

[Narrator] Cooperative Extension Service of Michigan State College presents another of its farm and home shows Today our guest is Dr. Donald P. Brown and here is Dr. Brown. [Dr. Brown] Hi there folks, those of you that were with us last week remember that we opened our show last week using the same little hay dryer fan. Well, this is a model of one of our hay drying setups and those of you do that heard the end of our show last week remember that we were talking about all the different systems of hay drying that we can use, different means that we can use to get an even air distribution from the fan out through the hay. And we promised you on that program that we'd come back and go through some of those systems with you and try to discuss some of the points that might be well for you to keep in mind when you're building your hay dryer setup. Let's take a look at some of the points here on the blackboard that some of the different ways that we can install a hay dryer. There are really no hard and fast rules about what we have to do in order to put a hay dryer in a building that is I mean in that respect as to what kind of a building we have to have we can put a hay dryer in most any building that's large enough and that has a good roof on it of course we need a good roof because we don't want to have the rain leak right in on the hay and add more moisture back to what we're trying to drive out of. Let's suppose that we have a building that is shaped something like this. We'll assume here that we're looking into the end of the building. In a setup like this we could come in and build what we call a duct, air duct, down the side of the barn and then come out across the floor with a slatted floor section. Now in this arrangement This would just be a more or less a tunnel built out of lumber and extending right down the length of the barn our fan of course would be located up in the end of the Barn and would be blowing air down into that tunnel Well, if we make this floor Not solid but make it with slats. So we have air spaces out between the slats Such as the of course this wouldn't be up in this part of the barn would be the floor section down here So that when we blow air down through the duct that it will come out and come up through these cracks here between the floor between the boards and the floor. So in a system like this now remember that we always want to have an even distribution of the air. So if we're going to have an even air distribution It means we're going to have to have even density of our hay in there. So in a system like this we would probably want to load that and keep our the top of our hay fairly level All the way across as we maybe put in that much hay, dry it out. And put in some more, dry it out, and so on up. Another type Building that we might use in quite a fact we quite often find that all sort of a quonset shape Building being used as a hay storage In a system like that we can quite often come right in here and use one side of the building as part of the main dirt And then build our slatted floor section out across the floor of the building. Of course our fan again would be located here in the end blowing the air down through there and the air comes out and Filters up through here. Here again, we'd want to keep our hay fairly level all the way across here Whether we're using long hay or chopped hay put in a certain amount, dry it out, the air comes up through it Add some more and keep on until we get the whole system finished Now we often think of a hay storage proposition say as being in a hay mow a hay mow up on the second story of the barn. Well, that's that is perhaps the most common, but it isn't absolutely necessary. We can dry hay right down on the ground level. In fact, if we have a good; good drainage around our building quite often farmers don't even put a floor in the building. They just use the dirt floor, build this system right on the ground because naturally the air isn't going to leak down through here or not. And that's one thing that we must keep in mind though when we when we use a second -story barn Or a second -story room for our hay storage is that we must have a tight floor because air is well... Some people say that air is lazy. It's like water. It's going to go wherever it can go with the least resistance. So you can easily see what would happen here if we

had large cracks in this floor across here and we were trying to force air up through this hay and up into to dry out these top layers of hay that naturally that air could come out those cracks easier than it can go up through there and it's going to get away from us so that's one of the main things we must keep in mind is that we have a tight floor and then all these other fine points about how large this duct should be how big a fan we need and so forth well there's just so many things there that must be considered that I'm not even going to try to cover them with you today but in case you do have questions drop in and see your county agent or talk to your farm service advisor. All of those men are are willing and glad to help you and they have the information that you'll need. Another type of system that we sometimes find, let's assume here that we have a building shape somewhat like the first one that we had. A lot of farmers are using what we call just a central duct system and that is just a duct down the length of the barn. Of course we have openings here that the air comes out, the fan again is located in the end. Now in loading a system such as this, you remember that up here in our first two systems we tried to keep a level or to keep the hay practically level. In a system such as this we wouldn't want to do that because we must try to maintain an even air pressure, an even distribution of our hay in order to get an even air distribution. So if we start loading that duct something like this. Notice that we keep building up, building up, and of course we'll start our drying operation almost as soon as we get the duct covered and we'll start blowing the air out through the hay here in order to dry the moisture out of it. Now another type of system that we find quite frequently, instead of using a rectangular center duct as we see here, is what we call an A-frame duct. So let's assume that we have a barn here that looks something like this, and we want to put in an A-frame central duct. That is perhaps the easiest type of duct to build. There again, of course, we have a fan. That is perhaps the easiest type to build and works very well as long as our barns aren't too wide, and we don't like to go, oh, much over 30 feet in width of that. Some people stretch it up to 36, but there's danger if we get too wide that we won't be able to force enough air out to the side here in order to dry the hay that may be out in these outer regions. But as long as we stay down in the neighborhood of 30 to 34 feet, something of the kind, we can do a very good job of it. Now this is a system that is perhaps, oh I would say maybe the most common here in Michigan and that's the one that I brought the model along today to show you and I think if we set the model up here on the table that you can get a pretty good idea of how this type of system works. We'll have to turn this one around and we have some other sections of the duct that we'll put on this one. That's good here. I see we got a fellow helping us out. You know these fellows around this television studio over here are pretty nice fellows to have around. So if we place this duct up in this area here and we keep adding these on. Incidentally you might like to take a look at these if we can get up here. See it's very simple in construction. It's what we call an A-frame. You notice it's shaped like an A. We have our slatted floor here for the air to come out. The fan of course is located back here on the end blowing the air down through here. The air comes out between the cracks in the floor and so on up through the hay. The A-frame central duct type of dryer. Remember that we don't like to use this type of duct system if the mile is too wide because we may run into a little trouble there of getting air out to the outer parts of the barn out along the wall. Another point we need to keep in mind is that we don't run this stuck all the way to the end of the barn. In other words, if we had this say if the end of our barn was right here naturally the air could come out here and go right out along the wall and get away from us. So we usually stop this or it's a six feet eight feet or something the kind away from the end of the barn. In other words, a barn end would be out here somewhere so that we have enough room there to seal it off with hay So that we don't lose the air out around the wall So now then

let's bring in some hay here If these fellows will help me a little bit and we'll load this thing up with hay and actually show you how it works Well, I know that all of you people out there know that no one would be making hay with a coat on So I'll get rid of this and we'll load this thing up here and see if we can't bring out some of these points that we've been talking about. Remember that we always like to get a good even distribution of the hay on the duct. If we're using chopped hay, we don't like to put it in and tromp around over it any more than we absolutely have to. And if it is necessary to walk out on the hay, we like to lay down boards and walk on those so that we don't tromp the hay any more than necessary. So let's load this thing up here. We'll put some of this on and hey that's pretty good looking hay isn't it? Smells good too. You'll notice here that there are a lot of leaves left on some of this hay. A lot of leaves on, for instance one like this that's that's a pretty good sample of hay. Some of the leaves are shattered off but we still have a lot of leaves there and the small stems are still on it. So we'll try to get this on here just as evenly as we possibly can. Get some up on the top here so that we'll get our good even distribution. Another thing that we do need to keep in mind that that is in case we have a post or something right up the center of the barn it just has to be there today to hold up the barn we can't get away from it. We usually have to block off around that post because if we don't watch it the air will go right up beside the post we can't pack the hay in tight enough to get the air right up beside the post so we'll block it off with something so that it doesn't let the air escape on us doesn't let the air get away and another thing a lot of folks like to if they have this duct right down the center of the barn they'll maybe like to have a feed shoot right in the center of the barn also. Of course it's quite possible to make this duct of such a construction that they can maybe feed down to it and take out a section or else go in here in the duct and put a door in there that they can climb inside and open up and actually feed their chopped hay right out through the duct itself in other words if they have a barn arrangement that they like to have a feed center duct. So let's, I think maybe we can try this thing out here pretty soon now. We'll get our hay a little bit, maybe a little more evenly distributed here. Remember that that's our big point in loading our hay dryer is to get a good even distribution of the hay so that we get an even distribution of the air coming through it. And air is like water, it's lazy, it'll go where it can go the easier so we have a thing here today I know you couldn't see air coming through that so I have a little smoke gun here today that will give this thing some smoke and normally I know you wouldn't go out and put a lot of smoke into your hay mouth and we're actually not trying to burn up the studio here but if we put some smoke in here now and remember we have our hay drying fan here we'll turn our fan on notice how that smoke is filtering out through that hay well that is is the pattern that your air will take. Of course the air going out through there is what actually carries the smoke out. And as that air goes through there, of course, it will keep the hay cool, it will carry out the moisture away from it, and complete the drying process. So that illustrates what we mentioned a while ago is perhaps the more common of our hay drying systems here in Michigan, although we do find a lot of the other type, the rectangular duct, and other types using the slatted floor. This system, the A-frame system, is quite easy to build. I mean, it doesn't require any elaborate carpenter work. In fact, most any hammer and saw carpenter could build this thing. Remember, though, that to design your system, to select your size of your fan, your motor, and the size of your duct, go to your accounting agent or to your service representative, your farm service representative from your power company and get him to help you he can give you a lot of help so it's been very nice being back with you again folks so come back with us again next week and we'll bring you some more of our electricity at work for you program. [Narrator] This has been another of the cooperative extension series today's program was presented by the School of

Agriculture and arranged by the Department of Agricultural Engineering and the Michigan Committee on Rural Electrification we had with us today Donald Brown of the Department of Agricultural Engineering. This has been a video recording of Michigan State College Television.