TORO®

Drip irrigation for your corn!

Protect your crop.
Assure your profit.

corn

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Demand for corn is growing strongly for both human and animal food use and biomass production. The price of corn (continually on the rise) and the possibility of making good profits are attracting ever more farmers to produce this crop.

It is therefore of fundamental importance to maximise the harvesting quality and yield at the same time efficiently managing the farm's resources, such as water, energy, fertilizer and labour.

In addition, climate change and the relative rise in temperatures makes it increasingly important to protect crops against drought or sudden heatwaves. Drip irrigation allows safeguarding your crop, enhancing the quality and yield with the least possible environmental impact, and assuring the profit of your farm.

THE GREAT ADVANTAGES OF DRIP IRRIGATION

The most efficient and effective method of irrigating corn 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);
- Water saving;
- Extraordinary delivery uniformity and consequently crop uniformity;
- Increased productivity per hectare cultivated (owing to the uniform water and fertilizer distribution);
- Possibility of irrigating with extraordinary uniformity even surfaces with irregular perimeters, rounded corners or in proximity of roads or houses;
- Possibility of using the entire cultivatable surface not needing to leave passages for sprinkling equipment movement;
- Possibility of increasing the cultivable surface in areas where the water resource is scarce;
- Energy saving (thanks to the lower operating pressure compared to hose-reel irrigation machines);
- Reduced pump system purchasing costs.

Fertirrigation

- Accurate and uniform application of fertilizer with a considerable saving (optimisation of the fertilizer dosage in relation to the plant development cycle) and reduced environmental impact;
- Possibility of intervening in case of micro/macro element deficiencies;

- Elimination of fertilizer distribution costs not needing a tractor.

System management

- Possibility of irrigating at any time of day even in windy conditions and without any restriction;
- Fully in line with your irrigation program and no need to reprogram the operations in the event of adverse weather conditions;
- Ease of irrigation system management and overall farm management;
- Reduced labour costs;
- Labour costs not dependent on the number of operations;
- Possibility of installing drip lines of more than 800 metres long reducing the number of irrigation sectors to a minimum and consequently the length of the main lines.

Lush and healthy plants for quality production

- Improved quality and crop preservability;
- Defence against water stress;
- Elimination of thermal stress (as caused by sprinkling systems);
- Reduction of fungal diseases encouraged by water stagnation on the foliage;
- Prevention of the development of aflatoxins that form when the plant suffers water stress or inadequate fertilization;
- Possibility of irrigation during blossoming without compromising pollination (as occurs with sprinkling systems).

OUR EXPERIENCE, OUR SOLUTIONS

Since the '90s Toro has successfully realised drip irrigation systems for corn all over the world. After conducting numerous experimental campaigns in collaboration with universities, research centres and large farms, Toro offers farmers two innovative corn irrigation solutions:

Aqua-Traxx PBX: this is the Toro drip tape that assures the best performance on the market, excellent uniformity of delivery and extraordinary quality;

Neptune: this is the drip line with flat emitter that gives good value for money at the same time guaranteeing high quality and excellent performance.

If you prefer a Sub-surface Drip Irrigation system (SDI):

- A further increase in irrigation efficiency thanks to the reduced loss by evaporation.
- Less weed growth and hence a considerable saving in weed killer;
- Possibility of reusing the system for several seasons (no annual laying and installation costs, and disposal costs only at the end of its operating life).

Toro offers a wide range of solutions to satisfy the most varied and stringent farming needs and requirements; to name only a few:

SANDY LOAM SOIL WITH ROWS OF MEDIUM LENGTH

In loose soil the force of gravity predominates with respect to the horizontal water movement and you should therefore opt for drip irrigation systems with short spacings between the drippers.

In all these conditions, **Aqua-Traxx PBX** is the best choice and is available with:

- 10, 15, 20 and 30 cm spacings;
- 5, 6, 7 and 8 mil thicknesses;
- 16 mm (5/8") and 22 mm (7/8") diameters;
- 6 flow rates: 0.30 / 0.38 / 0.42 / 0.57 / 0.64 / 0.87 l/h @ 0.7 bar

SANDY LOAM SOIL WITH ROWS OF MEDIUM LENGTH

Diameter 16 mm (5/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA5xx04100-yyy	0,87 l/h	10 cm	90%	102	103	104	105	105	106
RA5xx0667-yyy	0,87 l/h	15 cm	90%	132	133	135	136	136	137
RA5xx0851-yyy	0,87 l/h	20 cm	90%	159	160	161	163	164	165
RA5xx1234-yyy	0,87 l/h	30 cm	90%	206	208	209	211	212	214
RA5xx0650-yyy	0,64 l/h	15 cm	90%	159	160	162	163	164	165
RA5xx1225-yyy	0,64 l/h	30 cm	90%	246	250	252	254	255	257
RA5xx0467-yyy	0,57 l/h	10 cm	90%	134	135	137	138	139	139
RA5xx0834-yyy	0,57 l/h	20 cm	90%	209	211	213	214	216	217
RA5xx1222-yyy	0,57 l/h	30 cm	90%	270	274	276	278	280	281
RA5xx0825-yyy	0,42 l/h	20 cm	90%	241	242	243	244	245	245
RA5xx0822-yyy	0,38 l/h	20 cm	90%	258	259	260	261	263	263
RA5xx0817-yyy	0,30 l/h	20 cm	90%	304	305	306	308	308	308

Max pressure: 0.7 bar for 5 mil / 0.8 bar for 6 mil / 0.9 bar for 7 mil

Diameter 22 mm (7/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA7xx04100-yyy	0,87 l/h	10 cm	90%	181	183	185	186	187	188
RA7xx0667-yyy	0,87 l/h	15 cm	90%	234	237	239	241	243	244
RA7xx0851-yyy	0,87 l/h	20 cm	90%	282	285	287	289	291	293
RA7xx1234-yyy	0,87 l/h	30 cm	90%	365	368	372	375	378	381
RA7xx0650-yyy	0,64 l/h	15 cm	90%	281	283	286	288	290	292
RA7xx1225-yyy	0,64 l/h	30 cm	90%	436	441	445	448	451	454
RA7xx0467-yyy	0,57 l/h	10 cm	90%	238	241	243	245	246	249
RA7xx0834-yyy	0,57 l/h	20 cm	90%	370	374	379	382	383	387
RA7xx1222-yyy	0,57 l/h	30 cm	90%	478	486	490	494	497	500
RA7xx0825-yyy	0,42 l/h	20 cm	90%	426	428	431	433	434	435
RA7xx0822-yyy	0,38 l/h	20 cm	90%	457	459	461	462	463	465
RA7xx0817-yyy	0,30 l/h	20 cm	90%	536	539	541	543	544	546

Max pressure: 0.7 bar for 7 mil / 0.8 bar for 8 mil

Aqua-Traxx PBX is also available in other models.
Ask for more information.

SURFACES WITH VERY LONG ROWS
(irrespective of the type of soil)

Where you have long rows and want to reduce the number of irrigation sectors to a minimum simplifying field management without compromising crop uniformity, **Aqua-Traxx PBX** is the right solution. Thanks to the innovative drippers with an ultra-low flow rate, **Aqua-Traxx PBX** can reach considerable lengths guaranteeing an extraordinary delivery uniformity:

- 3 ultra-low flow rates:
  - 0.30 l/h @ 0.7 bar – ***Already successfully used!***
  - 0.38 l/h @ 0.7 bar – ***Already successfully used!***
  - 0.42 l/h @ 0.7 bar – ***Already successfully used!***
- 20, 30 and 40 cm spacings;
- 7 and 8 mil thicknesses;
- 16 mm (5/8") and 22 mm (7/8") diameters

With Aqua-Traxx PBX, 22 mm diameter, 0.30 l/h dripper, 40 cm spacing you can carry the water for more than 800 metres with 90% uniformity!

SURFACES WITH VERY LONG ROWS

Diameter 16 mm (5/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA5xx0825-yyy	0,42 l/h	20 cm	90%	241	242	243	244	245	245
RA5xx1613-yyy	0,42 l/h	40 cm	90%	381	383	385	387	388	389
RA5xx0822-yyy	0,38 l/h	20 cm	90%	258	259	260	261	263	263
RA5xx1611-yyy	0,38 l/h	40 cm	90%	400	401	404	405	406	408
RA5xx0817-yyy	0,30 l/h	20 cm	90%	304	305	306	308	308	308
RA5xx1609-yyy	0,30 l/h	40 cm	90%	470	472	474	476	477	479

Max pressure: 0.7 bar for 5 mil / 0.8 bar for 6 mil / 0.9 bar for 7 mil

Diameter 22 mm (7/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters					
				@ 0,5 bar	@ 0,6 bar	@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar
RA7xx0825-yyy	0,42 l/h	20 cm	90%	426	428	431	433	434	435
RA7xx1613-yyy	0,42 l/h	40 cm	90%	664	667	670	672	674	676
RA7xx0822-yyy	0,38 l/h	20 cm	90%	457	459	461	462	463	465
RA7xx1611-yyy	0,38 l/h	40 cm	90%	706	713	717	719	721	723
RA7xx0817-yyy	0,30 l/h	20 cm	90%	536	539	541	543	544	546
RA7xx1609-yyy	0,30 l/h	40 cm	90%	833	837	840	843	847	849

Max pressure: 0.7 bar for 7 mil / 0.8 bar for 8 mil

Aqua-Traxx PBX is also available in other models.
Ask for more information.

CLAYEY LOAM SOIL WITH ROWS OF MEDIUM LENGTH

Heavy soil is characterised by good horizontal water movement and you should therefore opt for drip lines with longer spacings between the drippers.
Neptune is the solution that most efficiently satisfies these requirements.

- 40, 50 and 60 cm spacings;
- 8, 10, 12, 15, 18, 24, 35 mil thicknesses;
- 16 mm (5/8") and 22 mm (7/8") diameters;
- 3 flow rates: 0.67 / 1.08 / 1.34 l/h @ 0.7 bar

CLAYEY LOAM SOIL WITH ROWS OF MEDIUM LENGTH

Diameter 16 mm (5/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters				
				@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar	@ 1,5 bar*
PTW16xx4006-yy	0,67 l/h	40 cm	90%	276	277	278	279	283
PTW16xx5006-yy	0,67 l/h	50 cm	90%	320	321	322	324	329
PTW16xx6006-yy	0,67 l/h	60 cm	90%	361	363	364	366	371
PTW16xx4011-yy	1,08 l/h	40 cm	90%	188	189	190	190	193
PTW16xx5011-yy	1,08 l/h	50 cm	90%	218	219	220	222	225
PTW16xx6011-yy	1,08 l/h	60 cm	90%	246	248	248	249	254
PTW16xx4014-yy	1,34 l/h	40 cm	90%	161	162	162	163	165
PTW16xx5014-yy	1,34 l/h	50 cm	90%	187	188	189	189	192
PTW16xx6014-yy	1,34 l/h	60 cm	90%	211	212	213	214	217

Max pressure: 0.7 bar for 5 mil / 0.8 bar for 6 mil / 0.9 bar for 7 mil

Diameter 22 mm (7/8")
Slope 0%

Model	Individual Emitter Flow Rate	Dripper Spacing	Emission Uniformity	Maximum Lateral Lengths in meters				
				@ 0,7 bar	@ 0,8 bar	@ 0,9 bar	@ 1,0 bar	@ 1,5 bar*
PTW22xx4006-yy	0,67 l/h	40 cm	90%	494	496	498	500	508
PTW22xx5006-yy	0,67 l/h	50 cm	90%	572	575	577	579	588
PTW22xx6006-yy	0,67 l/h	60 cm	90%	645	648	651	653	664
PTW22xx4011-yy	1,08 l/h	40 cm	90%	337	339	340	342	346
PTW22xx5011-yy	1,08 l/h	50 cm	90%	391	393	395	396	402
PTW22xx6011-yy	1,08 l/h	60 cm	90%	441	443	445	447	453
PTW22xx4014-yy	1,34 l/h	40 cm	90%	289	290	291	293	297
PTW22xx5014-yy	1,34 l/h	50 cm	90%	335	337	338	340	344
PTW22xx6014-yy	1,34 l/h	60 cm	90%	378	380	382	383	389

Max pressure: 0.7 bar for 7 mil / 0.8 bar for 8 mil

Neptune is also available with other drippers and different spacings.
Ask for more information.

TESTIMONIALS

Farmers all over the world have put their trust in Toro and bought our drip irrigation systems for corn certain that they have made the best choice.

 Dott. Sante Bissaro "La Quercia" Farm Bonavicina, Verona, Italy	"We installed the first drip irrigation system for our corn in 1978 and since then Bi-Wall and then Aqua-Traxx have been our first choice. The high uniformity of delivery clearly produces a higher yield and quality not to mention the considerable water and energy saving. With fertirrigation we optimise the dosage of nitrogenous fertilizers thus reducing the environmental impact. We can in fact easily administer the urea in the period of maximum absorption (bridging plume emission) preventing waste that could be harmful to the groundwater. Drip irrigation also allows using the entire cultivatable surface not needing to leave uncultivated strips to allow for passage of hose-reel irrigation machines."
 Giuseppe Cavallini "Giuseppe Cavallini" Farm Argenta (Consandolo), Ferrara, Italy	"In 2001 we installed Aqua-Traxx underground (SDI) and today, in 2012, the irrigation system is still working efficiently. With drip irrigation, we can accompany the corn during its development cycle and at the same time make more rational use of the water resource. Drip irrigation gives us the certainty of harvesting quality and yield without having to run the risks related to seasonality."
 Steven e Chris Cox, Cox Valley View Farms Long Island, Kansas, USA	"In comparison with flood, drip requires little labor, and in comparison to pivots, energy requirements are low. Fertilizers can be placed precisely where needed, and no-till farming becomes a reality. Best of all, no water is wasted to evaporation, runoff, wind drift or deep percolation, and uniformity is generally greater than 90%. "This means that with a 1" application of water, the driest plant will receive .90 inches of water, and the wettest plant will receive 1.10 inches. This allows me to get the most from every gallon of water I pump from the aquifer."
 Gary Greving Gray Island, Nebraska (USA)	"We've achieved tremendous plant health with SDI and increased yields 40%. The stem of the plant was twice as thick, the leaf area larger, the plant taller, and the pod count over double. At the same time, we reduced water applications by 40% compared to our pivots. SDI is as close to 100% efficient as you can get."

Drip irrigation works and produces profit!

TORO®

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