TORO®

Drip Irrigation for Onions

Reduce diseases,
Optimise size.

onion

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Reduce diseases, Optimise size.

The commercial needs of large retailers increasingly require healthy onions, with a good and uniform size. These objectives can be easily achieved through the use of a drip irrigation system.
Although onion cultivation can be widely adapted to different environmental conditions, meeting water needs is an essential production factor both in terms of quantity and quality. In short, low water availability leads to lower production; on the contrary, an excess of water constitutes a waste of resources, favours a greater susceptibility to parasitic attacks and reduces the shelf life of the bulb.
Drip irrigation is therefore fundamentally important both for spring crops, to counter dry periods and ensure the development of a good size, and for autumn sowing crops, whose germination cannot otherwise be guaranteed.

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THE GREAT ADVANTAGES OF DRIP IRRIGATION

The best method of irrigating onions is without a shadow of doubt drip irrigation, whose main advantages are:

EFFICIENCY, ENVIRONMENTAL IMPACT AND FLEXIBILITY

- High irrigation efficiency (all the water is distributed to the plants reducing loss by evaporation to a minimum);
- Extraordinary uniformity in delivery and consequent crop uniformity;
- Increase in yields thanks also to the adoption of fertigation practices;
- Water saving;
- Energy saving (thanks to the lower operating pressure compared with sprinklers);
- Possibility of extraordinary uniform irrigation even on surfaces with irregular perimeters, rounded corners or in proximity of roads or houses;
- Possibility of increasing the cultivatable surface in areas where water resources are scarce.

HEALTHY PLANTS FOR QUALITY PRODUCTION

- High uniformity of the bulb size: correct fertigation management allows to obtain uniformly sized products with maximum commercial value;
- Greater health (less residues in the final product as is increasingly requested by the large-scale retail industry);
- Improved shelf life of the product with suitable fertigation based on P and K;
- Defence against water stress;
- Reduction of fungal diseases encouraged by water stagnation on the foliage.
  In particular, the adoption of a drip system allows to minimise infestation by Stemphylium Vesicarium (onion leaf blight) which has now become endemic in Europe. This infestation occurs when the leaves remain wet in the presence of temperatures above 26°C, i.e. the typical unwanted conditions that sprinkling can generate.

FERTIGATION

- Precise and uniform application of the fertiliser and consequent significant savings;
- Optimisation of the fertiliser distribution according to nutritional needs;
- Possibility of intervening in case of lack of nutrients;
- Reduction of the environmental impact.

SYSTEM MANAGEMENT

- Possibility of irrigating even in windy conditions, fully complying with the irrigation program;
- Ease of irrigation system management and of overall farm management;
- Possibility of installing long laterals reducing the number of irrigation sectors to a minimum.

A continuous wetting pattern, the great advantage of close spacing.

When choosing the right spacing between the drippers, several variables must be taken into account, such as the crop, the type of soil and its salinity, the orography of the ground and certainly the type of planting layout chosen. Numerous studies highlight the important advantages of adopting close spacing. This is particularly important for those crops, such as onions, with a reduced root system and significant leaf mass.

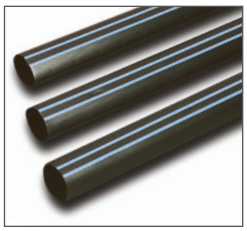
Close spacing between drippers allows to obtain a correct and continuous watering profile without affecting the purchase cost of the tape. A quick implementation of a continuous wetting pattern is fundamentally important for delivering to all plants - at the same time - the same amount of water and nutrients (in the case of larger spacing, the wait for a continuous wetting pattern to form gives rise to unwanted percolation phenomena with a waste of water and fertilisers).

It should also be said that onions prefer light and well-drained soils on which, it should be remembered, the adoption of close spacing becomes even more indispensable. In loose soils, in fact, the force of gravity prevails over the horizontal movement of the water and it is advisable to prefer close spacing between emitters in order to favour the rapid formation of a continuous wetting pattern.

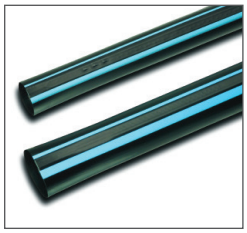
The image shows two drip tapes with the same flow rate per metre, specifically 5.70 l/h/m; the left drip tape has a 1.14 l/h emitter with a 20 cm spacing, the right one has a 0.57 l/h emitter with a 10 cm spacing. It is therefore obvious that the drip tape with a close spacing are faster in forming a continuous wetting pattern.

OUR EXPERIENCE, OUR SOLUTIONS

Since the 1990s, Toro has been successfully realised drip irrigation systems for onion growing, all over the world. Toro offers farmers two innovative solutions:



Aqua-Traxx® PBX: this is the Toro drip tape which ensures the highest performance on the market, with excellent emission uniformity and extraordinary quality.



Aqua-Traxx® FlowControl™: this Toro drip tape uses a special FlowControl™ system to guarantee uniformity of water distribution even in challenging topographical conditions, especially on undulating terrains.

FLAT LANDS

Where the orography of the ground allows it, or on flat surfaces, **Aqua-Traxx® PBX** represents the best possible choice to guarantee very high performance and high quality.
Specifically for onion cultivations, Toro offers the following solutions:

- 10, 15 and 20 cm spacings;
- 1.41/1.14/0.87/0.64/0.57/0.42 and 0.30 l/h @ 0.7 bar emitters;
- 16 mm diameter, 6 and 8 mil thicknesses;
- 22 mm diameter, 8 and 10 mil thicknesses.

Aqua-Traxx® PBX 5/8" (16 mm) Diameter — Slope 0%

Model	Individual Emitter Flow Rate @ 0,7 bar	Emitter Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA5xx04170-yyy	1,41 l/h	10 cm	85% 90%	90 73	92 74	93 74	93 75	94 75	94 76
RA5xx06112-yyy	1,41 l/h	15 cm	85% 90%	95 94	109 95	119 96	120 96	121 97	122 98
RA5xx0884-yyy	1,41 l/h	20 cm	85% 90%	140 113	142 114	144 115	145 116	146 118	147 118
RA5xx04134-yyy	1,14 l/h	10 cm	85% 90%	104 84	105 85	106 85	107 86	108 87	108 87
RA5xx0867-yyy	1,14 l/h	20 cm	85% 90%	162 131	164 132	165 133	167 134	168 135	170 136
RA5xx04100-yyy	0,87 l/h	10 cm	85% 90%	127 102	128 103	129 104	130 105	131 105	132 106
RA5xx0667-yyy	0,87 l/h	15 cm	85% 90%	163 132	165 133	167 135	168 136	170 136	171 137
RA5xx0851-yyy	0,87 l/h	20 cm	85% 90%	197 159	199 160	201 161	202 163	204 164	205 165
RA5xx0650-yyy	0,64 l/h	15 cm	85% 90%	197 159	200 160	201 162	202 163	204 164	205 165
RA5xx0467-yyy	0,57 l/h	10 cm	85% 90%	166 134	168 135	170 137	171 138	173 139	174 139
RA5xx0834-yyy	0,57 l/h	20 cm	85% 90%	259 209	262 211	264 213	266 214	268 216	269 217
RA5xx0825-yyy	0,42 l/h	20 cm	85% 90%	302 241	304 242	305 243	306 244	307 245	308 245
RA5xx0822-yyy	0,38 l/h	20 cm	85% 90%	322 258	324 259	326 260	327 261	328 263	329 263
RA5xx0817-yyy	0,30 l/h	20 cm	85% 90%	379 304	381 305	383 306	384 308	385 308	386 308

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Aqua-Traxx® PBX 7/8" (22 mm) Diameter — Slope 0%

Model	Individual Emitter Flow Rate @ 0,7 bar	Emitter Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA7xx06112-yyy	1,41 l/h	15 cm	85% 90%	194 192	224 194	245 197	246 198	249 200	251 201
RA7xx0867-yyy	1,14 l/h	20 cm	85% 90%	288 233	291 235	294 237	296 239	298 240	301 242
RA7xx04100-yyy	0,87 l/h	10 cm	85% 90%	225 181	227 183	229 185	231 186	233 187	234 188
RA7xx0667-yyy	0,87 l/h	15 cm	85% 90%	291 234	294 237	296 239	300 241	301 243	303 244
RA7xx0851-yyy	0,87 l/h	20 cm	85% 90%	349 282	354 285	357 287	359 289	362 291	364 293
RA7xx0467-yyy	0,57 l/h	10 cm	85% 90%	295 238	298 241	302 243	304 245	306 246	308 249
RA7xx0834-yyy	0,57 l/h	20 cm	85% 90%	460 370	464 374	468 379	472 382	475 383	478 387
RA7xx0825-yyy	0,42 l/h	20 cm	85% 90%	528 426	531 428	534 431	536 433	538 434	539 435
RA7xx0822-yyy	0,38 l/h	20 cm	85% 90%	566 457	569 459	571 461	573 462	574 463	576 465
RA7xx0817-yyy	0,30 l/h	20 cm	85% 90%	664 536	668 539	671 541	673 543	674 544	677 546

Aqua-Traxx® PBX is also available in other models. Request further information.

LANDS WITH DIFFICULT TOPOGRAPHICAL CONDITIONS

In topographically difficult soils and especially on undulating land, it is essential to use a drip tape able to guarantee a distribution as constant as possible between the various emitter in relation to the differences in altitude.
In all these situations, **Aqua-Traxx® FlowControl™**, thanks to its innovative FlowControl™ technology, ensures extraordinary emission uniformity:
Aqua-Traxx® FlowControl™, is available with:

- 15 and 20 cm spacings;
- 1.01 and 0.76 l/h @ 0.7 bar emitters;
- 16 mm diameter, 8, 10 and 15 mil thicknesses;
- 22 mm diameter, 10 and 15 mil thicknesses.

Aqua-Traxx® FlowControl™ 5/8" (16 mm) Diameter — Slope 0%

Model	Individual Emitter Flow Rate @ 0,7 bar	Emitter Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters			
				@ 0,7 bar	@ 1,0 bar	@ 1,4 bar	@ 1,7 bar
EAFC5xx0690-yyy	1,01 l/h	15 cm	90%	124	131	139	145
EAFC5xx0867-yyy	1,01 l/h	20 cm	90%	148	157	168	174
EAFC5xx0667-yyy	0,76 l/h	15 cm	90%	150	159	168	175
EAFC5xx0850-yyy	0,76 l/h	20 cm	90%	181	193	202	211

Aqua-Traxx® FlowControl™ 7/8" (22 mm) Diameter — Slope 0%

Model	Individual Emitter Flow Rate @ 0,7 bar	Emitter Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters		
				@ 0,7 bar	@ 1,0 bar	@ 1,4 bar
EAFC7xx0690-yyy	1,01 l/h	15 cm	90%	217	230	244
EAFC7xx0867-yyy	1,01 l/h	20 cm	90%	261	277	294
EAFC7xx0667-yyy	0,76 l/h	15 cm	90%	263	279	296
EAFC7xx0850-yyy	0,76 l/h	20 cm	90%	318	337	355

Aqua-Traxx® FlowControl™ is also available in other models. Request further information.

Reduce diseases, Optimise size.

TESTIMONIALS

Anton Ivanov
Volgograd
Russia

"We have been using the Aqua-TraXX drip tape for irrigating onions for more than 10 years and we know that we have made the right choice.
It allows us to have excellent uniformity, great harvests and also to prevent the development of weeds".

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