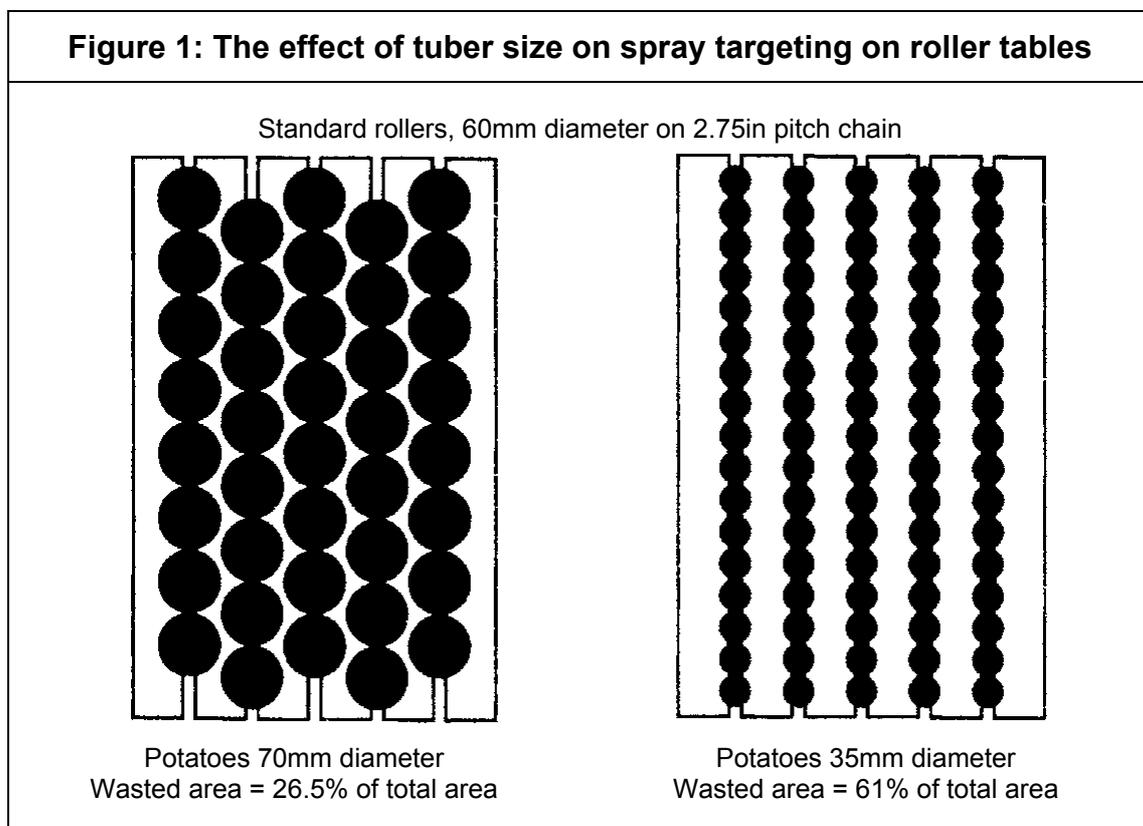


The improved targeting of sprays onto potatoes on roller tables

1 Background



Roller tables used for the application of fungicides to potato tubers should be matched to the size of tubers to be treated. As potatoes pass beneath a spray unit mounted above a roller table a surprising proportion of spray can miss the potatoes, as the rollers are not fully covered by the crop. Figure 1 shows the difference between potatoes of 70mm diameter and 35mm diameter, on a roller table 600mm wide, fitted with 60mm diameter rollers on a 70mm pitch chain.

Although, in reality, such uniformity of tuber sizes is never achieved it is clear that, on a conventional roller table, there is considerably less waste of chemical with ware potatoes than with small seed.

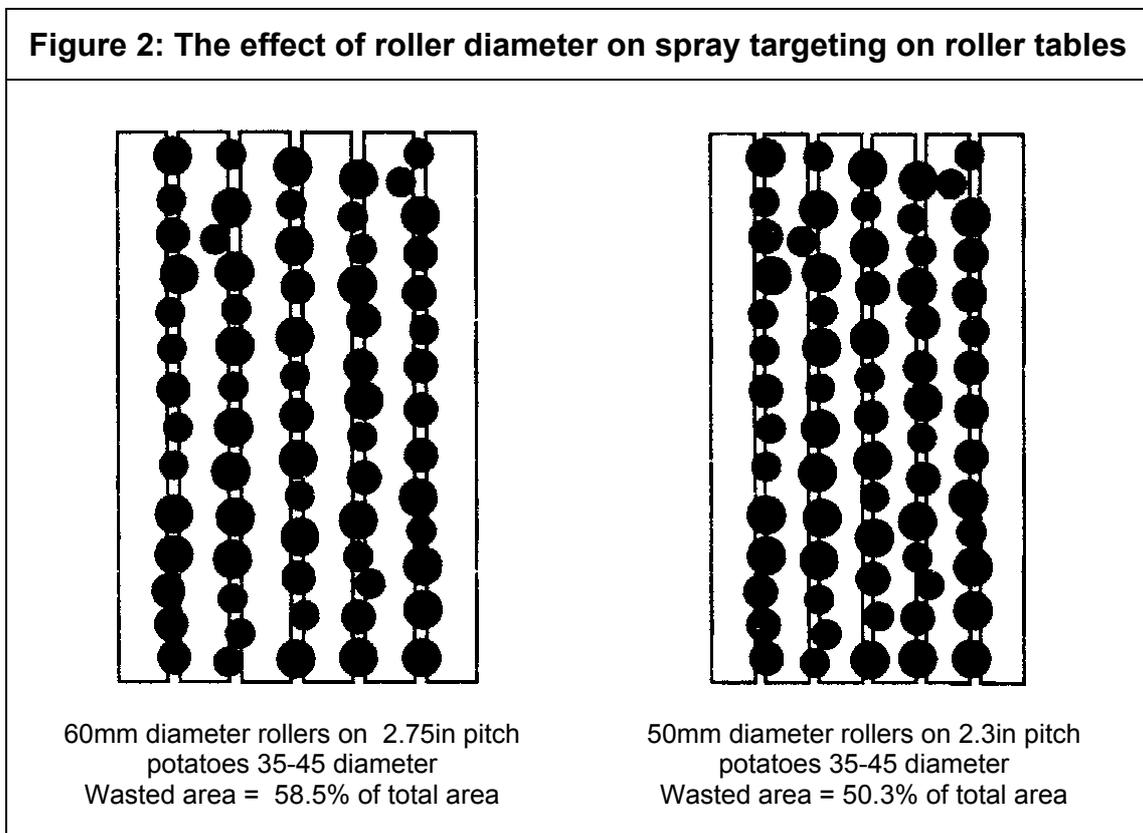
A further factor is that ware potatoes are usually treated at considerably higher throughput rates and the table is less likely to be completely full. Seed potatoes, on the other hand, tend to be treated at much lower rates and it is common to see tables very lightly loaded.

2 Objectives

Every effort should be made to ensure that the table is fully covered and runs at a speed commensurate with the throughput rate. If this is liable to fluctuate or is insufficient to fill the table, some kind of buffer should be included at the input to the spray table to ensure the table remains fully covered.

Even on a fully loaded table there will always be a wasted area where the crop diameter is less than the pitch of the rollers.

3 Selection of equipment



Match the table to the typical tuber size by fitting smaller diameter rollers and shorter pitch chain where smaller tubers will be treated. Figure 2 illustrates a table with a typical seed fraction graded 35 – 45mm. On the left is a table with standard 60mm diameter rollers. On the right is the same crop on a table with 50mm diameter rollers.

The saving of 15% may not seem significant but, properly calibrated, it amounts to that amount of chemical saved and minimises the area exposed roller and so reduces the amount of secondary pick up which can lead to excessive and potentially phytotoxic levels of chemical.

Where treatment of a small graded fraction is a permanent requirement, tables with small diameter rollers should be specified when growers are considering new treatment facilities. Roller diameter and chain pitch should be matched to the size of the tubers that will normally be passed over it. The best is guide for treatments to be applied after size grading and for the chain pitch to be no more than 5mm greater than the largest tuber.

The following table indicates the amount of wasted area for a range of typical size fractions. These figures will, of course, vary according to the actual mix of sizes and they also depend on the table being fully covered in every case. However, they are typical

Tuber sizes	Wasted area (percentage of the table not covered by potatoes)	
	60 mm rollers at 2.75" pitch	50 mm rollers at 2.3" pitch
70mm average	26.50	-
45 – 55mm	44.91	34.14
35 – 45mm	58.50	50.30
35mm average	61.00	46.66

- Read the label before you buy: use pesticides safely.
- All chemicals and machinery must be used in accordance with manufacturers' recommendations.
- Follow approved Code of Practice, such as COSHH, FEPA and NPTC*.
- Consult *The Guide to Potato Tuber Treatments in the UK* published by the BCPC. Contact BCPC Publications Sales at £8.50. Tel: 01420 593 200 or Fax: 01420 593 209 to order your copy.

* COSHH = Control of Substances Hazardous to Health Regulations 1989
 FEPA = Food and Environment Protection Act 1985
 NPTC = National Proficiency Test Council

The authors do not accept liability for any error or omission in the content, or for any loss, damage or other accident arising from the use of techniques or products mentioned in this article.

Updated and revised by the BPC Crop Protection Treater Group, May 2004.