



Drought Impact on the Vegetable Sector

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Exceptional drought

The current drought that the country is experiencing is having a very serious effect on the field vegetable sector. Rainfall levels over the past couple of months have been way below average e.g. the rainfall recorded for Dublin Airport for May and June was less than 19% of normal. There has been virtually no rain in one of the main production areas, Co Dublin, since the end of May. The current soil moisture deficit (SMD) ranges from 70mm in the west to 95mm in the east. The other key factor that crops had to contend with was the high temperatures and long hours of sunshine. June temperatures for Oak Park Carlow were 2.7°C above normal with solar radiation 23% above average at Dublin Airport.

And to make matters worse the dry weather came in on top of one of the worst springs on record; March was cold and wet whilst April delivered above average rainfall in all areas. In summary, a late spring was quickly followed by a hot dry summer – the worst of all possible combinations.

Total rainfall (mm) for Dublin Airport

Year	Jan	Feb	Mar	Apr	May	Jun	Jul
2018	93.1	36.9	100.0	68.9	19.1	4.8	0
Mean	62.6	48.8	52.6	54.1	59.5	66.7	56.2

Mean temperature (°C) for Dublin Airport

Year	Jan	Feb	Mar	Apr	May	Jun	Jul
2018	5.3	3.4	4.3	8.1	11.4	14.5	15.7
Mean	5.3	5.3	6.7	8.1	10.7	13.4	15.4

These adverse weather patterns have created very difficult growing conditions for all outdoor vegetable crops. Due to the late spring growers were late to get sowing and planting. In some cases sowings/plantings were missed altogether because of wet conditions. Early crops that would have been sown or planted out in March were skipped; other crops were planted out in less than favourable conditions, a situation made worse with the subsequent drought, due to initial poor establishment. A wet spring also made growers pick their lightest ground for their early crops, which were then more vulnerable to drought when dry weather hit.

The dry weather has also created knock-on effects: weed control is more difficult as residual herbicides need soil moisture to work properly. Pest numbers increase during warm spells e.g. aphid, flea beetle and caterpillar control have become an issue this season. And the situation is worsened by the fact that systemic insecticides don't work well in drought conditions as plant sap movement slows down.

Irrigation

There is quite a variation between growers in relation to being equipped with irrigation. Growers of crops like celery, lettuce and scallions have to be equipped with irrigation to grow them; and the specialised carrot growers are well equipped. Other growers e.g. brassica growers using modules, have been able to get away without having irrigation up to this. It is estimated that about 20% of the vegetable growing area can be irrigated. Where a grower has both equipment and a good source of water, crops are being irrigated and are making progress. However in some cases fields don't have water close by and in other cases existing water sources are drying up due to the prolonged drought.

Even where growers are well equipped with irrigation, the hot weather has been so extreme that growers are not able to get around all their crops with the amounts of water that's required. For example a broccoli crop that only got two waterings because the stream dried up only yielded 60% - it would have been 100% if a third watering had been applied. It has been very trying for growers with irrigation to get direct drilled crops struck – a crop that received irrigation early in the morning on a hot drying day, would be dry again by the afternoon.

The effort that growers have put into their crops to keep them going has to be acknowledged. Large investments in irrigation equipment and labour have been put into salvaging crops. Bore holes were drilled, reels were purchased, slurry tankers were hired – even down to the extent of individually watering plants and drills with a hose.

Increased costs

Costs this season have risen substantially due to the drought. The three main areas are:

- Irrigation
- Pest and weed control
- Harvesting

Irrigation: there are potentially two costs associated with irrigation in 2018. The capital cost of purchasing the equipment for those growers who had no need of irrigation prior to this year, and in certain cases, the cost associated with drilling for water where fields have no streams or rivers close by. A new irrigation rig could set a grower back €50,000. The cost of drilling for water will depend on the depth of the borehole but is often in the region of €8-12,000. The second cost is operational. Irrigating crops is a very time consuming job and in many cases growers are irrigating on a 24 hour basis, seven days a week. If it involves a night shift overtime rates have to be paid. Irrigation costs can be very variable but a reasonable overall figure is €100 per acre per 25mm application. Our estimation is that some irrigated crops presented to market, run the risk of being loss making due to the additional cost incurred in getting them there.

Pest and weed control: the dry weather has meant that residual herbicides didn't work well with the consequence that some crops had to be hand weeded. One grower had a team of 27 staff weeding a 21 acre field of parsnips which cost him €309 an acre. Dry weather has also meant that a lot of carrot and parsnip crops germinated erratically, which means the crop is at multiple growth stages. This in turn forces the grower to make multiple passes with low dose herbicides. The warm weather has brought increased aphid and caterpillar numbers. Pigeon attacks increase where brassicas are making poor growth. Scab which is encouraged by dry soil will show up in all root crops.

Harvesting: a crop like broccoli and cauliflower which normally can be harvested in 2-3 passes is now taking up to 5 due to dry weather effects on crop maturity and quality. The uneven crop emergence with root crops will cause downstream problems with root size and quality – this will result in extra work in the packhouse when grading out the crop.

Consumer market

Industry sources state that whilst the hot weather has encouraged sales in salads and strawberries, it has reduced demand for the more traditional lines like cabbage, broccoli and cauliflower.

Crop loss example (broccoli)

A 16 acre of fleeced early crop broccoli was lost. The grower had irrigation but the field had no water source – it was chosen because it was a dry field in a wet spring. The crop cost €50,000 to establish and another €30-35,000 would have been spent to get the crop to market. It was hoped that it would yield 4.5 tonnes per acre around mid-June. The grower estimated it was worth €90-100,000. It came to nothing.

Crop assessment

Some crops particularly where irrigation has been fully applied are doing well. However other irrigated crops have not performed as well as growers couldn't get enough water on. With the intense heat growers found it difficult to irrigate all their crops adequately as a lot of the water applied evaporated. In other cases the irrigation source dried up. Unirrigated crops range from total crop loss to variable levels of loss. Complete failures are occurring and frequency of failures will accelerate in the coming weeks if moisture deficits remain. Generally speaking the drought affected all crops.

Broccoli: due to the wet spring the first three plantings with some growers didn't get planted. Some of the early unirrigated crops were rotavated in due to poor growth. Other unirrigated crops which initially developed well have been chopped up with a rotavator. Irrigated crops are heading well but head size and quality of later plantings being impacted. It is estimated that a minimum of 25% of the crop will be lost.

Cauliflower: irrigated crops are ok, irrigated crops is a disaster with some already rotavated in. Even where irrigation is available in the Co Dublin area, fields are been left without water where local streams have dried up.

Cabbage: in general production of cabbage is 70% of average but consumption is down due to the warm weather. Increased Diamond back moth activity is an extra worry for growers as this pest can attack and devastate crops especially pointed cabbage.

Onions: direct drilled seed onions in counties Dublin and Wexford were abandoned due to the wet soil conditions in March and early April. The set crop was planted in April and May with irrigation being applied to most of it. Sets planted late however are putting up a good fight despite the drought but yield and size will be impacted. Irrigated crops are responding well and benefit at the current bulbing stage. Leaf number is down due to the late planting which will give smaller bulb size. Overall the crop is not too bad.

Salad onions: early crops were not drilled due to a cold, wet March. Later sown crops which were irrigated have not established well. Even with the application of water it has been difficult to get even germination due to the hot dry weather. As a result crops are extremely patchy which will have a knock-on effect on yield.

Iceberg lettuce: this crop is normally irrigated and in general is doing well. But high temperatures caused head deterioration in certain crops with consequent yield reductions. There have been increased workload and input costs due to more frequent waterings.

Swedes: historically swedes were never a crop that got irrigation. Early crops are reasonable but need a bit of water to swell them. Bolting and splitting has been seen on some early planted crops. Boron deficiency (brown heart) has shown up in a number of early crops despite been sprayed with boron – this is due to the drought. Boron deficiency causes a brown discolouration within the swede making them unmarketable. The main crops that were sown in May are very variable. They vary from complete crop loss to well established. There is a lot of variation in plant establishment but overall the figure is about 60%. This will mean that there will be a lot of variation in final bulb size, with the possibility of splitting becoming a problem when the rain does come.

Carrots: most of the carrot growers have irrigation equipment but not all fields have an irrigation source. The early crops are bulking up and have been irrigated but require large volumes when close to harvest. The May sown maincrops show quite a variation in plant stand – some are good but gappy crops are reported in 25-50% of the carrot farms. This will lead to future problems with size, quality and yield. As with the parsnip crops uneven germination makes weed control more awkward with the contact herbicides. Scab is showing up because of the dry weather.

Parsnips: the best crops are the earlies which mostly got irrigated. Second earlies also got water but plant stands are as little as 65%. Maincrops in general haven't been watered and are showing uneven germination varying from 20-80% establishment. Normal establishment would be 90% plus. About 30% of the crops would be classified as poor. Weed control poor in a lot of fields.

Celery: this crop is normally irrigated. However some of the early plantings have developed blackheart due to the crop becoming stressed by the extreme heat.

Leeks: all crops are backward with unirrigated crops worst affected. Even with water applied it has been hard to get crops to progress with the intense heat. There may be increased level of Fusarium foot rot if the dry warm weather continues. Estimated loss is 15%.

Spinach: crops drilled from mid-May have bolted – they were irrigated but the severe pressure from long periods of sunshine has triggered bolting. Perpetual spinach crops, May drilled, have also bolted.

Courgettes/Pumpkins: These are least affected by the drought but if the dry weather continues yields may be impacted.

Conclusions

- This is the worst drought to have hit the vegetable industry in living memory.
- Crops have been lost and losses will continue to mount – the final figure will not be known until the autumn.
- There will be a shortfall across most lines in the supply of Irish vegetables to supermarkets.
- Growers' costs have increased substantially and cash flows have greatly reduced.
- There is also a human cost. The extra hours that have been put in to save crops, have increased stress levels on the growers and their staff.
- Due to poor yields, the high investment cost in crops will not be recouped unless growers are paid more for their produce.
- This crisis may mean that some growers will not be trading in 2019.
- The current crisis highlights the need for reasonable levels of return in order to ensure the long-term viability of the vegetable sector. All actors in the supply chain – growers, CDC's, retailers and consumers – all have a responsibility in ensuring the viability of an industry that puts local, fresh, top quality vegetables on the supermarket shelf.

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