

Fencing Fundamentals

In this kickoff to a series on building fence, we begin by discussing the traditional, permanent barbed-wire fence.

by **Troy Smith**

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Fixing fence is something all livestock managers have to address. Whether it falls to the manager, the outfit's regular employees or a custom fencing crew, it must be done. And whether building from scratch or mending existing fence, doing the job right usually saves time and trouble later on. Through this article and others to follow, we'll talk about building pasture fence. We'll start with traditional, permanent barbed-

wire fence and eventually get around to the alternatives.

But before going any farther, we must issue a disclaimer. We realize that opinions will vary regarding what constitutes a "good" fence. We're offering a compilation of basic fencing tips — suggestions applicable to the "average" cattle farm or ranch situation. The information has been gleaned from professional contractors who build fence for a living, some cooperative Extension personnel who know "PhD" really stands for posthole digger, and several curmudgeonly cattle producers with 40-odd years of fencing experience apiece. They didn't always agree.

No doubt there are alternative methods for performing some of the tasks described. We're not suggesting that you should turn away from your current system if it meets your objectives. We will share some practical fencing fundamentals, but perhaps even veteran fence builders will find something useful. Choose what you can use, dear reader, and leave the rest. If you think you have some better ideas, let us know (see "Contact the author," page 171). We'll trot your suggestions past our old curmudgeons and, just maybe, we can share your tips in a future issue.

Setting the standard

Still the most popular, all across cow country, are pasture fences consisting of three or four strands of barbed wire. In some situations, five, six and even seven strands of wire may be used to maximize fence height and minimize spacing between wires to help prevent cattle from crawling over or reaching through the fence.

Our sources tended to agree that a well-built and well-maintained four-wire fence will suffice in most instances. And while three wires may work for cross-fencing pastures, our experts agreed that four or more wires should be used for perimeter fences.

Typically, a new roll of barbed wire is 80 rods [1,320 feet (ft.)] in length and consists of double-strand galvanized wire with barbs attached at intervals of about 4 inches (in.). According to Greeley, Colo., fence contractor Clay Nash, barbed wire comes in different "class" ratings, corresponding to the amount of galvanization (zinc coating) used to make the wire rust-resistant. He prefers to use 12½-gauge wire having the highest class rating.

"Lower grades with less galvanizing will rust sooner. There's only about \$5 per roll difference in price, so it pays to use the best," Nash states. "And if you use lighter wire (smaller strand diameter), it breaks more easily when it's stretched."

When selecting wire, remember that a smaller gauge number corresponds with larger wire diameter. Costs vary by region, manufacturer and quantity purchased as well as by wire gauge and class. However, at the writer's local fence supply outlet, 12½-gauge, Class 1 barbed wire is priced at about \$70 per roll.

It seems more common among producers of a certain age, but some prefer fences built from woven wire that's 3 or 4 ft. high, with one or two strands of barbed wire stretched above the woven wire. Fence contractor Dan Sharp, of Paris, Mo., thinks it's a holdover from the days when the typical stock farm

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►Combining woven wire and barbed wire may be a holdover from the days when stock farms were more diversified and fences contained other species as well as cattle.

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was more diversified, needing fences suitable for smaller animals (sheep, goats or hogs) as well as cattle. So maybe it's no surprise that producers aged 60 or so still like a fence made with "hog-wire."

"Woven wire made from heavier 9- and 10-gauge wire makes a really good fence," Sharp says. "But it's pretty expensive for cattle alone, when a four- or five-strand barbed-wire fence might do the job. Over time, it's also harder to maintain — to keep tight and looking good."

Post considerations

It's easy to start a friendly argument over the type of post that's best for holding up the wire. Opinions vary with regard to appearance, expected lifespan, convenience and, of course, cost.

Historically, cost and availability have most influenced producer choices. Back when many producers fashioned posts from materials offered by their environment, posts were often hand-cut from whatever kind of

tree grew within a reasonable distance of the homestead. The "post-rock" country of Kansas is an example where, in the absence of trees, stockmen cut fence posts from layers of limestone lying beneath the prairie's shallow sod. During the Great Depression, hard-pressed but resourceful producers "recycled" materials like porch pillars, car and truck axles and driveshafts, bed frames or whatever cast-off pieces might be substituted for fence posts.

Today, a majority of producers purchase their posts, with treated wood posts and steel "T-posts" being the most readily available. Wood posts offered by most suppliers are cut from pine and treated with preservatives. The goey black kind are treated with creosote (a coal tar derivative) while the tan or greenish "CCA" posts are pressure-treated with chromated copper arsenate to resist rotting. Creosote posts are generally considered to be longer-lasting, which is reflected in pricing.

The writer's local supplier offers both kinds, including 8-ft. posts of either 5- or 6-in. diameters, for building braces and

corners. Line posts come in 3½- to 4-in. diameters and 6½- or 7-ft. lengths. Purchased individually, a 6-in. x 6-ft. creosote post costs approximately \$22, with a CCA post of the same size priced at about \$15. Generally, all sizes of CCA posts cost \$5-\$7 less than creosote posts.

Some suppliers offer posts made from recycled plastics. Reportedly, they will hold staples used for fastening wire, won't ground out a charge when used with electrified fence and plastic won't rot like wood. Prices vary considerably, and they can be expected to cost significantly more than wood posts. Ranking among the recyclables would be used railroad ties and utility poles, which may still make stout long-lasting posts for building stout fence corners and braces.

Posts cut from native wood, such as cedar, black locust or Osage orange, remain a popular choice regionally. Generally, the harder the wood, the longer they last. Osage orange, or "hedge," posts see fairly widespread use in several Plains states, mainly due to durability and price. Some producers object to their "natural" appearance, as few are straight and some are plenty crooked. Unless you're into the rustic look, they don't make a fence that's as aesthetically pleasing as nice, straight, treated pine posts. Neither will hedge or other hardwood posts accept a staple like softer pine. (We'll address the wire-fastening challenge later.)

Purely from the standpoint of economics, natural hardwood posts sometimes have advantages — like price. Last summer, hedge posts hauled from Kansas to north-central Nebraska could be purchased for less than \$5 apiece. That's for line posts 7 ft. long and about 3½ in. in diameter. Bigger, longer posts



PHOTO BY TROY SMITH

► **Above:** Shown here are three examples of fence posts and methods for fastening barbed wire. On the left, a staple fastens the wire to a creosote post. Note how the staple has been placed at an angle to the grain of the wood to avoid creating a split in the grain of the wood. In the center, a hole has been driven in the hedge post. The 12-gauge tie-wire passes through the hole and around the post and wire before twisting the ends together. At right is a steel T-post with a tie-wire attaching the barbed wire to the post.

► **Right:** Contractor Sharp favors steel posts in the fenceline because they can be driven into the ground faster than a posthole can be dug, particularly in rocky ground or in wooded areas where tree roots hamper digging.



PHOTO BY MATTHEW ELLIOTT

for corners cost a couple dollars more, with some price variation depending on the volume purchased.

Granted, they aren't pretty, but they really last. The writer's granddad was exaggerating only a little when he joked, "Put a hedge post in the ground up-side-down and it will last a 'hunerd' years; put it in right-side-up and it will last forever." Many of the posts he planted have lasted more than 50 years and counting.

Attempts have been made to advise producers regarding the "life expectancy" of various kinds of posts, but estimates are relative to geographic region and specific site conditions. The biggest enemy to wood posts is moisture, and deterioration occurs most quickly near the soil surface where moisture and microbial activity promote decay. Consequently, wood posts usually last longer in more arid climates, while decay occurs faster in regions of higher precipitation and in lowland areas or any site where wet conditions are common.

Even steel posts rust eventually, and they'll do it faster in ground that's frequently or always wet. Still, steel posts last a long, long time. Contractor Sharp favors steel posts in the fenceline because they can be driven into the ground faster than a posthole can be dug, particularly in rocky ground or in wooded areas where tree roots hamper digging. And despite the rising steel prices seen in recent years, Sharp says costs are competitive.

Steel posts are priced according to various lengths. Prices for 6-ft. T-posts — a popular choice — run in the neighborhood of \$4.50 to \$5 apiece.

A disadvantage to steel posts is they can bend under certain circumstances. Out on the High Plains, for example, Nash says blowing tumbleweeds can get caught in fences and build up to the point that steel posts bend under the pressure. The same thing can happen under the weight of drifted snow. Producers may want to consider adding strength and stability by setting wood posts alternately with steel, or at least for every third, fourth or fifth post in the fenceline.

In very uneven country, especially if the soil is soft and sandy, steel posts set in a low depression or dip in the landscape may be loosened and pulled up, due to the upward pressure from tightly stretched fence wires. Also, steel posts placed at the top of a hill may be pulled deeper into soft soil by the downward pressure of the fence wire. Even if the steel post doesn't move, constant upward or downward pressure may, over time,

loosen the tie-wire or clips that fasten each strand of barbed wire to the post. That leads to a narrowing of spaces between fence wires, a gap beneath the bottom wire or a shortening of overall fence height at the affected spot.

Producers may want to consider using stout wood posts on hilltops. When fences traverse a low spot in the fenceline, loosening of steel posts or fence wire fasteners might be averted with strategically placed anchors — a subject we'll address in a subsequent article.

A common question is, "How close together should fence posts be?" Sharp likes to space posts 12 ft. apart, but the safe answer is, "It depends." In general, closer spacing of posts lends more durability, but it might depend on the terrain. Fencing country with a lot of up-and-down to it usually requires more posts than fencing across the flat. Post interval also depends on the pressure a fence might receive from livestock and the elements. It depends on the builder's budget, too.

One way some producers can increase the distance between posts is to use stays between them. Commercially available stays made from twisted galvanized wire can be inserted to maintain wire spacing between widely spaced posts, and some producers fashion homemade stays from wooden slats or sticks cut from native trees, like cedar. Something to remember, however, is that stays aren't set in the ground. They are tied to the fence wires and represent additional weight, which the posts must support.

Fasteners

The most common method of fastening wire to wood posts is with staples — those U-shaped nails placed astride the wire and hammered into the post. Producers may want to consider the consequences of hammering a staple so tightly into the post that it crimps the fence wire. Crimps and sharp bends in wire can damage the galvanizing, leaving a place for rust to begin and thus, a weak spot where, eventually, the wire is likely to break. Additionally, leaving the staple just loose enough that the wire can move allows for some re-stretching at a later day, without manually loosening all the staples in the fenceline to maintain even tension.

A long-standing recommendation calls for placing the staple at an angle, respective to the grain of the wood in the post. This helps prevent the staple from starting a split, which can grow over time, allowing the staple to

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loosen. Also, angling the staple upward or downward, relative to the pull of the fence wire, will help prevent eventual loosening. For posts set at a low point in the landscape, tip the staple so it is driven into the post at a slightly upward angle. For posts set on a high point, where the fence wire pulls downward, drive the staple into the post at a slightly downward angle.

Staples come in varied lengths, and recommendations typically call for using long staples in soft wood, such as pine, and shorter staples in hardwood posts. But users of the aforementioned hedge posts know how hard it is to drive a staple into the hard ol' boogers. Consequently, the fence wire has to be

fastened with a tie-wire, as with steel posts.

However, the tie-wire may eventually loosen, allowing the fence wire it holds to slide up or down. Probably the most popular remedy involves drilling a small hole in the post, passing the tie-wire through that hole and around the post before fastening the fence wire in place. Some people say rechargeable drills were invented for just such a purpose. But holes can be drilled before posts are hauled to the pasture, by taking measurements, marking the posts, and drilling holes according to desired spacing of three, four or more fence wires that will be attached. And a few producers use a chainsaw to make shallow notches in posts at the

desired spacing. Then, either the tie-wire or the fence wire itself can rest in the notch, preventing slippage up or down.

A steel T-post typically has a row of protrusions all along its flat side. When fence wire is fastened to the post at the desired height, those little nipples prevent the wire from sliding up or down. Fence wire may be fastened to the post with light tie-wire (usually 12-gauge black or galvanized smooth wire), or clips manufactured and marketed for the purpose.

Re-cap

So now we've begun our discussion of fencing fundamentals by describing some of

the most readily available materials needed for building barbed-wire fence. Naturally, choices of materials will depend on how substantive and durable the fence must be. Physical appearance is a more significant issue for some people, while others figure a strong, easily maintained fence is the prettiest kind.

It's been said that more is better when building a barbed-wire fence. In other words, using more good posts and stringing an additional wire or two will often make a fence stronger and easier to maintain. But there are limits, and economics often are a limiting factor.

"In our experience, the shorter the space

between posts and the more strands of wire you use, the longer the fence will last," Clay Nash says. "My advice is to use the best materials you can afford and build it stout.

You can pay for a good fence now, or pay even more for it later, with high-maintenance costs."

Perhaps the best advice is to plan ahead. Figure out how much country you need to fence and calculate the materials needed for the fencing options you might be considering. And don't forget to check on opportunities to buy supplies in quantity,

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rather than piecemeal.

By the way, it couldn't hurt to know what your state considers a "legal" fence. Such things have been set down in state statute and can affect the

type of fence that should be constructed along property lines. Also varying by state are laws determining whether both or just one of adjoining property owners are responsible for maintaining shared fences. You may be able to decide on your own definition of a "good fence," or it may have already been determined for you.

