BORD BIA

Water Analysis Requirements Guide Notes

Background

The use of water is essential in the horticultural industry. It is required for crop irrigation, application of chemicals and for post harvest rinsing/washing, cooling and transport. It is also required on production sites for canteen and hand washing facilitates. Sources of water include county council supply, bore hole, deep well, ponds, rivers, dykes, lakes etc.

The quality of water may affect the safety of produce for human consumption. Produce can become contaminated by using a source of water which is contaminated. Water can directly contaminate produce and/or enable contamination to spread in the field, production unit or factory. Water contamination can be caused by microbial and/or chemical factors.

Why test water?

The purpose in having a representative aseptic sample of water tested is to establish its chemical and microbiological status. The result of the test will show if the water supply is suitable for its intended use.

Water quality is an issue of critical concern to fresh produce retailers and consumers alike. This is the reason why water analysis has become a requirement for participants in the Bord Bia Quality Programme. The following key areas are addressed in this document :

- Water quality requirements in the fresh produce sector ;
- Water sampling frequency ;
- Sampling procedure ;
- Microbiological and relevant chemical test requirements on water ;
- List of test laboratories.

Water Quality Requirements in the Fresh Produce Sector

1. All participants in the Bord Bia Quality Programme must have an annual analysis of their water source(s) and have a copy of the analysis available as a record for the auditor. The analysis must be carried out within the auditing time and documented results must be available before final audit. Where more than one water source is used an analysis of each source will be required.

2. In general field grown crops will undergo certain processes post harvesting (e.g. washing and cooking etc.). In the cases of field grown crops which are being irrigated from rivers, open waterways etc and which are deemed as low risk crops (eg potatoes/root crops/crops in a non ready to eat form in the field) a water analysis of these sources will not be required. Where field grown crops are ready to eat and near harvest (eg soft fruit/iceberg lettuce) and if irrigated, then a water

analysis of these water sources will be required. In relation to these crops when a test has been carried out on the water supply and the results received, a risk assessment must be carried out on the water quality, source and purpose of use to identify if the quality of the water poses a risk to the safety of the product. On completion of the risk assessment a decision can be taken as to what if any corrective action in relation to the water supply is required. In relation to the process of carrying out of a risk assessment please refer to the Bord Bia Guideline Document No 2 on this matter.

3. Protected crops are generally likely to be consumed without cooking or processing. This sector can be divided into two categories: (a) Where water is applied directly onto the crop (e.g. mushrooms, lettuce, tomato, celery, cucumber, strawberries etc.) the water used in the production of these crops must be of drinking quality. (b) Where water is applied indirectly to the crop such as through a drip irrigation system (e.g tomatoes, cucumbers, strawberries etc.) a risk assessment must be carried out on the water supply as described in point 2 above.

4. Water of drinking quality is required for all washing/processing water. It is essential that water fit for human consumption is used for the final rinse stage of any post-harvest handling process.

It is important that good agricultural practice is maintained at all times to maximise the quality of the water in the horticultural enterprise and to ensure its suitability for the crop being grown and other associated processes.

Water Sampling and Analysis

The Bord Bia Quality Programme requires that a minimum of one water analysis (for each separate water source used) is available for the current year. A copy of the analysis should be available where possible on the first audit. This allows time if required for corrective action to be taken if the analysis indicates that the quality of the water supply is not suitable for its intended use, and for a re test to be carried out. A copy of this analysis can then be available for inspection on the last audit. If a copy of the analysis is not available on the day of the inspection then it can be forwarded at a later date to the quality programme inspection body ie. the National Standards Authority of Ireland (NSAI). Ideally testing should be carried out at least twice a year in different climatic conditions to get a more accurate picture of the quality of the water supply.

The Bord Bia Quality Programme Specification outlines the microbiological and relevant chemical analysis (see below) to be carried out. A list of selected laboratories that carry out water testing is included at the end of this explanatory note. However the water sample can be tested at any water testing laboratory. Details of the relevant microbiological and chemical tests to be carried out on the water supply are also outlined.

Microbiological /Chemical Tests and Results Required on Water fit for Human Consumption (Drinking Water)

These specifications for water testing are set down in The European Communities (Quality of Water Intended for Human Consumption) Regulations, 1978; Statutory Instrument Acts 81 of 1988.
Water testing for microbiological and chemical analysis is carried out to a standard Codex procedure for the following:

Microbiological standard analysis required by Bord Bia :

Test For	**Specifications/Results Required For Drinking Water**
Total Coliforms	0 per 100 ml. of sample
Faecal Coliforms	0 per 100 ml. of sample
Total Bacteria Count @37°C	20 per 1 ml. of sample
Total Bacteria Count @22°C	100 per 1 ml of sample

Chemical standard analysis required by Bord Bia :

Test For	**Specifications/ Results for Drinking Water Maximum Admissible Concentrations**
pH	6.0-9.0
Nitrates NO_3 mg/l	50 (11.3 mg /l as N)
Nitrites NO2 mg/l	0.1 (0.03 mg/l as N)
Ammonia NH4 mg/l	0.3 (0.23 mg/l as N)

In a particular cropping situation where a water analysis and risk assessment is carried out on the water source and it is shown that water of drinking quality is not necessarily required for that particular use, then the results of the analysis do not have to be within the specifications as listed above (except for Faecal Coliforms). However the aim should always be to use the best quality water where possible and to achieve results as near to these specifications as possible. It should also be remembered where staff are drinking water on the production site that it must be from a source that has water fit for human consumption.

Please note that producers who add fertiliser to water for the liquid feeding of plants (e.g. in the production of certain crops under glass) will need to have their water analysed for additional relevant chemical elements critical to the growth of plants to ensure that the correct and appropriate levels of feed are being supplied to the plants. Producers should consult with their technical advisor on this matter. In these cases where producers have already carried out a detailed chemical analysis of their water supply for production purposes and it includes the chemical elements listed above this will satisfy this part of the water testing requirement for the Quality Programme this year. Where this is the case, only the outstanding microbiological analysis needs to be carried out.

Where test results are identified as being outside the specifications for a specific use the water should be re-sampled and re-tested to eliminate any doubt in relation to the