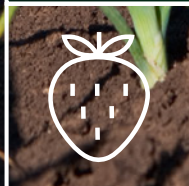


Optimize your drip emitter spacing



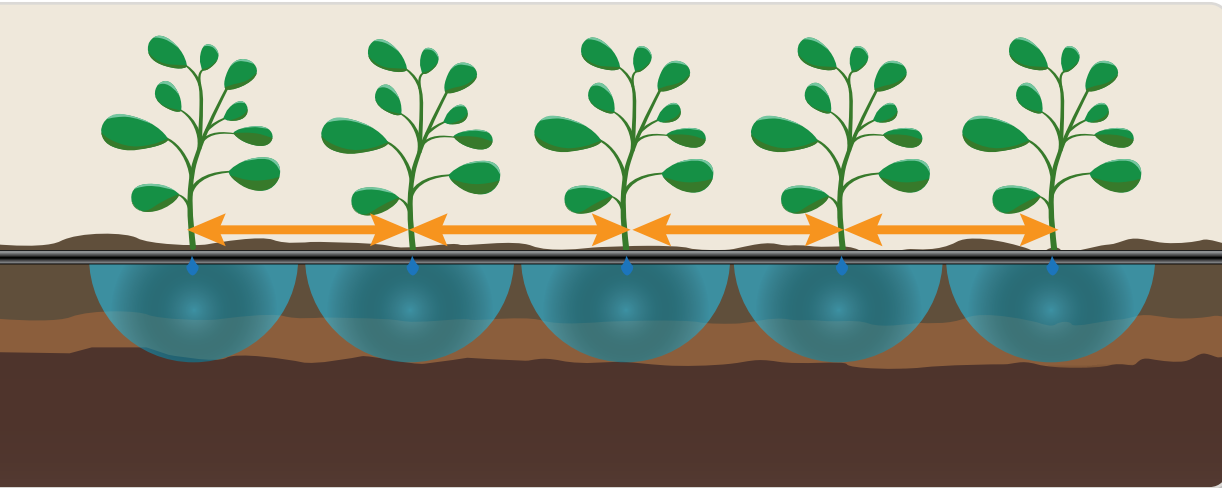
Make your drip emitter spacing an agronomic decision, not an economic decision

- Discover the agronomic benefits of using drip emitter spacing of 15 cm (6") or less
- Ideal for onions, garlic, lettuce, celery, carrots, strawberries, lettuce, and potatoes

Optimizing your drip emitter spacing

The challenge

How to match a drip tape to a specific cropping situation, ensuring it meets the requirements of plant spacing, soil type, depth of irrigation, and wetted area to maximize agronomic outcomes.



Benefits of using close emitter spacing

Standard drip emitter spacing

Emitter spacing is typically within the 20–30cm (8–12") range, with a flow rate chosen based on meeting peak crop demand and run length.

Plants are usually spaced 20–40cm (8–16") apart, which means one emitter or more per plant.

Common Rivulis T-Tape configurations using standard spacing:

- xxx-20-250 (xxx-08-66): (0.5 l (0.13 gal)/hr/emitter)
- xxx-25-250 (xxx-10-66): (0.62 l (0.16 gal)/hr/emitter)
- xxx-30-250 (xxx-12-66): (0.75 l (0.2 gal)/hr/emitter)
- xxx-40-250 (xxx-16-66): (1 l (0.26 gal)/hr/emitter)
- xxx-50-400 (xxx-20-106): (2 l (0.53 gal)/hr/emitter)

Note: all flow rates stated in this document are based on a nominal operating pressure of 0.55 bar (8 psi).

For a number of applications, the above configurations will work well and meet the agronomic demands of the crop.

However ...

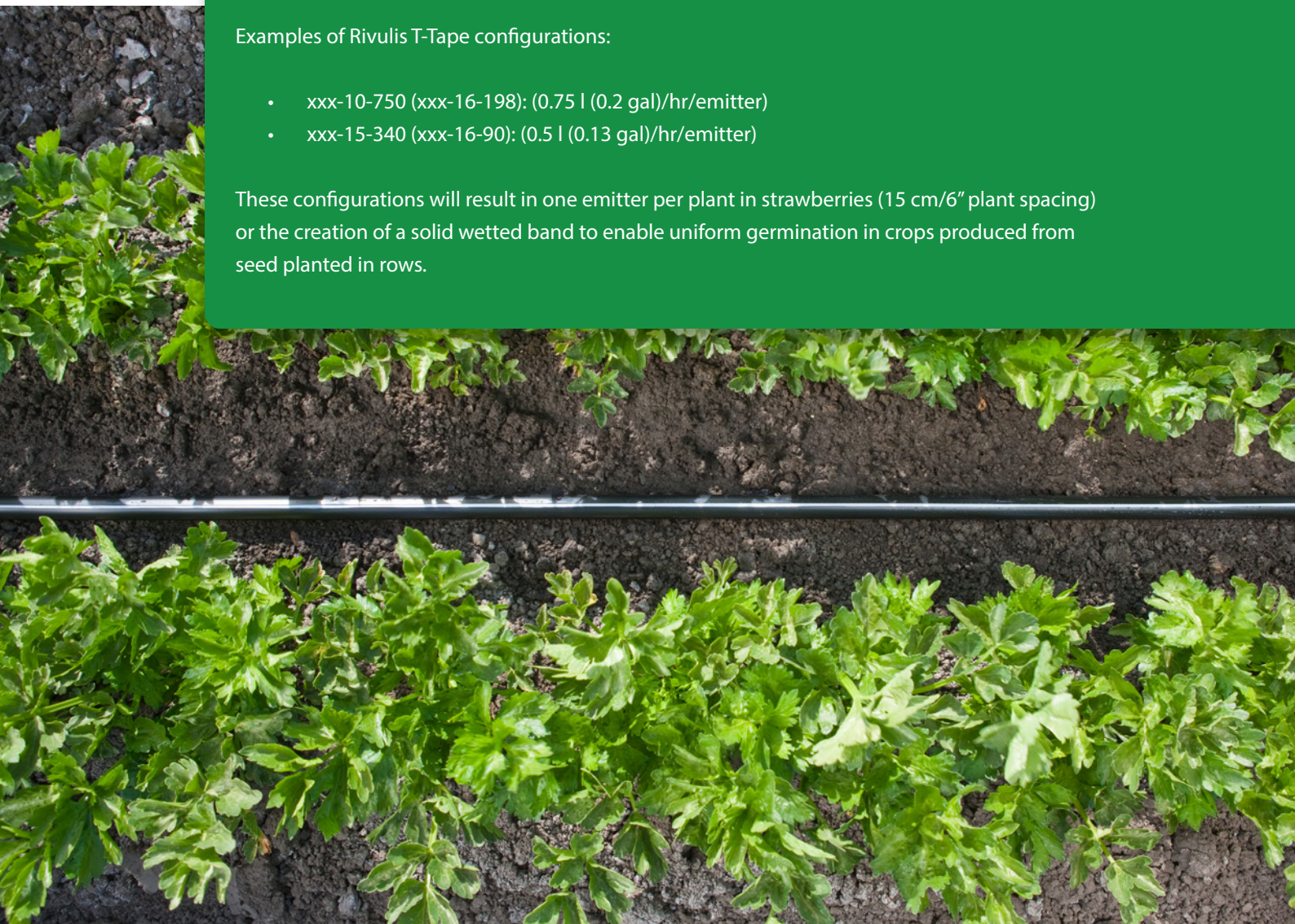
When standard drip emitter spacing is not enough

Drip tape with emitter spacings closer than 20 cm (8") is required when:

- the plant spacing is higher than every 20 cm (8")
- a solid wetted band is required to germinate seeds, or
- there is a risk of deep drainage occurring with extended irrigation length.

Crop applications that frequently have these conditions include onions, carrots, strawberries, celery, garlic, and lettuce.

In these scenarios, it is better to use drip tapes with emitter spacings of 15 cm (6") or less.



Examples of Rivulis T-Tape configurations:

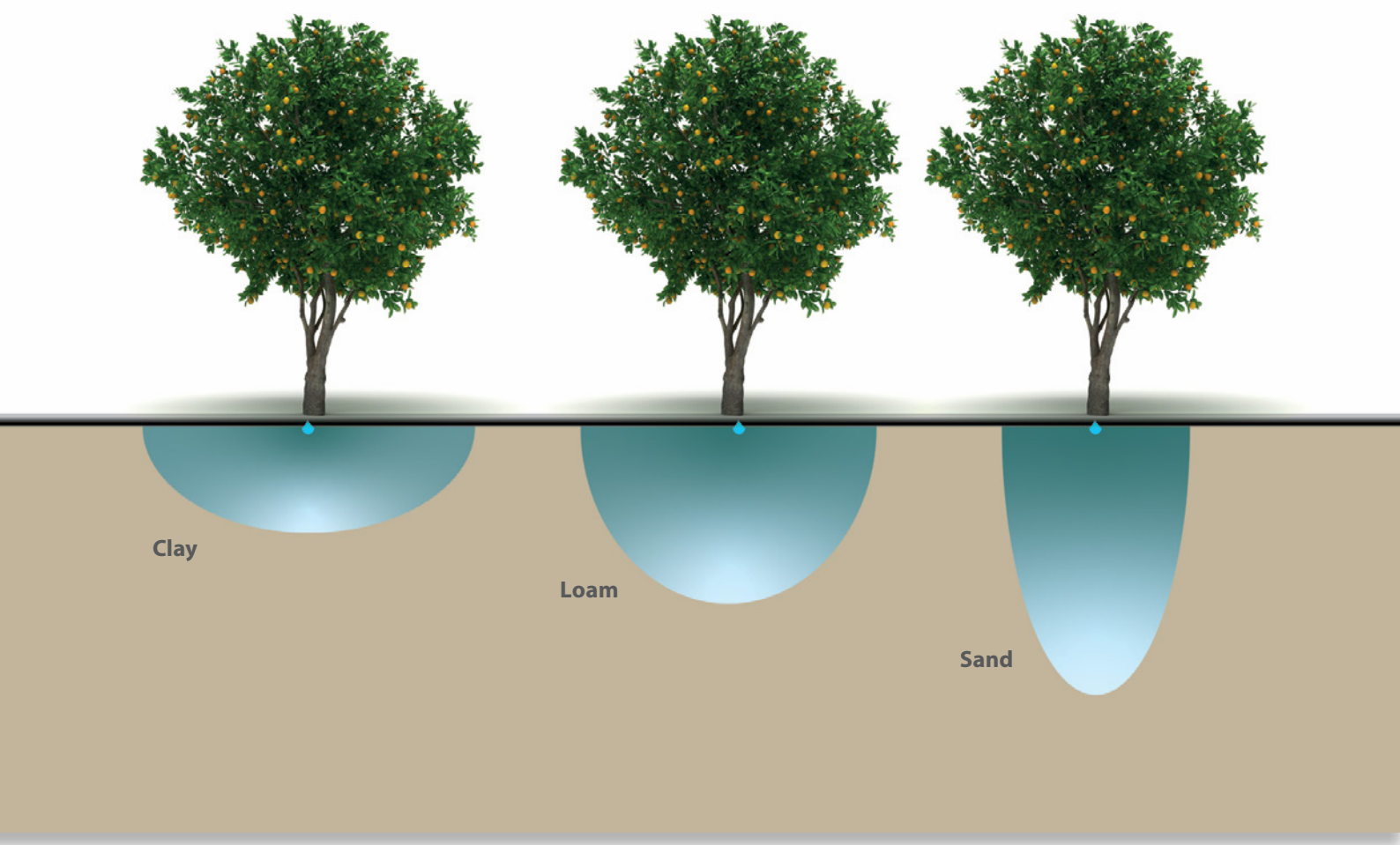
- xxx-10-750 (xxx-16-198): (0.75 l (0.2 gal)/hr/emitter)
- xxx-15-340 (xxx-16-90): (0.5 l (0.13 gal)/hr/emitter)

These configurations will result in one emitter per plant in strawberries (15 cm/6" plant spacing) or the creation of a solid wetted band to enable uniform germination in crops produced from seed planted in rows.

Water movement and reducing deep drainage

The image below demonstrates the influence of soil type on the pattern of the wetted soil zone.

This image shows that a clay soil will have a wetted zone that spreads wide and does not extend very deep in the profile, while on a sandy soil, the wetted zone does not spread as wide but will result in deep movement of moisture into the profile.



The spacing between emitters plays a critical role in the wetted pattern that occurs close to or on the surface of the soil/plant bed.

For wetted zones to meet up or merge, the emitters need to be closer in sandy soil compared to clay soil, while avoiding deep drainage.

The images below show the impact of emitters being placed too far apart compared to closer spaced emitters on the same soil type.

It is evident in the image on the right that each emitter is creating a wetted zone that does not meet up with the wetted zone of the emitter on either side.

However, the image on the left shows where the emitters are closer together and each wetted zone meets up to create a band of moist soil along the plant bed.



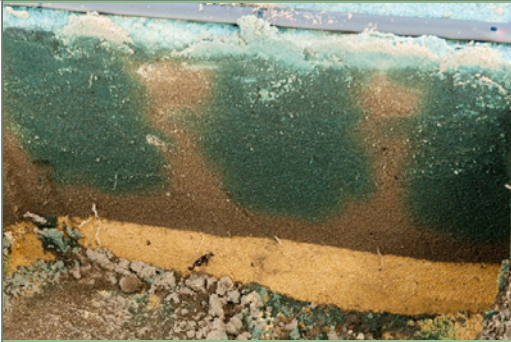
For crops that are closely planted, or where seed germination is required, a continuous wetted zone along the bed is essential.

In the example above, the wider spaced emitters would not create an adequate wetted zone along the plant row that would be suitable for close planted seedlings or for germinating seeds.



But ... if we just irrigate longer?

A continuous wetted zone can often be achieved with wider spaced emitters by increasing the length of irrigation events, but this will often come at the expense of deep drainage of moisture. This is best seen when injecting dye into drip line and looking at the subsequent cross-section of soil.

Application 1: Low flow rate Close spacing Low water application		Drip line: 1 l/h (0.26 gph) drippers at 20 cm (8") spacing Water applied: 0.5 l (0.13 gal) Water movement: Spread: 18 cm (7") Depth: 29 cm (11.5")
Application 2: High flow rate Wide spacing High water application		Drip line: 8 l/h (2 gph) drippers at 50 cm (20") spacing Water applied: 2.0 l (0.5 gal) Water movement: Spread: 23 cm (9") Depth: 60 cm (24")

Source: Rohan Prince. Using dye to show water movement below drip irrigation.
Department of Primary Industries and Regional Development.
Government of Western Australia (2016)

In the above test, you can see in Application 2 that using higher flow drippers and wider spacing between drippers only results in a 5 cm (2") wider spread of water, **despite applying four times the volume of water!**

When wetting up a seedling/seed row zone, the primary objective is to ensure that moisture is delivered to the plant or seed row uniformly, without pushing too much moisture deeper into the profile. The uniform spread of moisture along the bed will result in uniform early plant establishment and growth or uniform seed germination.

Deep movement of moisture into the profile during the early stage of plant growth will place water where it is not needed and move applied pre-plant fertilizer and essential nutrients below the early developing root zone. These factors can result in reduced water use efficiency, reduced fertilizer use efficiency and uneven plant growth.

In other words, with wider spaced drippers, you can end up applying significantly more water (and fertilizers via the drip tape), but in fact be losing a large volume of it below the root zone. With closer drip spacing, you can apply less water and fertilizer, and still obtain the same application to the plant itself.



Germinating carrots

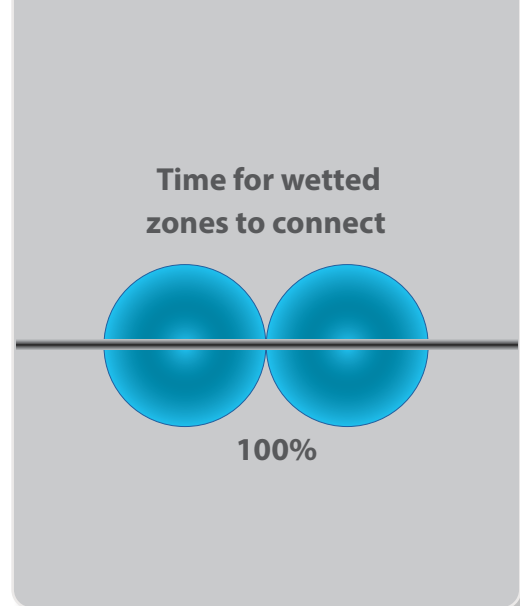
15 cm (6") emitter spacing T-Tape was used to germinate carrot seeds.

The continuous wetted zone along the dual plant row can be clearly seen (darker soil band along the row), as well as the uniform plant growth.

Time to form a fully wetted band

The illustration below shows the results of a study evaluating the time taken for the individual wetted zones (circles) to merge for various dripper spacing and flow-rate configurations.

The data shows that the closer emitter spacing products, when combined with lower emitter flow rates, can have these wetted zones merge up 2–3 hours faster than comparable products with wider spaced emitters and higher flow rates.



Emitter spacing	GPH	LPH	1 hr	3 hr	4 hr	5 hr	6 hr	8 hr	10 hr	12 hr	
8"/20 cm	0.07	0.3	0% 	10% 	90% 	100% 					
6"/15 cm	0.14	0.5	90% 	100% 							
8"/20 cm	0.14	0.5	0% 	100% 							
12"/30 cm	0.13	0.5	0% 			65% 	70% 	90% 	100% 		
16"/40 cm	0.13	0.5	0% 						2% 	60% 	65% 
8"/20 cm	0.2	0.8	0% 	100% 							
12"/30 cm	0.2	0.8	0% 		40% 	90% 	100% 				
16"/40 cm	0.2	0.8	0% 				2% 	10% 	30% 	90% 	
8"/20 cm	0.27	1.0	60% 	100% 							
12"/30 cm	0.27	1.0	0% 	2% 	80% 	100% 					
16"/40 cm	0.27	1.0	0% 			5% 	60% 	80% 	90% 	95% 	
24"/60 cm	0.34	1.3	0% 								5% 

Using drip tape with close emitter spacing will result in an overall reduction in the length of irrigation events required to create a full band of moisture suitable for the germination of seeds.

The ideal result is when there is a continuous moisture band along the row, which extends evenly outside of the plant/seed row and penetrates no deeper than the maximum expected rooting depth of the mature plant.

Key advantages

- **Shorter irrigation events.**
- **Reduced deep drainage of water.**
- **Even germination improves the evenness of the crop at harvest.**
- **Allows for multiple irrigation events during the germination period to ensure soil surface remains friable/soft without the risk of surface crusting occurring.**



Specific benefits to seed germination and close planted seedlings

In traditional seedling planted crops such as tomatoes where the plants are 40 cm (16") apart, the general approach is to have at least one emitter per plant. This would result in using a drip tape product with emitters spaced every 30–40 cm (12–16"). Taking this approach ensures that all sides of the plant root ball can be wet up during a typical irrigation event.

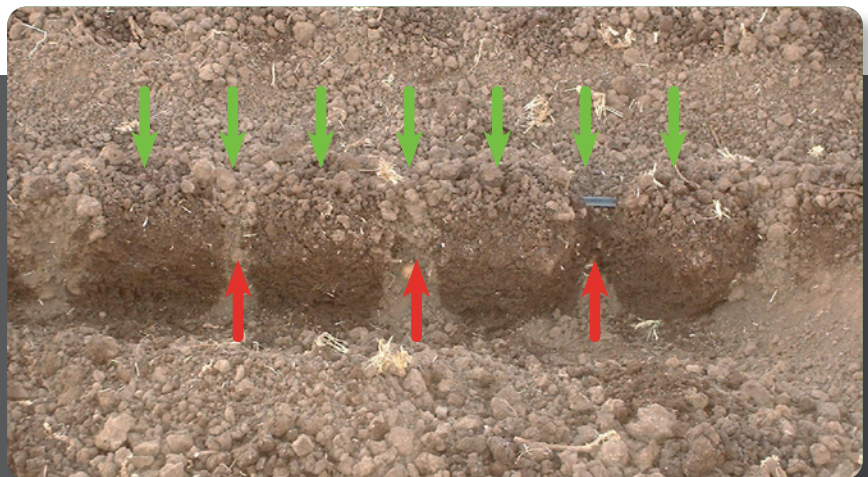
In situations where seedlings are planted closer together, the same agronomic principle applies, but does result in the need to consider closer emitter spacing products to achieve the same outcome.

In the case of crops such as lettuce, garlic, celery, or strawberries, where the seedlings are planted 10–15 cm (4–6") apart, choosing a drip tape that has emitters at these spacings will maintain an even wetted zone along the plant row and improve the evenness of plant growth.

Using drip tape products with emitter spacings wider apart than the plant spacing can result in dry patches forming within the bed, especially as the plants grow and the root ball of each plant develops.

Spacing too wide

In the above image, the green arrows represent plants. The wetted zone of each emitter is clearly visible and the potential for dry soil zones in the bed are shown as red arrows.



In this situation, up to 50% of the plants can be impacted by having some of their effective root system in dry or drier than average soil. This can result in variability in plant growth and negatively impact crop productivity.



In situations where crops are planted as direct seed, such as onions and carrots, the challenge is to ensure that the drip tape product meets the following criteria:

- Emitter wetted zones merge quickly.
- An even band of moisture can be created along the plant row.
- Each seed/plant row either side of the drip tape is wet-up uniformly.
- The band of moisture extends evenly outside the seed/plant row.
- The moisture does not move down through the profile too far.



The task of drip tape selection to meet these requirements is often more challenging than the wider spaced seedlings scenario.

The first step is to rethink the concept that 20–30 cm (8–12") emitter spacing represents close emitter spacing. If the recognized standard emitter spacing drip tape products are 40–50 cm (16–20"), then 20–30 cm (8–12") may seem close, but they are often not close enough to meet the above key agronomic criteria.

The second step is to clearly understand what agronomic objectives are required and the factors that may influence achieving these outcomes, such as:

- soil type
- soil physical characteristics
- soil profile constraints
- row alignment and configuration in relation to the drip tape
- method of drip tape installation
- method of drip tape removal.



To meet the agronomic objectives and the desired production outcomes in seeded crops of onions or carrots, the drip tape products would ideally have emitters spaced 10–15 cm (4–6") apart.

The **third step** is the choice of flow rate of the drip tape in conjunction with emitter spacing. Some of the agronomic considerations are:

- infiltration rate of the soil
- Soil wettability (hydrophobic characteristics)
- required width of spread
- required depth of moisture
- depth of installed drip tape.

The obvious decision might be to go straight for a 10 cm (4") emitter spacing and a low or ultra-low emitter flow rate, as this represents the most likely option to provide a wide band of moisture along the seed/plant row without pushing moisture too deep into the profile.

This can be an advantage in some soil types and be achieved with shorter irrigation cycles than wider spaced emitter products, but can also be a disadvantage in other soil types.

In soils where there is a wettability issue (hydrophobic soil) and the requirement is for deep irrigation, the low or ultra-low flow emitters may work well as it gives the soil time to absorb the water. This will require longer irrigation cycles to allow the required depth of irrigation to be reached.

The use of drip tape for the germination of seeds can be unsuccessful if the correct product is not chosen or a critical agronomic factor has not been adequately considered. This is why the investigation and assessment process must be conducted with the consideration of all critical agronomic, soil and operational factors.

The decision-making process on emitter spacing and flow rate in seed sown situations should be a combination of meeting the agronomic considerations above and achieving the required run length. Agronomic success is likely to be impacted if run length is prioritized over meeting essential agronomic requirements.

Some of this decision-making process can be made using a computer model, such as calculated run length. Field trialing of different tape products will likely be necessary during the investigation and assessment stages to ensure the emitter spacing and flow rate decisions are correctly made to match the soil type and soil physical characteristics challenges.

Improved fertigation and chemigation outcomes

In most drip irrigation systems, you are not just delivering water, you are also delivering fertigation and chemigation.

For wider planted crops such as tomatoes, with standard spacing used, the focus is on field uniformity to ensure fertigation and chemigation can be evenly delivered to the plants.

In close planted seedling crops or crops planted as seed, attention needs to be given to both the uniformity of delivery to the field and to each plant. If there are any dry patches of soil along the plant row due to the choice of drip tape product, the delivery of fertigation and chemigation products to the plants will also be non-uniform.

Non-uniformity of delivery of fertigation or chemigation products along a plant row or across a field will result in variable plant growth, differing maturity timing and an overall undesirable agronomic and production outcome.

If the correct close spaced emitter product is chosen with a flow rate that matches the soil and row configuration requirements, the opportunity to use the irrigation system for fertigation or chemigation purposes can be realized.



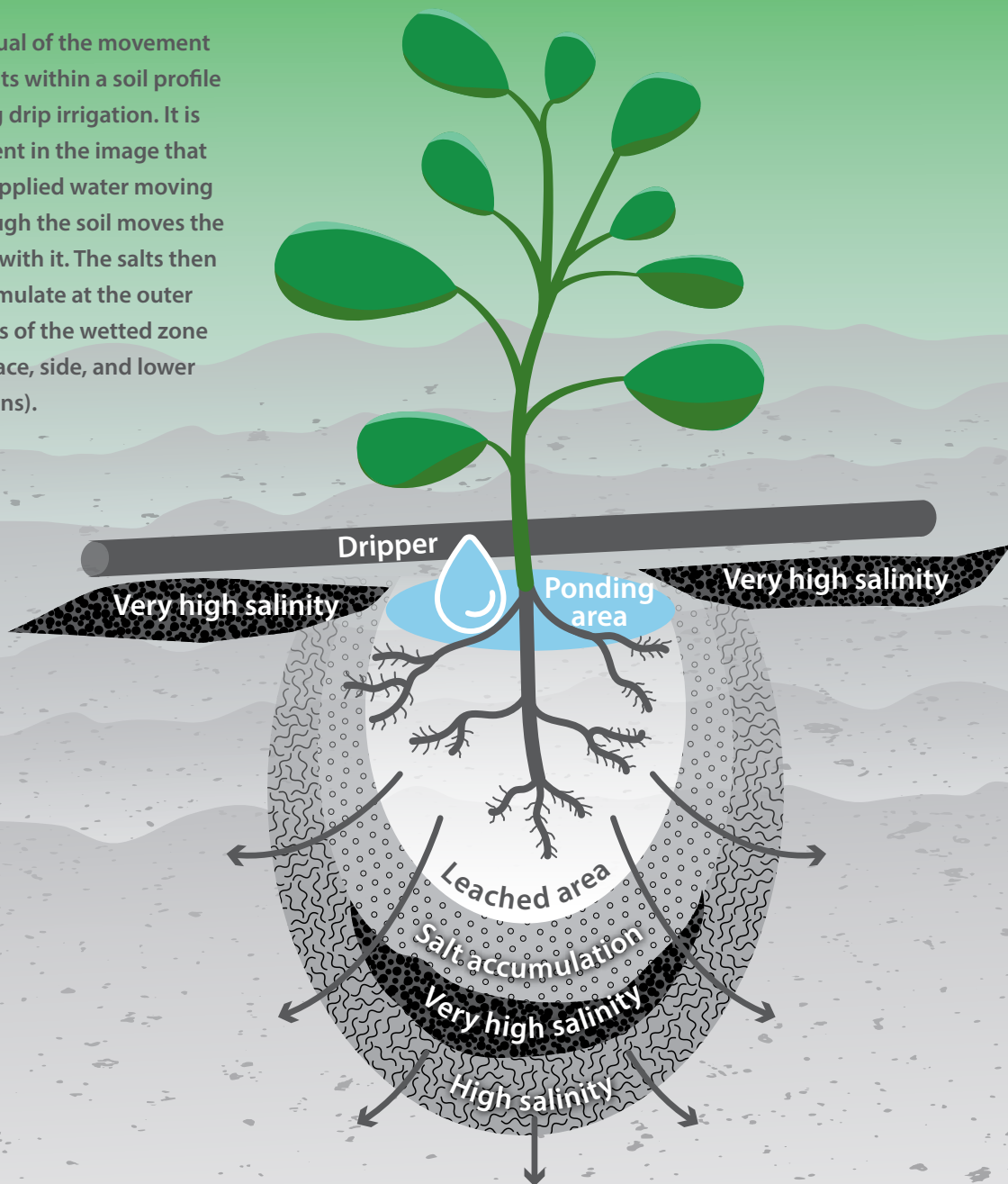
Salinity management

The risk of salinity buildup in a plant bed occurs from salts either occurring in the soil or being applied from a water source.

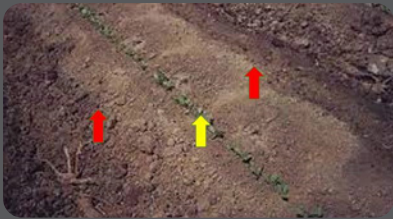
In situations where salts that are adverse to plant health can accumulate in the root zone, managing the movement of these salts within the root zone and soil profile can benefit agronomic outcomes.

Salt movement in drip irrigation

A visual of the movement of salts within a soil profile using drip irrigation. It is evident in the image that the applied water moving through the soil moves the salts with it. The salts then accumulate at the outer edges of the wetted zone (surface, side, and lower regions).



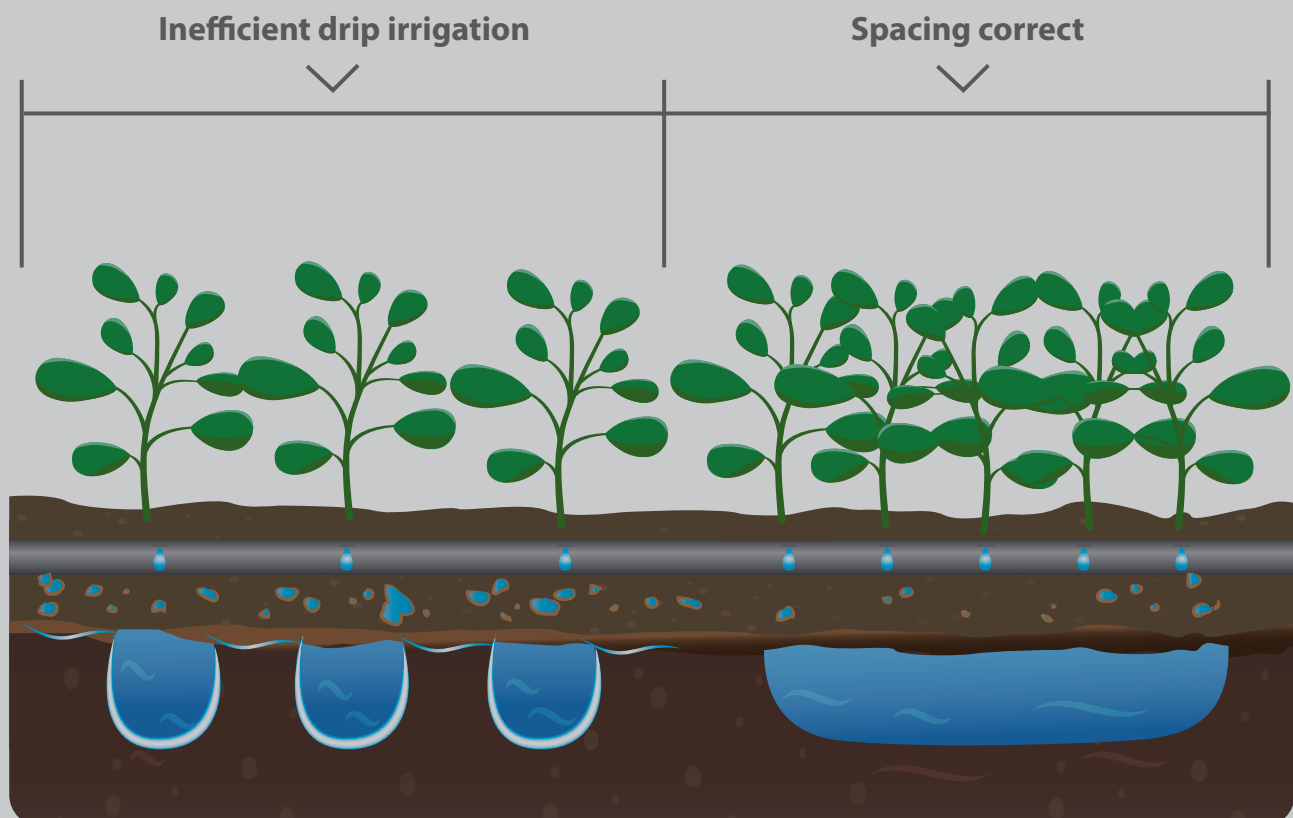
If each emitter creates a wetted zone that does not merge with the neighboring wetted zone, **then there can be an accumulation of salts between the emitters** along the row and between plants, or within the effective root zone of plants along the row.



With close emitter spaced drip tape, a continuous wetted zone can be created along a row with the salts being pushed below the active root zone and to the outer edges of the bed. This creates a root zone with a relatively lower level of salts, which that can be tolerated by the plant.

Salt management cannot be achieved when drip tape is used where the emitters are spaced too wide creating wetted zones that do not meet or fully merge.

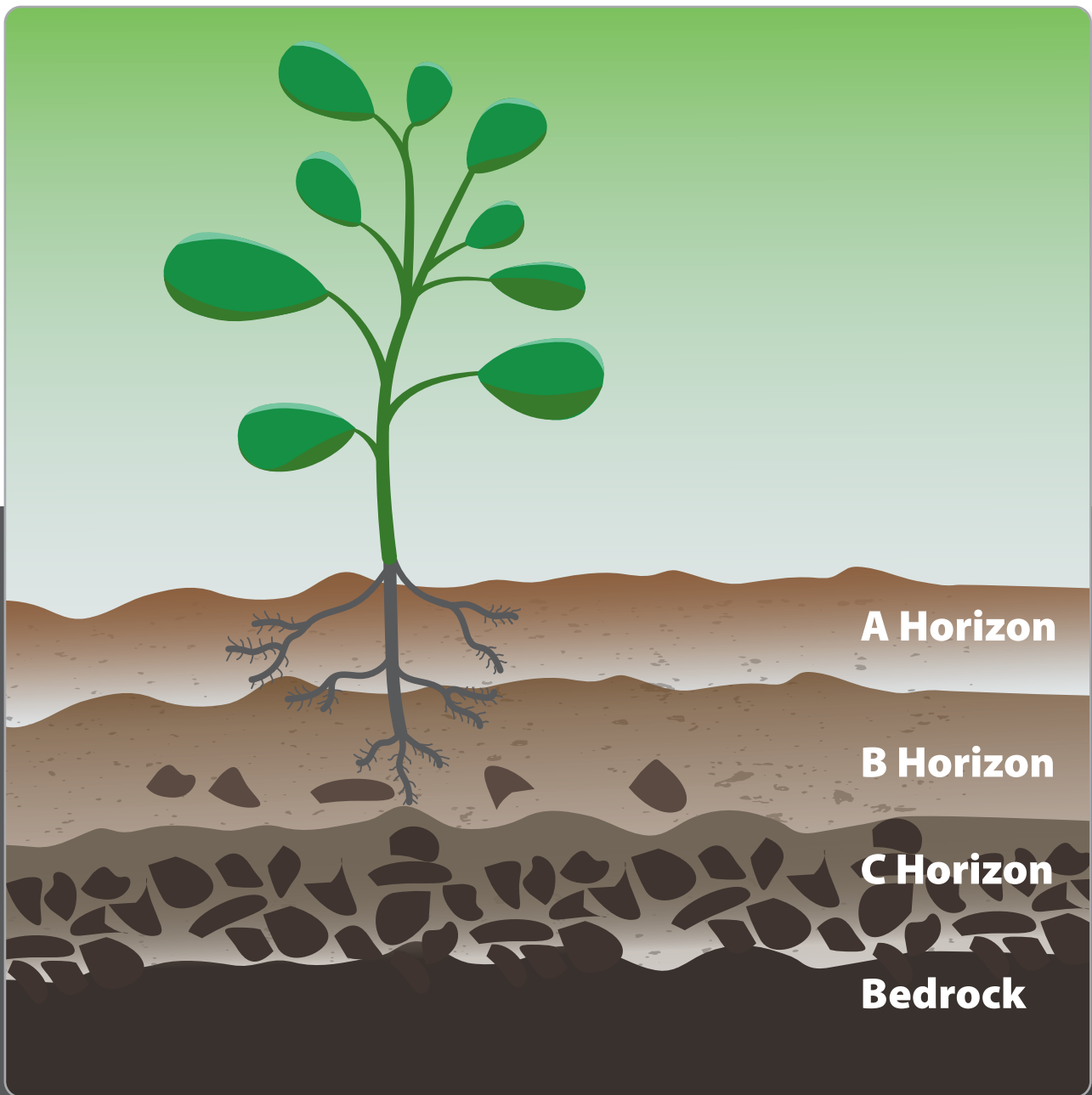
The image above shows the movement of salts within a soil when viewed from above. The red arrows point to the outer edges of the wetted zone and the accumulation of salts (white colour), and the yellow arrow points to where the salts have accumulated along the plant row between the two emitters.



Soil considerations

As previously discussed, when trying to achieve a uniform wetted zone along a plant row/bed, soil type plays a critical role in product choice in terms of emitter spacing and flow rate.

The first consideration is the dominant soil type in the upper profile (A horizon), although there are many variants of soil.



Water will move through these soils very differently, with lateral (sideways) movement of moisture being the greatest in the clay soil and least in the sandy soil. Infiltration will be fastest in the sandy soil and typically the slowest in the clay soil.

The second consideration is the required depth of irrigation and what, if any, soil constraints exist.

In some fields, the A horizon can be as deep or deeper than the expected root zone of the crop. In other situations, there may be a distinct change in soil type/structure between the A and B horizon that could create an issue with salt accumulation, restricted root growth or moisture accumulation that will impact plant growth.

When evaluating the options for close emitter spaced drip tape products, there is a balance between lateral movement of water and how deep you want or can allow the water to move through the profile.

To achieve the desired lateral spread of water, if the irrigation event needs to be long, depending on the soil type, the water will move deeper into the profile.

Closer spaced emitters will provide more lateral movement of water than wider spaced emitters in all soil types.



T-Tape product selection with close drip emitter spacing

Based on regional availability, there are different specific models of T-Tape in the close emitter spacing range 10–15 cm (4–6”).

As previously discussed, to achieve the desired agronomic outcome, the choice of emitter spacing and emitter flow rate is based on soil type and other specific agronomic requirements.

In consideration of field management, run length is a factor that can be brought into the evaluation process during the planning and design stage.

The close emitter products have the following emitter flow rate ranges:

- Emitter flow rate: 0.25–1.5 l/emitter (0.07–0.4 gal)
- Linear flow rate: 170–1350 l/100 m (0.2–1.8 gpm/100ft)

The run length for the close emitter spaced drip tape products ranges from the following:

- 10 cm (4”) emitter spacing: 50–85 m (164–279 ft)
- 15 cm (6”) emitter spacing: 75–205 m (246–673 ft)

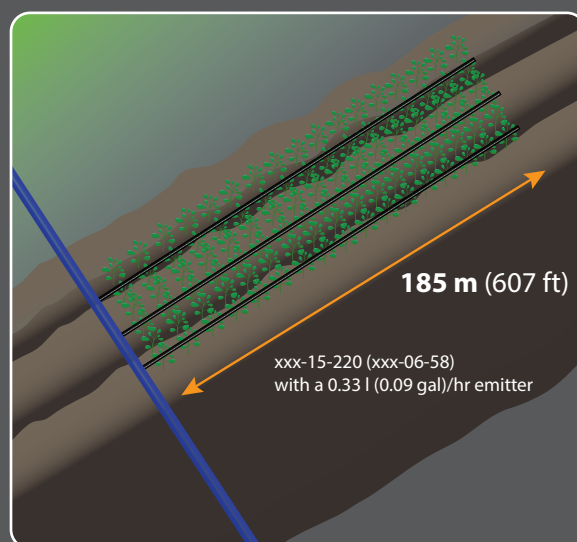
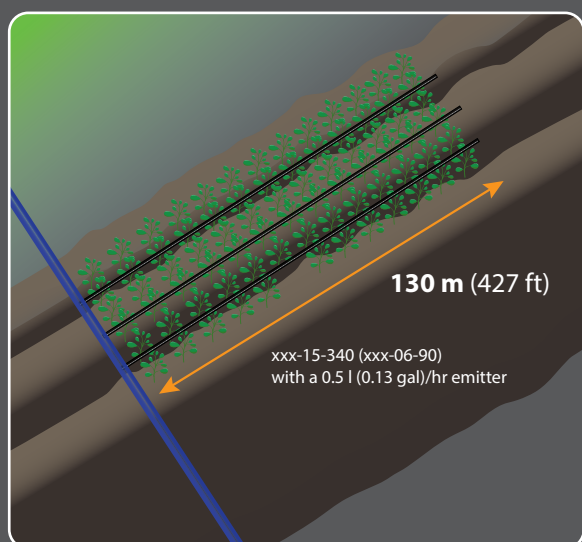
Note: The run lengths are all calculated based on a 90% emission uniformity (EU) on flat ground.

Do not just consider run lengths

Although the temptation may be to start the product evaluation process by trying to meet a specific run length, there is a risk that if all agronomic requirements are not well understood or met if a product is selected based on run length as the primary decision point.

If the chosen product meets the agronomic and production requirements, then the product choice can be considered in relation to run length. If there must be a minor compromise in the product choice, this can be achieved in the full knowledge and understanding of the agronomic requirements in the field as the basis for success.

For example, consider that a product such as xxx-15-340 (xxx-06-90) with a 0.5 l (0.13 gal)/hr emitter is chosen, as it meets all agronomic outcomes and has a run length of 130 m (427 ft). If the field design requires a central feed but slightly longer runs, then an alternative product needs to be considered. If the emitter spacing is suitable but more run length is required, then choosing a lower emitter flow rate product, such as xxx-15-220 (xxx-06-58) with a 0.33 l (0.09 gal)/hr emitter and a run length of 185 m (607 ft) may be successful. This relies on the water quality or filtration standards being suitable for an ultra-low flow emitter. This will also result in the requirement for longer irrigation and may push water slightly deeper into the profile than is desired, but germination is not likely to be negatively impacted.



In practice, if run length is prioritized over agronomic requirements, there is a risk the crop performance results can be compromised.

Always make compromises to meet run length that do not compromise agronomic and crop production outcomes.

A note about filtration

Due to the emitters being formed closer in the drip tape, this can often lead to the emitters having a low water flow rate of less than 0.5 l (0.132 gal)/hr. An emitter with a low flow rate compared to higher flow emitters can have a higher risk of blockages compared to higher flow emitters if water quality is poor or variable and the correct filtration is not in place.

We do not believe that there is a one size that fits all approach. Factors such as water source, quality, and length of use of the drip tape all impact what filtration type and grade is required. In practice, the most common filtration grades used for drip tapes at 0.55 bar (8 psi) are as follows:

- >0.5 l(0.132 gal)/hr per emitter: 130 micron/120 mesh
- <0.5 l(0.132 gal)/hr per emitter: 100 micron/150 mesh

Low flow emitters are not as tolerant to contaminants in the water as medium or high flow emitters, and as such, filtration needs to be a priority starting from the evaluation stage through to the final planning and design stage.

In consideration of the additional focus on water quality and filtration, ensuring that the tape is installed with the emitters facing up is important to prevent emitters from getting blocked during the cropping cycle.



Case study 1

Direct seeded onions and brassicas

Onion production on sandy loam soils using close emitter spaced drip tape.



Germinating onion seeds on sandy loam soil with dual drip tape and three dual seed rows.

A grower was accustomed to using drip tape to irrigate their cantaloupe fields and on deciding to commence growing onions, wanted to make it work for the new crop.

In the initial seasons, the onions were sown into three dual rows across a standard width bed with the drip tape installed subsurface between rows 1 & 2 and 2 & 3.

The two lines of drip tape were 510-15-220 (510-06-58) with a 0.33 l (0.09 gal)/hr emitter to match the soil type. This configuration was able to provide the width of moisture across the top of the bed required to germinate the three rows of seeds.

Initially, the grower started with a configuration of two lines of drip tape and three dual rows of seeds as shown in the image to the left.



Three dual rows of onions with dual drip tape lines.

After proving the success of this row configuration over several seasons, the grower changed the configuration to include four dual rows of seeds and dual drip tape lines on each bed. This had the benefit of improved productivity per linear distance of bed and reduced the cost of drip tape per unit of crop output.



The seeder and tape layer used to plant four dual rows of onion seeds and dual drip tape lines in one pass, and the final bed configuration prior to wetting up for the first time to germinate the seeds.



*Four dual plant row bed configuration prior to wetting up to germinate the seeds.
The green arrows identify the location of the onion seed rows in relation to the dual drip tape lines.*

After several seasons using the four seed row and dual drip tape line configuration, the grower reconfigured the bed entirely. The latest bed configuration is six dual rows of seeds and three lines of drip tape on a 2 m (78") wide bed.



*2m (78") wide bed configuration with six dual rows of plants and three lines of drip tape.
The green arrows point towards the plant rows and the red arrows point towards the subsurface drip tape lines.*

The latest configuration allows the grower to harvest the onions leaving the drip tape lines in place. The central drip tape line is then removed prior to planting brassica seedlings and irrigating with the remaining dual drip tape lines. This has resulted in spreading the costs associated with pulling up the bed and the drip tape set-up across two high-value horticulture crops. This has improved the cost of operation and reduced the labor required to manage the fields, while maintaining the benefit that drip tape brings to horticultural production.

The reasons the grower chose Rivulis T-Tape with close emitter spacing included:

- matched irrigation management with other horticulture crops grown on the property
- water use efficiency
- less inter-row weed management compared to overhead irrigation
- evenness of harvested onions
- flexibility to double crop the plant beds.



Brassicas grown as second crop on dual drip tape lines. Note the uniformity of the plants.

Case Study 2

Dual row strawberries on sandy soil with a clay loam subsoil



Strawberries planted in a dual row configuration with the drip tape installed sub-surface between both rows.

A strawberry grower was managing multiple varieties on a sandy soil that had a loam subsoil layer at 350–400 mm (14–16"). The plant configuration was a single row of drip tape with a row of plants 16 cm (6.3") on either side. There are six plants per meter of row (39").

There were two primary reasons the grower chose this tape and plant configuration.

The first reason was the ability to ensure that the full bed would be evenly wet-up with the drip tape and that peak water demand could be met.

The second reason was related to fruit quality during the picking cycle. Some varieties that have softer skins can have a lower pack-out due to skin quality issues if the soil profile is full. The grower irrigates following a pick and then allows the profile to dry down leading into the next pick. This has the effect of maintaining fruit size and hardens the skin and firms the fruit, thereby increasing the first-grade pack-out.

The close emitter drip tape and plant configuration ensures that the full bed can be evenly and effectively wet-up following each 3–4-day irrigation cycle.

The grower is using the close emitter drip tape product 512-15-340 (512-06-90) with a 0.5 l (0.13 gal)/hr emitter to:

- enable lateral movement of water to maintain a full width bed of moisture
- avoid deep irrigations that can cause a buildup of water on the subsoil loam layer
- reduce the risk of nutrient leaching and a buildup of EC on the subsoil loam layer
- meet peak crop water demand leading into summer
- enable crop management using precise nutrient balancing and soil EC management
- manage irrigation cycle to maximize fruit quality at harvest on a 3–4 day picking cycle.

Case Study 3

Carrot seed germinated on clay soil



The carrot plant configuration where the crop is germinated and grown only using drip tape for irrigation. The narrow band of moisture is evident along the top of the bed that reaches to just outside the seed/plant row.



The evenness the grower was able to achieve with the carrot production using close emitter spaced drip tape.

A carrot grower converted from overhead to drip tape for their carrots after positive results from some trials that were conducted. The purpose of the trials was to confirm that the desired lateral spread of water would occur to ensure an even strike of carrot seed.

The grower used a row configuration where a seed row was placed either side of the subsurface installed drip tape. The tape product 510-15-170 (510-06-45) 0.25 l (0.07 gal)/hr emitter, was chosen to meet the lateral spread requirements and run length.

Reasons the grower chose Rivulis T-Tape with close emitter spacing included:

- reduced soil surface sealing (crusting) during warmer months, improving germination rate
- less impact by wind compared to overhead irrigation
- water use efficiency
- less inter-row weed management
- evenness of harvested carrots.

The grower had to do some minor modifications to their precision seeder to enable the drip tape to be installed in a single operation at the time of seeding.

Case Study 4

Onion production, including germination, using close emitter spaced drip tape



The bed configuration including the onion plant rows and the two lines of drip tape. The wetted zone is evident in the image by the soil surface color being darker compared to the inter-row space and shows the ability to maintain the lateral spread of moisture across the bed.



Uniform onion crop at mid-growth stage.

An onion grower converted to close emitter spaced drip tape from overhead irrigation to germinate and grow their onions from overhead irrigation.

The onions are seeded into eight rows across a wide bed with the drip tape installed subsurface between rows 2 & 3 and 6 & 7.

The drip tape product used is 510-15-170 (510-06-45) with a 0.25 l (0.07 gal)/hr emitter. The chosen drip tape product was correctly matched to the soil type to provide the width of moisture across the top of the bed required to germinate multiple rows of seeds.

Reasons the grower chose Rivulis T-Tape with close emitter spacing included:

- less impact to wind compared to overhead irrigation
- water use efficiency
- less inter-row weed management
- evenness of harvested onions
- improved yield and quality.

T-Tape – the best by far for close dripper spacing products

The best water application by far

As Rivulis drip emitters are built directly into the tube itself, you do not pay more for closer dripper spacing models.

Rivulis T-Tape makes your choice of emitter spacing an agronomic decision, not one based on your bank account.



The best clogging resistance by far

At low flow rates, you need a tape that has outstanding clogging resistance.

For decades, T-Tape has proven itself with outstanding clogging resistance, even at the lowest of flow rates.

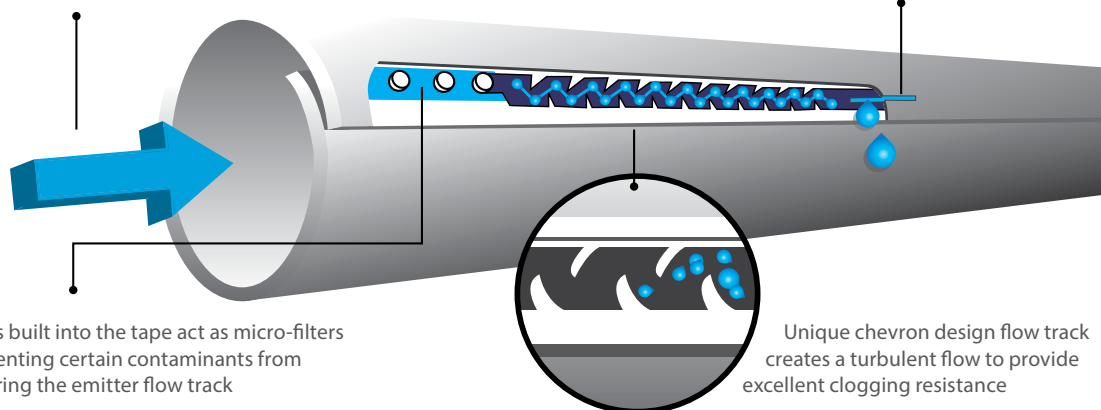
A filtration area that works like micro-filters provides first stage protection of contaminants. T-Tape then utilizes a unique reverse chevron labyrinth, which creates maximum agitation to minimize clogging, and the knife cut outlet closes on shutoff, to prevent the ingress of particulates.

Water flows through supply tube & enters inlet filters

Slit outlet opens when the system is pressurized to allow flow of water

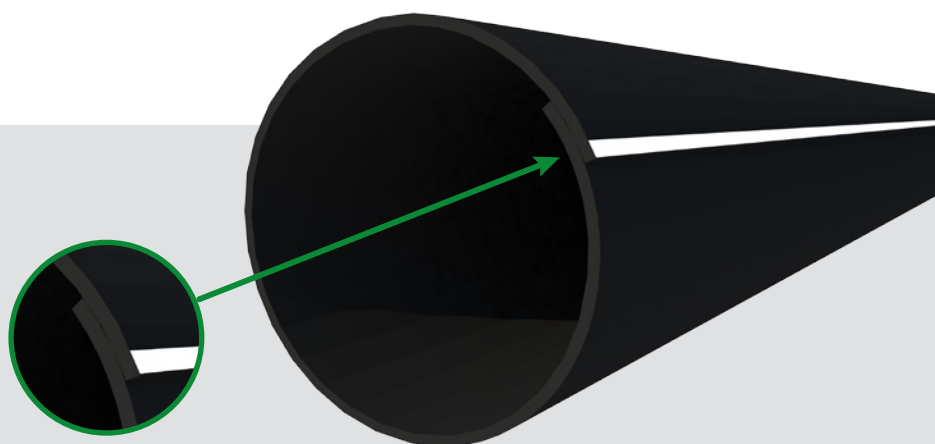
Inlets built into the tape act as micro-filters preventing certain contaminants from entering the emitter flow track

Unique chevron design flow track creates a turbulent flow to provide excellent clogging resistance



The best strength by far

Double seam =
double the strength
for hassle free installation
and easy mechanical retrieval after use.

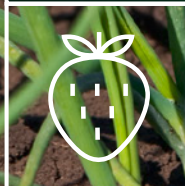


The most configurations by far

16 and 22 mm (5/8" and 7/8") diameters, multiple wall thicknesses, and numerous close spacing and flow rate options provide the maximum versatility of application.



Optimize your drip emitter spacing



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