight in early spring when the cluster is at the top of the hive, and of guaranteeing air supply when ice may block the lower entrances. At any rate, when making wraps, we must plan for and make allowance for such entrances.

Measurements: The exact measurements of wraps are dependent on the hives being wrapped; seldom do two beekeepers settle on exactly the same dimensions. Nonetheless, deciding on the size to make should be a simple matter of careful measuring and allowing a bit extra -- especially in the length of belt wraps, or *both* dimensions for blankets. Measure twice to be sure.

If you start big, you can always cut a bit out later, but adding more material is difficult and the resulting patch job never looks right. When finished and put onto the hives, the thickness of a wintering wrap will cause it to fit smaller than the cut size by an amount roughly equal to the wrap thickness multiplied by the number of corners it goes around -- plus one full wrap thickness.

As an example, for a single-hive wrap, measure around the hives, then estimate the thickness of the finished wrap and add four times that thickness to the length measurement, plus one more thickness. Then add the amount of overlap desired to get the design length.

Draw and re-draw your plans on paper until you are satisfied, since it is wise to work from drawings, rather than just cutting at will. If you are making several wraps, make one complete wrap and try that first wrap out for fit on the hives before cutting out the rest -- just in case.

Design your wraps a bit big.

The thickness of the insulation in a wintering wrap will cause it to fit smaller than the cut size when finished and put onto the hives. Compensate for this in your plans by designing each dimension of the wrap larger than the distance around the hive(s) by an amount equal to the wrap thickness multiplied by the number of corners it goes around -- plus one full wrap thickness. Add to that, any overlap you'll need.

Make one wrap and try it on the hive(s) before making any more.

At this point -- before you finalize your plan and start cutting out patterns -- you might be wise to jump ahead and experiment with small samples of material, cutting the batting, and sealing plastic using an iron (see below) to be sure that you understand what can -- and what cannot -- be done. Flat seams that stick out from the edge and have no insulation are much easier to make than seams made on the face of surfaces that contain insulation, although either style is possible.



The wraps in these illustrations are being made using jigs. Jigs speed production and ensure consistency when more than a few wraps are being made.

The first two pictures show a lap seam being sealed. The second two show the area around an upper entrance being ironed flat. A 4" circle of insulation was cut out inside the wrap and the wrap positioned over a 3-1/2" button on the table. The iron is seen pressing the plastic through a hole (barely visible near Ruth's thumb) in the plywood heat shield. A small hole is then cut in the resulting flat, thin spot to match the auger hole in the upper brood chamber. A single staple holds the wrap tight to the hive at this spot.

Getting ready to build: Before beginning, you will need to have the following:

- Your completed drawings
- Sufficient 6-mil black UV resistant plastic
- Sufficient insulation
- A large flat surface like a full 4X8 sheet of plywood or Masonite on which to cut and iron
- A box-cutter knife and/or scissors
- A long straight edge
- A measuring tape
- Chalk
- Sticky tape for holding things together during fit-up and testing. (Duct tape will do)
- A cheap household iron. Don't use your spouse's good iron.
- Waxed paper or glossy magazine pages
- Several hours of uninterrupted free time

Start building: When your drawings are ready, and all materials are at hand, you are ready to begin.

1. Start by laying out the plastic on a surface large and flat enough that the entire wrap will be able to lie flat. A floor will do fine for small jobs, since tables are generally too small, but you'll need a sheet of Masonite or plywood for a work surface on which you can cut and iron.

If you are building more than a few wraps, making special tables, templates and jigs may prove to be a good idea, but for a one or two-wrap project, careful marking and cutting, using the measurements from your drawings, will be the easiest approach.

2. Lay out your design on the plastic with chalk or tape. Using your straightedge, mark carefully where you will cut. One edge of each wrap will usually be a simple fold, but the other edge will be ironed closed, so allow at least an inch -- and preferably two -- on each outside edge for ironing. Excess plastic can be cut off later, but it is messy to have to try to add on if you find that you have cut too much off. Try positioning the cuts several ways and pick a layout that wastes as little material as possible.
3. Cut the plastic by drawing a sharp knife along the marks or by using scissors. Cuts don't have to be perfectly straight, or smooth but any wandering should be onto the waste material, not into the wrap itself.
4. Next cut the insulation to size with a knife or with scissors.
5. Fold the wrap and place the insulation inside. Tape things in place so that they won't shift while you are sealing the wrap.
6. Heat the iron and experiment with some scrap plastic.

Don't start right on to your new wrap. Wait until you are sure you have the technique down pat before you try to seal a real wrap. It takes a few tries for even an experienced hand to determine what iron setting and what speed and pressure of ironing will give a good bond without melting the plastic to the point where it falls apart.

Place two layers of plastic on a piece of wood or Masonite and place a sheet of waxed paper or magazine paper on top. Carefully iron the paper, wait a full minute for the heat to equalize, and then see if you got a bond between the sheets of plastic

7. When you are satisfied that you know how to iron the plastic, iron your first wrap closed at the edge.
8. Cut out and finish and holes that you have designed for upper entrances.
9. Try it out on a beehive.
10. Wow! It's beautiful!