

Primer on Wood Burning

by Backwoods Savage (Dennis)

Part I

Perhaps the most important of the above is the fuel. Why? Good question and it is good to know the reason. First and foremost, wood needs to be fairly dry to burn correctly and this usually means a moisture content of 20% or less. One also has to realize that all trees are not created equal when it comes to firewood. Two examples might give a good idea of what to expect.

1. Let's say one has found some soft maple, which is plentiful in many areas and it is not a bad firewood at all. However it is not the best for holding a long fire. But it's greatest benefit is that it splits super easy and dries super fast. We have found that we could actually cut soft maple in, say, February or March, split it right away, stack it off the ground and outside in a windy spot and that wood can be ready to burn the following fall.
2. Now let's say one has found some oak. Oh boy! Oak is one of the very best firewood you can have. This is some great stuff to burn during those cold winter nights because there is lots of heat in that wood and it will hold a fire for a long time. However, although that is the strength of oak, it's weakness is that it is high in moisture and very reluctant to give up that moisture. In most areas, most folks find that oak needs about 3 years after being split and stacked before it is ready to burn right. Some areas can get by with 2 years but in most areas where folks burn wood, oak needs lots of time to dry.

So, let's look further at the fuel needs. Let's say you have just gone out and purchased a new car or truck. Ah, new vehicles! They can be so nice to drive. Normally the dealership will also deliver the car to you with a full tank of gas. That is nice to not have to immediately spend more dollars on that car because you already lightened your purse immensely.

But, sooner or later you will have to buy more gas, or fuel. So you drive into the first gas station you come to and fill it up. A few miles down the road though and suddenly your new vehicle is not running right. You get very poor performance and extremely poor gas mileage.

Now let's look at this another way. You buy a new stove and have it installed and ready to go. However, the dealer did not leave you with a full tank of fuel; you have to fill that stove right away before you can use it. Heck, you haven't even had a test drive on this new stove.

It is at this point of perhaps just a short time ago that new wood burners then begin thinking about the fuel. After all, they have been doing this for years. When the oil or gas runs low, call and order more. Sorry, this is not the way to start burning wood.

So, what are we going to do for fuel? Many are the tales of the new wood burners of how they called the friendly wood seller to order some firewood. Mr Friendly assures you he has good “seasoned” wood. It is ready to burn. Some will even brag about how long their wood has “seasoned.” But wait! It is at this point you should begin to be very cautious. But Mr & Mrs Woodburner doesn’t know too much about this wood burning and they will believe Mr Friendly. After all, he seems so nice and has told us all about his wood. They also have found out Mr Friendly has been selling wood for several years so he should know, right? Well, yes, he should know...but does he? Does he really care?

Looking at this from Mr Friendly Woodseller’s point of view now, he is in this business to make money. Contrary to popular belief, he is not in this business to help you except to supply you with firewood and it actually matters little to him how ready this wood is to burn. Cutting and processing firewood is a very labor intense job and it also can require some very expensive tools. Because there is so much labor involved, he cannot afford to handle the wood any more than possible. Which means it would be foolish for him to fell trees, buck up the wood, split it and then stack it. Now he also has to have lots of room if he is to properly dry or “season” that wood because it takes time to dry wood. And all wood does not dry at the same rate so he may even have to sort that wood. So in order to make a dollar, he has to keep the labor as low as possible and he does not want a huge inventory as that can take up a lot of space if you are selling firewood. So realizing this his hands are sort of tied here. So he makes the best out of the situation that he can, but that usually is not the best for your situation.

Of course, a fellow can decide to just cut his own wood. Maybe he does know a little bit or at least he knows he needs dry wood. Well, maybe he can find some dead trees and cut that. After all, it is dead so the wood should be ready to burn, right? Not so fast here! It may or it may not be ready to burn.

Take a couple scenarios. A tree has died and fell and has been laying there a year or two or even possibly more. So it is assumed that should be good wood. It might but... Most of this is dependent upon how the tree fell. Is most of the wood off the ground? Or is it lying flat on the ground? If that wood is touching the ground, most times it is not worth cutting. If it has fell so that most of the wood, especially the main trunk is not touching the ground, you may have some good wood here.

If the dead tree is standing, is that a good sign? It could be. However most times one will find that perhaps the top third or maybe even the top half of the wood will be great fuel. But the bottom part most likely is not ready because it still has lots of moisture in there and it will usually need a year or possibly more to dry properly.

For the fellow who cuts standing live trees, he really needs to know about the different

types of wood in his area so that he will know what is the proper wood for his present needs. Regardless of the type of wood though, he also needs to know how to properly dry this wood.

First, one needs to know that wood, left in log form will dry very little and then only on the ends. Many times we hear folks say they know their wood is dry because the ends are cracked. Not so fast! Those cracks on the ends tell you only that the ends of the log are dry and tell you nothing about the center of the log. Wood needs to be split so more of the grain is exposed to air so the excess moisture can evaporate. Then it needs to be stacked off the ground and preferably in a windy spot. Sunshine is nice too but wind is even more important. Think air circulation here. Stack it up and then wait for it to dry.

A general rule is usually given here that wood needs a year to dry before burning. Some, yes but others need more. It pays to know the difference and it might take you a while to fully understand and learn the differences. But a year is better than the poor fellow who cuts his wood in the summer or fall then expects to burn it already that fall and winter!

Another scenario is the guy who orders a truck load of logs. Do not be misled on this. Even if the guy tells you the logs were cut a couple years ago, it is not ready to burn yet. Remember, count drying time only after the wood has been cut to length, split and stacked. So if you buy wood this way, know that you still require the time for drying the wood.

Part II

Learn Your Local Trees

Know or learn what kind of trees are abundant for firewood in the area where you live & find out how well those trees are for firewood. There are helpful guidelines on the Internet to find out how many BTU's are in the various types of wood.

Know How Long It Takes To Dry The Wood You Plan On Burning

A little side note here. A couple things are commonly told over and over about how one should not burn pine. Forget what you have heard! Pine, like most woods will burn just fine in your stove as long as you have given it the proper amount of time to dry.

White ash. Excellent firewood and many will tell you ash is so dry it can be cut and burned right away. Well, you could, but you won't get very good results and you'll have to burn a lot more wood to get the same amount of heat you'd get if the wood was burned dry. Ash is indeed a low moisture content compared to other trees, but it still needs time to dry enough to burn right.

Know How To Dry Your Wood

Cut to length, split and then stack off the ground. Many use old pallets to stack wood on and they will work. A few folks own tractors and if they also use pallets and have a front end loader with forks on that tractor, then moving wood from point A to point B can be very easy. I happen to not be very fond of pallets and do not own a tractor so we simply cut down some young trees or saplings, lay them on the ground and stack the wood on top. One could also use landscape timbers. Some have laid down cement blocks then laid poles across and this works nice too. Others will build special racks for stacking and these can be very useful and helpful. Perhaps the most helpful are the racks build by member Dexter Day. His wood stacks are one of the very neatest looking stacks one can have and I do not see how anyone could call his wood stacks ugly, as so many are called. His and a few others are a work of art.

How High Should The Wood Stack Be?

In most cases, if the wood stacks are kept lower than 5' in height, these will be the most solid with less chance of the wood pile tipping over. In our case, we generally stack to 4 ½ feet high. Stacked like this in March or April, we mostly find that by fall the height is down to approximately 4 feet. This is due to loss of moisture which in effect shrinks the wood and the wood will tend to settle a bit too.

Should I Cover The Wood After Being Stacked?

That depends upon the climate in your area. Some areas have extended periods of wet weather; areas like the NE and NW part of the country. In these cases, it is perhaps best to cover the top of the wood piles. Note, top cover! Never cover the sides or ends of the wood piles. In other areas, it can be best to not cover the wood piles right away. At least leave them uncovered through the summer as this will allow for better evaporation of the moisture in the wood. At our place, we leave uncovered until just before the snow flies, which usually means November or December.

How Should The Wood Be Covered?

Something solid seems to work the best and then also can be laid so that rainfall will run off one end or the other or even perhaps to one side; just so that it does not run off and onto wood that is below.

Many have used tarps and many have found they can work to a certain extent but are usually a poor covering and they do not last very long. The same goes for plastic covering.

Some are able to scrounge the black rubber roofing from builders or roofers. Sometimes one can pick this up free or for very little money and it can work nice. Some claim the black rubber heats the wood stack and that can be true. However, in this case it is even more important that you have excellent air circulation because somehow that moisture has to have a place to escape and it won't go through that rubber. So perhaps it might be best in this case to raise the rubber a bit over the wood, leaving a small air space between it and the wood.

At our place we like to use galvanized roofing (fiberglass sheets work as well) which sometimes can be scrounged, especially in rural farming areas. We have perhaps 30 sheets of this and it works very well.

No matter what covering you use, you have to make sure it will stay on the wood pile. Many find that throwing the "uglies" on top after covering the wood works well. Rubber roofing and galvanized can also be screwed down to the wood.

How Long Should The Wood Be Left To Dry?

That depends upon what type of wood you have. However, if one uses the 3 year plan (more on that later), you cannot go wrong. Your wood will be ready to burn after 3 years and you'll have the best firewood you can possibly have. And while on this subject, we'll add that you do not have to stop cutting, splitting and stacking just because you get 3

years ahead. It does no harm to keep on cutting so long as you have a place to store the wood. Some folks get 10 years ahead on their wood supply and as long as it is handled correctly, it will keep just fine.

When new wood burners are starting out it is very difficult and very few have a 3 year supply on hand before beginning to burn. Those that do are very wise indeed! So these folks usually start out, if wise, with year old wood. For sure you need to really be aware of what type of wood you have. One surely does not want to start out with 1 year seasoned oak!

If you are in short supply on the wood, in order to dry the wood the fastest (leaving out kiln dried), it is best to stack in single rows. Do not try to be really neat with the stacking. Stack it loosely so that it gets the best air circulation possible. Don't stack it over 4 feet high because it will not be a strong and sturdy stack. If at all possible, do not cover the wood.

What About Wood Sheds?

They can be fantastic and if you have one, this means you won't have to be digging wood out of snow in the winter time and you also know it won't be wet if you had rain the night before you bring some in to be burned.

However, there is one little problem. If you do have a wood shed or store in a basement (very poor), the wood should still be dried outdoors before stacking it in the shed. The simple reason is that inside a shed there is very little air circulation which means the wood will dry much slower.

Most folks will fill the wood shed with the winter's wood in the fall of the year. If in a wet area, then perhaps August would be a better time to move the wood.

Part III

Splitting Wood

It does not take much time before one realizes that all wood does not split the same. Some wood will split very hard while others almost split when you give them a dirty look! Some of the easiest wood to split would be maple, especially soft maple and white ash while elm and gum would perhaps rank as some of the hardest woods to split. Still, you will also notice a big difference on how the wood splits if you cut a tree in the woods versus cutting one that grew more in the open. One good example might be white ash which is very easy to split....most of the time. We recall one tree that was grown in a city and I believe it was around 32" or more in diameter. The fellow who cut and split that tree (rdust is his screen name on hearth.com) struggled to split that big tree. So it does make a difference.

If using an axe, this works great with the easier splitting woods. For the tougher splitting, the splitting maul works good. Even tougher splitting can call for a sledge and wedges. When splitting this way it is usually best to have 3 wedges. The reason is that many times you will drive a wedge into the log but it won't split and then you can't get the wedge out. Usually one will drive in another wedge perhaps 6-10" from the first wedge and/or drive in a second wedge right beside the one that is stuck. This forces the split to open wider and in most cases it will finish the task. Then there are times when the split is almost open but still hanging on. If you can get the wedges out then you can sometimes finish up with an axe.

The ultimate for splitting is using hydraulics. They come in many sizes and there are several good manufacturers out there. For sure I would recommend that one buy a splitter which can be used in both the horizontal and vertical positions. As for size, most of us do not need the heavy tonnage splitters but some just like the big machines just like they enjoy running big chain saws. At present the most popular brands seem to be the Huskee and Swisher brands and the 22 ton will usually split everything you need to split. Some even get by using the small 5 or 7 ton splitters which are usually electric. It all depends upon your needs. If you can get by with the small splitters, that is great as you save some dollars and space.

Some folks will cut a load of wood (say like a pickup load), bring it home and then split. For those type operations splitting horizontally will work fine for most folks if they place the splitter directly behind the truck so they can just get a log and turn to put the log onto the splitter.

For others who either take the splitter to the woods with them to split what they cut on that day or for those who, like me, cut all winter then do the splitting after all the wood has been cut. For this type of work, the vertical splitting mode is difficult to improve on.

I have noticed that most folks who take the splitter to the woods will tend to get down on their knees to do the splitting. That will work if you don't have to do it too long or if you have good knees.

If you do all the cutting and the splitting in the spring, then for sure splitting in vertical mode is best. This way you are not lifting every log up onto the splitter. You simply roll or slide them to the splitter. For this, sitting is preferable, however, one has to experiment a bit to find the right height for his comfort and for the best leverage. As most on this forum know, I have found an old milk crate with a hot seat on top works best for me. (Videos are or will be posted showing some splitting techniques.)

On this sitting, many will say it hurts their backs. Yes, that is possible. However, it would seem if they found the right way to sit and the right height that it would relieve the back pain. One reason I say that is because of my own situation. Polio left me with some scoliosis and in addition to that, I have deteriorating disc disease along with three back surgeries. This leaves me with pain in the back at all times. It is just that sometimes it hurts worse than others. I also hurt more while standing than while sitting (which is why I get a lot of exercise walking around looking for a place to sit!).

While sitting and splitting, one will also find that a pickeroon or hookeroon can be a big help for reaching and pulling some logs to you. If you don't have one, you can also use an axe. I did that for many years and it works. But sooner or later you can take a break while you move the splitter forward a bit so you don't have to reach so much for the logs.

One thing that seems to work well for most is to do the reaching on your left and throwing the wood to your right. One reason this works well is that the control is on the right hand side and if you have to run the wedge far in to the wood to split, you can then be reaching for the next log to split so it can be a time saver.

Some folks get hung up on the cycle time of the splitter. Most times this is not a concern unless you happen to be doing this commercially. But I do have to admit there are a few splitters that do seem to be terribly so. I well remember when many folks made splitters to use on the back of a tractor. All that I've seen like this have been super slow. However, many times while splitting you will find that you do not have to use the entire cycle. There is no need sometimes to run the wedge all the way down and for sure there is no good reason to run the wedge all the way up unless you are cutting wood that is to the maximum length of the wedge stroke. If you are splitting the most common length of wood, which is 16", then there is no reason to let the wedge go all the way up. You simply let it go up about 18"; otherwise, you are wasting time and gas.

If you use kindling wood, making it with the use of a hydraulic splitter really shortens the time needed for this task and it can be fun! (Again, a video has been or will be posted showing how fast and easy this can be. The main thing is to use wood that is easily split. Second in line is that it is best to use wood that lights easy and burns hot and

fast. For example, soft maple makes excellent firewood and is one of the easiest woods there is to split. Most times you just touch the wood with the wedge and it splits so there is very little movement of the hydraulics.

Gathering Firewood

Having your own woodlot for your needs is the best. Some have to travel some distance to get their wood. Some to go woodlots while some scrounge wherever wood can be found. Many will see someone cutting a tree or trees and simply stop to inquire about the wood. Many times they will find that they can have the wood just for the asking. Others find arborists who will gladly drop off wood to their house and most times they will do it for free. Otherwise, they have to find a place to get rid of the wood so you help them and help yourself by doing this.

Another good way for some is by buying a truck load of logs. In most cases this turns out very well. One nice thing about this is there is no brush to contend with and no extra cost to drive somewhere to get wood. Cutting from these piles of logs can be very easy but you still have to exercise some safety. Know what you are doing and what will happen as you make the cut. Some will roll one log at a time off the pile before bucking it up. Others simply cut right on the pile. For sure one has to know about kickback of the saw if cutting right on the pile because the logs will be close together. So keep safety in mind always.

Know that there are tools to help with the wood gathering. Along with the saw, perhaps the next best tool is a cant hook. (Some may prefer a peavey but most prefer the cant hook.) Usually one with a 3' or 4' handle will work well and they should last a lifetime. Personally, I much prefer a wood handle and they too will last a long, long time with proper care. Occasionally a bit of boiled linseed oil on the handle will help to prolong its life. The canthooks and peaveys also can be purchased with aluminum or fiberglass handles.

Another tool some like is the timberjack. (I do not like them as I think they cause more work rather than helping) This is a simple cant hook but with an extra bar so one can lift the log as it is being rolled. Of course this allows one to cut without fear of the bar hitting the ground. The problem is that you can cut only a couple logs before having to get another bite to lift the log again. It is also hard work lifting that log.

Usually a better solution is to simply cut part way through the log but not all the way through. I usually cut a bit over $\frac{3}{4}$ through the log and then after making several cuts or all the cuts on one log, using the cant hook, simply roll the log over and finish the cut. By doing this one also doesn't have to be so concerned about pinching the saw.

Part IV

Starting Fires in the Stove

Now that you have your wood cut to length, split and stacked and you've given it time to dry outside it is finally time to decide on the stove and the location in the home along with the chimney. This can be a very lengthy article by itself so we will leave that part for the time being. We'll assume you have done your research and have decided on the best stove for your needs. You have the installation completed and are ready to get down to the business of burning some of that wood you worked so hard to get.

With most or all new stoves it is a good idea to have some burn-in fires. This is for curing cement, getting moisture out of soapstone and then there is the paint problem. As you heat up the stove, most times you'll get some smoke and fumes from the paint on the stove and the stove pipe. Most times it is good to have 2 or 3 burn-in fires. This is best done when one can open some windows and even perhaps place a fan so it blows out the window to remove the smell and smoke. Some folks even do a break-in fire outdoors before they even install their stove and this can work great so there is no smell in the home. Nevertheless, breaking in a new stove is necessary.

Now the break-in is done and the weather is turning cold it is time to get some heat from the stove. There are several ways of starting a fire in the cold stove and it is different from reloading on top of hot coals. Many like the top-down fires and there are some good videos on Youtube showing this method. One of the best things about this method is there tends to be less smoke.

Some like the cross log method which simply means they make sort of a criss-cross of the logs and put kindling or paper in to get it started. Some like the old "Boy Scout" method which calls for small kindling then a bit larger and a bit larger still followed by the larger splits or logs. The kindling can be lit with a match or a spark from a flint or even some paper. If one wants to really go way back, a fire can be started with no matches or sparks and there are several ways. One can look these up in the Internet if he so wishes.

Another method is to lay 2 splits on the bottom with the bark down. Form a V with the two splits. This is how we start the fire and after the V, we use $\frac{1}{4}$ of a Super Cedar (or other fire starters which can be bought or made by hand) and place it in the center. We then light the super cedar right away and if we use any kindling, we'll lay just a few pieces angled across the 2 splits. On top of that we will lay 2 or 3 more splits. The firebox door is then closed and the only thing one needs to do is keep watch of the fire and partially close the draft as the fire builds.

Of course there are many folks who have their favorite way of starting fires and so long as they work well, they are good. Some like to build a small fire just to get a coal bed

started. Then when it is all coals, they will do as normal with refilling the stove.

Refilling the Stove

We'll just state here that refilling the stove is a bit different depending upon the stoves but there are some techniques that pertain to all stoves. For example, it does not matter if you are building a small fire or filling the stove for an extended burn, you need to have the draft full open. In fact, even before you open the firebox door it is good practice to open the draft fully and then wait for anywhere from 10 seconds to a minute before opening the door. Then when you open it, do so slowly. This normally will do away with any problem of smoke coming out the firebox door when you open it because you have created a stronger draft.

Another thing about refilling the stove is that it is a good practice to make sure at least the top splits of the wood are somewhat charred before decreasing the draft. From this point on, it will depend upon your stove and your installation as to how best to proceed. Most folks will drop the draft to at least 50% once the wood is charred or if the flue temperature goes high. When the fire is well established it is time for the final draft setting. This definitely is stove and installation dependent. Most times though you will find that closing the draft completely is not a good idea. For sure if your fuel is not the best, you then will need much more draft to keep the fire going and hopefully to keep from getting too much creosote.

If you have good dry wood, it is possible to burn without the chimney getting caked with creosote. One more good thing about burning good fuel is that it will take less fuel for the heat you need if the wood is dry. This is the key to good wood burning and good fuel will take care of 90% or more of all wood burning problems.

One more trick we have learned about the fires is that just before the fire gets to the all coaling stage, we open our draft fully it assist in burning down the coals while keeping the stove temperature up (and sometimes it helps to stir the coals a bit if you need to hurry things along). It will cure the problem that some folks have when they begin complaining that there is not enough room left in the stove because it is full of coals. Some have gone so far as to actually shovel some coals out of the stove so they can get enough wood in to hold overnight fires. Of course as an analogy, this would be like opening a valve and draining some gas out of your car's tank; a total waste of dollars and fuel. Better to burn them down than to dump them out.

Ashes (for those Without Ash Pans)

Some folks ask, "When should we empty the ashes?" Good question. Remember that it is

usually good to leave 1-2" of ash in the bottom of the stove. The only time you should completely clean the ashes out is during the annual summer cleaning. The time to empty is before the ashes get so high that it impedes your ability to fill the stove with enough wood. On our stove, when the ashes get about level with the bottom of the firebox door, we then clean out the ashes.

What technique should one use to clean the ashes? This sometimes brings many answers but it really does not have to be a difficult task. It is so easy that a small child could do this task and I learned it when I was perhaps 5 or 6 years of age. I learned it really fast too because the first time I did it was also the first time I had the job of dusting the entire house because of all the ash dust that was created. This I will assure you will teach you rather quickly the proper way to handle ashes.

The key to handling ashes without making a dusty mess is to handle very, very carefully. Make all your movements very slow. The simple way is to first burn the coals down a bit more than usual. Then using the poker, simply slide the coals toward the rear of the stove. Then using the shovel, get some ash but do not get the shovel too full of ash! Moving slowly, get the shovel into the bucket and then even slower, lower the shovel to the bottom of the bucket. Now here is one of the biggest keys. You do not want to dump the ashes off the shovel. What you want to do is have the shovel at the bottom and then gently slide the shovel out from under the ashes. You can do this without raising any dust. Once you learn this little trick, it is simple, easy and quick.

Now that you have the ashes, let us be very careful what we do with them. What you do not want to do is to set the ash bucket on a flammable surface, like a deck or porch. It is best to set the bucket on something like cement or Mother Earth. The reason is that no matter how hard you try, you will get some hot coals in with the ash. The ashes will insulate these coals and they can stay hot for days. Always remember this!

That's it for now folks.

Keep Smiling!

Dennis