

Sprayer testing: what you need to know

Sprayer testing is good for the environment and good for your pocket

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All boom sprayers greater than 3m and orchard/blast sprayers must be tested by 26 November 2016

Sprayers play a key role on many farms. On a larger crop farm with 100ha of winter wheat and 80ha of spring barley, the sprayer is tasked with applying €41,000 of plant protection products, annually, to crops worth €270,000. Even a 40ha spring barley grower typically applies more than €6,000 of product through a sprayer annually. To get the best return from these expensive products, they must be applied evenly to the crop, at the correct rate, without loss as drift, leaks or run-off. To achieve this, a properly functioning sprayer is needed and the operator needs to be able to set and operate it correctly.

The Sustainable Use Directive was introduced by the European Union to achieve the sustainable use of pesticides. The Department of Agriculture, Food and the Marine (DAFM) has the task of implementing the Sustainable Use Directive in Ireland. The directive requires Ireland and other member states to take action to regulate the use of pesticides and to put certain controls in place to make the use of plant protection products more sustainable. Each member state was obliged to adopt a National Action Plan. The plan sets out a national strategy for sustainable use of pesticides. Ireland's National Action Plan is in progress and consists of four broad areas, with actions in each area, as follows:

- **Training, education and information exchange:** advisors, distributors and professional users must attend training courses and a register of each has been established.
- **Controls on application equipment:** Sprayers must be tested and certified and a register of sprayer inspectors has been established.
- **Controls on storage, supply and use:** Introduce storage standards for wholesalers, retailers and professional users of professional products and



for wholesalers of amateur products. Guidance is being given on the safe storage of pesticides in the home/garden situation. Enhance awareness and use of buffer zones, safeguard zones and further restrict pesticide use in sensitive and designated areas.

• **Integrated pest management (IPM):** Adopt the principles of IPM with the assistance of advisors and professional users.

The focus in this article is on the requirement to test sprayers. All boom sprayers greater than 3m and orchard/blast sprayers must be tested by 26 November 2016. After this date, only sprayers that have passed the test can be used to apply professional products.

The test is not particularly difficult. Most sprayers in good condition should pass if prepared, or minor repairs may be needed (e.g. new nozzles or new pressure gauge).

Some sprayers in very bad condition may not justify repair and in this situation if a replacement sprayer is not justified, using a contractor should be considered.

For some grassland farmers, this may be a sensible option as it avoids the need for operator training and sprayer testing.

Sprayers must be tested and certified and a register of sprayer inspectors has been established.



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New sprayers need not be tested until five years after purchase.

The boom on some ATV sprayers is wider than three meters. To confirm the length of the sprayer, multiply the nozzle spacing by the number of nozzles, e.g. seven nozzles x 0.5m spacing = 3.5m. This indicates that it needs to be tested.

So, how soon is the next test due following the initial test? Tests completed before 1 January 2020 will be valid for a maximum of five years and will expire, at the latest, by 1 January 2023. Tests completed after 1 January 2020 will be valid for a maximum of three years.

Table 1 shows when the next test is due for sprayers tested between 2014 and 2022. The date (i.e. day and month) of retesting will be the same day and month as the previous test with the exception of those completed in 2018 and 2019, all of which must be re-tested by 1 January 2023.

Over the last two years, Teagasc has been working closely with DAFM in providing training courses for those interested in becoming sprayer inspectors. A register of pesticide equipment inspectors, approved to date, is on the DAFM website. <http://www.pcs.agriculture.gov.ie/sud/equipmentinspectors/>

At present, there are 36 on the register but that number is likely to double over the coming few months. Keep an eye on the list to see if someone local is providing this service and book a test.



The nozzles are the most important parts on the sprayer. The flow rate of each nozzle must be checked to ensure that it is correct

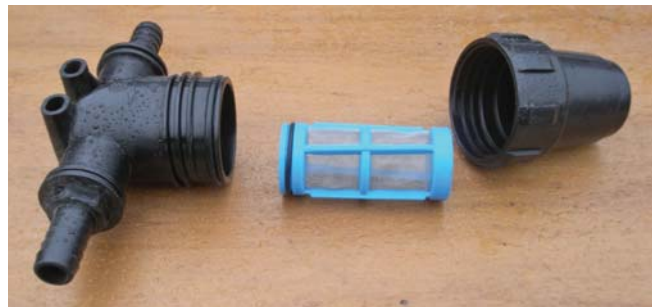
Preparing a sprayer for the test

Presenting the sprayer properly for the test will go a long way in helping to get through successfully. It will also help to reduce the cost of the test because it won't take as long. Before the test, ensure that the PTO is fully guarded and the sprayer is attached to the tractor.

The sprayer should be completely clean, inside and out, including basket, suction, pressure and nozzle filters. It should be full of clean water and ready for the test when the tester arrives. There should be a suitable hard standing area for the test. The sprayer operator should stay with the tester to operate the controls and generally speed up the process.

Testing process

The basis of any testing process is to carry out the tests, record the results on a test report, interpret the results and make recommendations and carry out repairs and any necessary maintenance. In addition, a copy of the test report must be given to the



Filters must be clean, undamaged, with changeable filter inserts and free from leaks.



The pressure gauge must be accurate, be easily readable from the driver's seat and have scale markings of at least every 0.2-bar up to five-bar.



Structural parts of the framework must be in good condition, with no permanent deformation and no significant corrosion or other defects. The strength and rigidity of the sprayer and the hitching device must not be affected. Locking of foldable parts must be secure.

sprayer operator/owner.

The sprayer tester must upload the details of the test on the DAFM website. A numbered and dated DAFM sticker must be attached to the sprayer, as well.

As well as testing the sprayer, the tester is allowed to carry out any servicing or replacement of worn or damage parts. There is no obligation on the sprayer owner to get them to do this. They can take on the job themselves or get someone else to do it. However, it would seem more straightforward to get it tested and fixed up all in one go.

Pressure gauge

An accurate pressure gauge is essential if you mean to apply plant protection products accurately. The gauge must meet certain requirements to pass the test. It must be accurate, the right size (at least 63mm diameter), be readable and have the correct scale markings. Gauges are relatively inexpensive, so if it fails the test it should be replaced with a new one before continuing the test. The new one should be checked also to see if it is accurate.

Nozzles

The nozzles are the most important parts on the sprayer. The flow rate of each nozzle must be checked to ensure that it does not deviate much (not to exceed +/- 10%) from the flow rate tables provided by the nozzle manufacturer.

As nozzles wear, their flow rate increases and the evenness of the spray pattern deteriorates. The test will determine the level of wear and whether or not they are due a change. Before the test, make sure that all the nozzles are the same along the boom and that there are no leaks, blockages or streaks in the pattern.

Filters

There must be a filter on the pressure side of the pump and most sprayers need to have a suction filter as well. Filters must be clean and undamaged. Filter inserts must be changeable and mesh size appropriate for the nozzles fitted to the sprayer. It must also be possible to clean the suction filter without spillage of any tank contents if it gets clogged while spraying. There must be no leaks from filtering units.

Table 1: Due date of retest for sprayers tested between 2014 and 2022

Year tested	Year/date next test is due
2014	2019
2015	2020
2016	2021
2017	2022
2018	1 January 2023
2019	1 January 2023
2020	2023
2021	2024
2022	2025

Boom

The boom must be in good condition and stable in all directions. The boom should be straight and level and the unfolding mechanisms and break-back devices must function correctly.

Controls

All devices for regulating the flow and adjusting the pressure must be present and working properly. The on/off handle and boom section taps must be present and working properly. There must be no leaks from the controls or manifold they are mounted on.

Pipes and hoses

Pipes and hoses must be clean and in good condition to avoid restricting the flow of spray liquid or accidental spillage in case of failure. There must be no leakages from pipes or hoses, when run at a few bars above the normal spraying pressure.

Leaks

A sprayer with leaks will not pass the test. Leaks usually show up quickly when the pressure is increased a couple of bar above the normal spraying pressure. They are usually easy to fix by adjusting, cleaning, tightening couplings and fittings, repairing cracks or replacing "o" rings, etc.

Benefits of testing sprayers

One might think that a sprayer test is more trouble and expense foisted on us. But it is better to focus on the benefits of having your sprayer working correctly, capable of applying plant protection products evenly and at the right rate. A sprayer in good condition will ensure that no underdosing or overdosing will occur, resulting in less waste and better control ensuring ongoing savings and less risk of damage to the environment.

The risk to the health and safety of the user and others is controlled with a sprayer that has passed the test.

The possibility of pesticide getting into water courses or waterbodies, from spills or inaccurate spraying can be reduced by having sprayers in good condition. This will help to guarantee the continued availability of these products. The sprayer test verifies that the sprayer is in good condition.