Should I buy an air rifle in .22 or .177 calibre?

This age old question has an easy answer, buy one of each. However this does not really answer the question that was asked. I have had many people ask me which is better and I can honestly say that one is not better than the other you just have to be aware of how the trajectory of each differs on leaving the barrel and the limitations of either calibre.

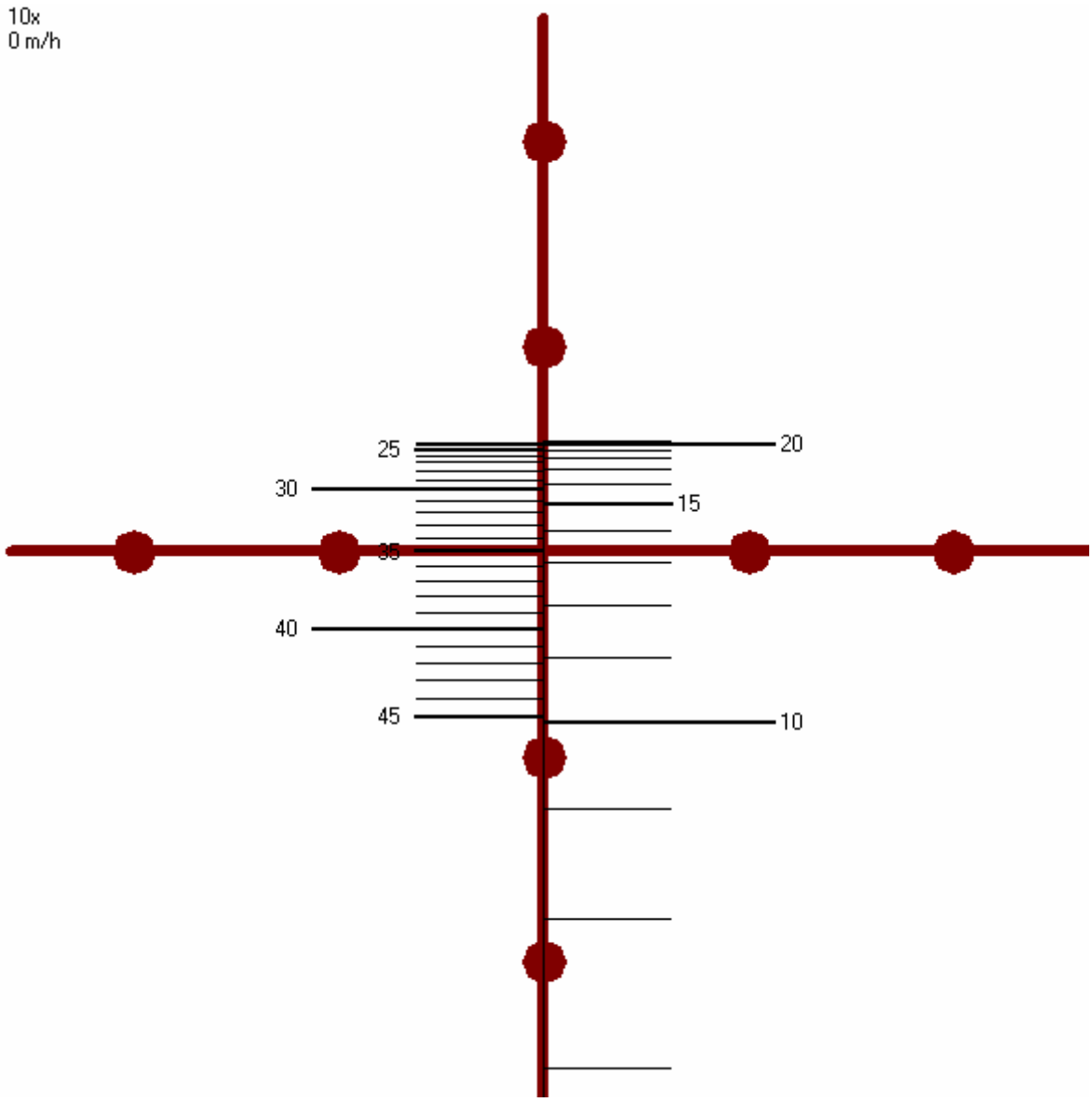
I will try to explain:

First off a few facts for people that have no idea what I am talking about. A .177 pellet is lighter, flies faster and has a smaller cross sectional area than a .22 pellet and as such both target shooters and hunters find it easier to predict the trajectory of the smaller faster pellet as it doesn't have as "loopy" a trajectory. However .22 rifles still outsell .177 rifles by 4 to 1 as people think they are more powerful.

I will try to demonstrate the differences using a few reticule diagrams, my test pellets will be:

.177 Air Arms Field weighing 8.44 grains
.22 Air Arms field weighing 16 grains

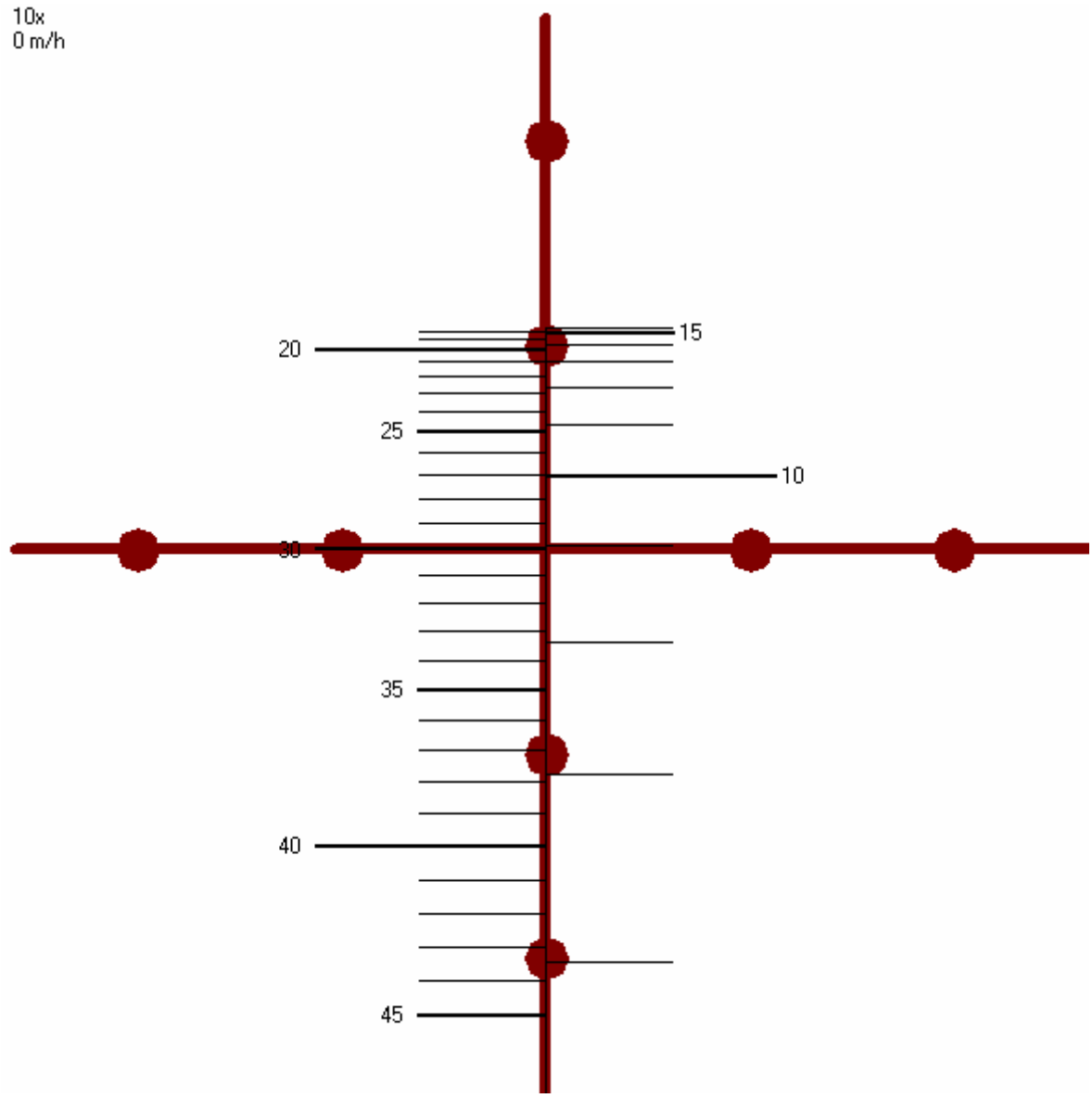
The rifle used will be a p.c.p. producing 11.4 foot lbs (the energy of the pellet as it leaves the barrel) in both calibres. The scope on each rifle will be 1.625 inches above the barrel. The .177 will be zeroed at 35 yards, the .22 at 30 yards. The scope on the guns is set at 10 times magnification and the scope has a mil dot reticule.



This is the reticule (what you can see through the scope) for the .177 pellet. Each line in black is a 1 yard increment of range. If you want to hit a target dead centre at 10 yards you would have to place the first mildot below the cross hair just below the centre of your target.

As can be seen here every range increment between 10 yards and 45 yards appears between the first mildot below and the first mildot above the cross hair.

Due to its flatter trajectory even if I estimate the range to my target (a 30mm reduced target on an HFT course or the kill zone on a rabbit) wrongly by 5 yards, e.g. I estimate it at 30 yards and it is 35 yards away I will still hit and drop the target.



By comparison this is the reticule picture of the .22 pellet and as you can see there is a considerable space between the range markers for 10 yards and 45 yards. Now presuming that the target is the same size if I estimate the target to be 30 yards away and it is 35 yards away I will miss the target on the low side.

The .177 pellet will move more in a sidewind however even though it has a smaller cross sectional area and it is flying faster. In a ten miles per hour side wind at 30 yards a .177 pellet will strike 1.901 inches to the side of the target whereas a .22 pellet will strike 1.765 inches wide.

A .22 pellet also retains more energy than the .177 at its target with the .22 still having 8.242 foot pounds or 72.4% of its energy at 40 yards with the .177 having 7.111 foot pounds or 62.5 percent of its energy remaining albeit this difference is minimal.

The bottom line of these results is that neither calibre is superior to the other in all ways and both have pros and cons.

If you can accurately estimate range and know the trajectory of your chosen pellet .22 is just as easy to use as .177. However to err is human and a .177 will allow you to still hit targets that you have ranged incorrectly.

If there is any doubt at all please come along to Tayside Airgun Club where you will be welcomed and given the chance to try both and see what you prefer. I as most members will always be willing to lend a hand and try to help in any way we can.

All diagrams and figures used in this article were taken from Chair Gun 2 a ballistics program used to analyze airgun data.