TORO®

Olive drip irrigation

Optimise production and safeguard typicality

olive tree

Olive drip irrigation

Optimise production and safeguard typicality

Drip irrigation is a useful tool in olive growing to optimise production, cut costs and improve quality. The advantages drip irrigation can bring depend a lot on the soil, cultivation and climatic conditions. In more arid climates or during particularly dry seasons, adopting a drip irrigation system ensures sizeable production and allows growing high quality olives. In modern olive growing, drip irrigation is a particularly important production element which can and should be used not only to eliminate the risks connected with unfavourable seasonality, but also and especially to control production improving its quality.

ADVANTAGES FOR A GROWING OLIVE GROVE

In the early stages of olive grove cultivation, the main advantages of a drip irrigation system are:

- Fast tree development, formation of a robust skeleton, branch lengthening, trunk thickening and root system development.
- Uniform tree growth because of the high emission uniformity which guarantees that all the trees get the same amount of water and nutrients (even on steep slopes thanks to the use of pressure compensating drippers).
- Early production start (2-3 years earlier than starting off "dry" if used in combination with fertigation practice).
- Greater contemporaneity of production.
- Possibility to meet the nutritional requirements during the different phenological stages through targeted fertigation management.

ADVANTAGES FOR A PRODUCING OLIVE GROVE

In the later stages when the trees start producing olives, the advantages of a drip irrigation system are:

- Possibility of developing and implementing irrigation strategies aimed at optimising and/or characterising the oil quality and safeguarding the specific typicality of each area.
- Increased olive and oil production per tree.
- Larger-sized olives and better flesh/stone ratio.
- Better organoleptic quality of the olives.
- In normal years, water stress management allows constant production over time, both in terms of quality and quantity.
- In particularly dry years or in particularly arid areas, elimination of intense water stress and consequent safeguarding of the production quality and quantity.
- Reduction of yield alternation and consistently higher yields through fertigation practice.
- Optimal distribution of the nutritional elements in relation to the phenological stages because of the targeted fertigation practices (substantial reduction in total units of fertilizer

used and elimination of the distribution costs of conventional methods).
- Possibility to promptly intervene with micro/macro-elements (also on heavy soil or hilly land).
- Better vegetative balance of the trees.
- Grassing management and maintaining a more balanced and natural ecosystem with consequent reduction in erosion phenomena on sloping ground.
- Less pruning required: the tree is put in the conditions to overcome larger evapotranspiration so that a larger number of branches and leaves can be left compared to a dry olive grove.

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How to irrigate

Olive tree water requirements vary considerably depending on the various phenological stages.
In particular, in the period between blooming and development into a fruit, water stress conditions must be averted in order not to compromise production.
The correct amount of water is also of fundamental importance during the initial fruit development stage in order to encourage the cell division, expansion and differentiation processes.
Subsequently, during the oil formation stage, the right amount of water in the soil allows not only constant fruit growth but also balanced formation of chemical components, such as phenols and polyphenols, which affect the final qualitative and organoleptic properties of the oil.

OUR EXPERIENCE, OUR SOLUTIONS

Since the 1990s Toro has successfully been building drip irrigation systems for olive growing all over the world. BlueLine is the Toro drip line whose extraordinary emission uniformity and durability allow accurate and reliable irrigation.

BlueLine PC: is the Toro pressure compensating drip line that ensures extraordinary resistance to clogging and excellent emission uniformity in the most difficult topographical conditions, especially on undulated terrains.

BlueLine Classic: is the Toro drip line that uses an innovative dripper that guarantees excellent performance, high resistance to clogging and value for money.

Sub-irrigation

Adopting a sub-surface drip irrigation system (SDI) brings further advantages:
- Increased irrigation efficiency thanks to reduced loss by evaporation.
- Greater fertigation effectiveness with consequent saving on fertilizers.
- High absorption effectiveness of "little moving" elements such as phosphor and potassium by virtue of their distribution in proximity of the root system.
- Less weed development with consequent sizeable reduction in use of weedkillers and/or mowing.
- No above ground tubing in the olive grove and consequently easier cultivation and less visual and environmental impact.

OLIVE GROVES IN DIFFICULT TOPOGRAPHICAL CONDITIONS

On topographically difficult terrain, especially on undulated soil, it is essential to use a pressure compensating drip line in order to ensure constant emission in relation to the elevation gradients.
In all these situations, thanks to its innovative pressure compensating dripper, BlueLine PC ensures extraordinary emission uniformity and unbeatable durability in the most severe operating conditions.

BlueLine PC is available with:

- 16 mm diameter, 0.9 mm and 1.1 mm wall thickness
- 20 mm diameter, 0.9 mm and 1.2 mm wall thickness
- 4 pressure compensating drippers: 1.0 / 1.5 / 2.0 / 4.0 l/h between 0.7 and 4.1 bar.
- Spacing starting from 50 cm

BlueLine® PC Diameter 16 mm
Slope 0%

Model	Individual Emitter Flow Rate between 0,7 and 4,1 bar	Spacing	Maximum Lateral Lengths in meters						
			@ 1,0 bar	@ 1,5 bar	@ 2,0 bar	@ 2,5 bar	@ 3,0 bar	@ 3,5 bar	@ 4,0 bar
PHWPC16xx5010	1,0 l/h	50 cm	144	204	243	272	296	318	336
PHWPC16xx6010	1,0 l/h	60 cm	165	234	278	312	340	365	386
PHWPC16xx7510	1,0 l/h	75 cm	195	276	328	368	402	431	456
PHWPC16xx8010	1,0 l/h	80 cm	204	290	344	386	421	451	478
PHWPC16xx9010	1,0 l/h	90 cm	221	315	375	421	459	492	521
PHWPC16xx10010	1,0 l/h	100 cm	239	340	404	453	495	530	562
PHWPC16xx5015	1,5 l/h	50 cm	110	155	183	206	224	240	253
PHWPC16xx6015	1,5 l/h	60 cm	125	177	211	236	258	276	292
PHWPC16xx7515	1,5 l/h	75 cm	147	209	249	279	304	326	346
PHWPC16xx8015	1,5 l/h	80 cm	154	219	261	292	319	342	362
PHWPC16xx9015	1,5 l/h	90 cm	168	229	284	319	347	373	395
PHWPC16xx10015	1,5 l/h	100 cm	181	257	306	344	375	402	426
PHWPC16xx5020	2,0 l/h	50 cm	91	129	153	171	187	200	212
PHWPC16xx6020	2,0 l/h	60 cm	104	148	176	197	215	230	244
PHWPC16xx7520	2,0 l/h	75 cm	123	174	207	233	254	272	288
PHWPC16xx8020	2,0 l/h	80 cm	129	183	217	244	266	285	302
PHWPC16xx9020	2,0 l/h	90 cm	140	199	237	266	290	311	329
PHWPC16xx10020	2,0 l/h	100 cm	151	215	255	287	313	335	355
PHWPC16xx5040	4,0 l/h	50 cm	58	82	97	109	119	128	135
PHWPC16xx6040	4,0 l/h	60 cm	66	94	112	126	137	147	156
PHWPC16xx7540	4,0 l/h	75 cm	78	111	132	149	162	174	184
PHWPC16xx8040	4,0 l/h	80 cm	82	117	139	156	170	182	193
PHWPC16xx9040	4,0 l/h	90 cm	90	127	151	170	185	199	211
PHWPC16xx10040	4,0 l/h	100 cm	97	137	163	183	200	215	227

BlueLine® PC Diameter 20 mm
Slope 0%

Model	Individual Emitter Flow Rate between 0,7 and 4,1 bar	Spacing	Maximum Lateral Lengths in meters						
			@ 1,0 bar	@ 1,5 bar	@ 2,0 bar	@ 2,5 bar	@ 3,0 bar	@ 3,5 bar	@ 4,0 bar
PHWPC20xx5010	1,0 l/h	50 cm	213	301	357	400	435	466	494
PHWPC20xx6010	1,0 l/h	60 cm	244	347	411	461	502	538	570
PHWPC20xx7510	1,0 l/h	75 cm	290	410	487	546	596	638	676
PHWPC20xx8010	1,0 l/h	80 cm	303	431	511	573	625	670	710
PHWPC20xx9010	1,0 l/h	90 cm	331	470	558	626	682	731	775
PHWPC20xx10010	1,0 l/h	100 cm	356	507	603	676	737	790	837
PHWPC20xx5015	1,5 l/h	50 cm	161	228	270	302	329	352	373
PHWPC20xx6015	1,5 l/h	60 cm	185	262	311	349	380	407	431
PHWPC20xx7515	1,5 l/h	75 cm	219	311	369	413	451	483	512
PHWPC20xx8015	1,5 l/h	80 cm	230	326	387	434	473	507	537
PHWPC20xx9015	1,5 l/h	90 cm	250	356	422	474	517	554	587
PHWPC20xx10015	1,5 l/h	100 cm	270	384	456	512	558	599	634
PHWPC20xx5020	2,0 l/h	50 cm	134	189	225	252	274	293	301
PHWPC20xx6020	2,0 l/h	60 cm	154	218	259	290	316	339	359
PHWPC20xx7520	2,0 l/h	75 cm	183	259	307	345	376	402	426
PHWPC20xx8020	2,0 l/h	80 cm	192	272	323	362	394	423	448
PHWPC20xx9020	2,0 l/h	90 cm	209	297	352	395	431	462	489
PHWPC20xx10020	2,0 l/h	100 cm	225	320	381	427	466	499	529
PHWPC20xx5040	4,0 l/h	50 cm	85	121	142	160	174	187	198
PHWPC20xx6040	4,0 l/h	60 cm	98	139	165	185	202	216	229
PHWPC20xx7540	4,0 l/h	75 cm	117	165	196	220	240	257	272
PHWPC20xx8040	4,0 l/h	80 cm	122	174	206	231	252	271	286
PHWPC20xx9040	4,0 l/h	90 cm	134	190	225	252	275	295	312
PHWPC20xx10040	4,0 l/h	100 cm	144	205	243	273	298	319	338

BlueLine PC is also available in other models. Ask for more information.

OLIVE GROVES ON FLAT TERRAIN

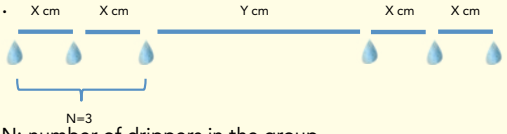
Where the orography of the land allows, a classic drip line can be used, which is a small investment at the same time guaranteeing excellent performance.

BlueLine Classic is the drip line that most effectively fulfils these requirements:

- 16 mm diameter, 0.9 mm and 1.1 mm wall thickness
- 20 mm diameter, 0.9 mm and 1.2 mm wall thickness
- 2 drippers: 2.0 / 4.0 l/h @ 1 bar
- Spacing starting from 50 cm

GROUPED SPACING BETWEEN DRIPPERS

In the case of olive groves where the system layout is not cramped, a specifically designed irrigation system can be installed to optimise emission uniformity so that each tree is fed with the right amount of water and nutrients.
The innovative BlueLine production technology allows designing special product configurations with grouped spacing between the drippers. These configurations allow satisfying specific requirements and are characterised by a certain number of drippers placed at distances of X cm followed by a gap of Y cm long without drip points.



N: number of drippers in the group
X: distance in cm between the drippers
Y: gap between two consecutive groups of drippers

BlueLine is available with grouped spacing in both the PC and Classic models. Ask for more information

BlueLine® Classic® Diameter 16 mm
Slope 0%

Model	Individual Emitter Flow Rate @ 1 bar	Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters @ 1,0 bar
PHWE16xx5020	2,0 l/h	50 cm	90%	110
PHWE16xx6020	2,0 l/h	60 cm	90%	125
PHWE16xx7520	2,0 l/h	75 cm	90%	146
PHWE16xx8020	2,0 l/h	80 cm	90%	153
PHWE16xx9020	2,0 l/h	90 cm	90%	165
PHWE16xx10020	2,0 l/h	100 cm	90%	178
PHWE16xx5040	4,0 l/h	50 cm	90%	71
PHWE16xx6040	4,0 l/h	60 cm	90%	80
PHWE16xx7540	4,0 l/h	75 cm	90%	94
PHWE16xx8040	4,0 l/h	80 cm	90%	98
PHWE16xx9040	4,0 l/h	90 cm	90%	106
PHWE16xx10040	4,0 l/h	100 cm	90%	115

BlueLine® Classic® Diameter 20 mm
Slope 0%

Model	Individual Emitter Flow Rate @ 1 bar	Spacing	Emission Uniformity (EU)	Maximum Lateral Lengths in meters @ 1,0 bar
PHWE20xx5020	2,0 l/h	50 cm	90%	165
PHWE20xx6020	2,0 l/h	60 cm	90%	188
PHWE20xx7520	2,0 l/h	75 cm	90%	219
PHWE20xx8020	2,0 l/h	80 cm	90%	230
PHWE20xx9020	2,0 l/h	90 cm	90%	249
PHWE20xx10020	2,0 l/h	100 cm	90%	268
PHWE20xx5040	4,0 l/h	50 cm	90%	106
PHWE20xx6040	4,0 l/h	60 cm	90%	120
PHWE20xx7540	4,0 l/h	75 cm	90%	141
PHWE20xx8040	4,0 l/h	80 cm	90%	147
PHWE20xx9040	4,0 l/h	90 cm	90%	160
PHWE20xx10040	4,0 l/h	100 cm	90%	172

BlueLine Classic is also available in other models. Ask for more information.

Where long lateral lines are required, BlueLine PC provides superior performance.

Control production, improve quality and safeguard the typicality of your oil

TORO

TESTIMONIALS

Pietro Leone
Cericola Emilia Farm
Incoronata (Foggia), Italy

"We use Toro drip lines to irrigate our super-intensive olive groves.
In the growing stage, the drip irrigation system allows us to quickly and uniformly go into production.
In the production stage, on the other hand, we can increase the olive and oil production per tree.
The investment to purchase and install a drip irrigation system has an incidence of not more than 5-10% on the total cost incurred for a new olive grove. You get a return on investment in a very short time.
In modern olive growing, drip irrigation is an essential tool thanks to which we can control production and ensure the success of our company."

TORO®

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