

Salad vegetables for sandwiches

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First I would like to give a little background to our business. We produce and distribute between 16,000 and 20,000 sandwiches per day over a six day week. All products are made in our purpose built sandwich production unit at Ellesmere Port, and distributed from there.

We also have a distribution depot in Rugby to which we deliver in bulk and then redistribute to the Midlands area.

Our customer base is a mixture of garages, forecourt services, shops, supermarkets, hospitals and colleges. Our delivery area is Lancaster in the north, Leeds in the east, the Midlands in the south and Anglesey in the west. We have refrigerated delivery vehicles, all less than three years old.

We make a selection of products including:

- Standard sandwiches (singles, twins and triples)
- Filled rolls (cheese topped, CombiCorn)
- Mini Viennas (7in long rolls)
- Torpedo rolls (10in long rolls)
- Bloomer sandwiches
- Ciabatta rolls
- Layered salads
- Pizzas

Under the title 'salad veg' we include lettuce, tomatoes, cress and cucumber as well as celery, peppers, onions, spring onions, cabbage, Chinese leaf and carrot. Approximately 90% of our products contain one or more of these items; 80% will have lettuce, tomatoes, cress or cucumber in them and only a small percentage contain the other salad products.

We use an HACCP system to control our ingredients from purchasing through to the finished product. It is important to bear in mind that with 20,000 products a day being made, this is 20,000 opportunities to poison the public. Sandwiches are one of the most high risk foods to produce because a sandwich is eaten without any further process or treatment. This means that any micro organisms will not be disposed of prior to consumption, so great importance is put on control of bacteria.

As salad veg is living organic produce, many types of foreign body can be present before preparation. The most common are stalks; aphids in lettuce (both green and fruit fly); caterpillars, centipedes and other insects in lettuce; pieces of plastic, wood, glass and soil. Fertilisers, decomposition and rot can also contaminate the produce.

We have found it advantageous to use two wholesalers for supplies. Each buys primarily from a different market, one from Manchester and one from Liverpool. Both also buy direct from local growers during the season.

Having two suppliers means that if a product is not available at one market, we may be able to get it at the other. On the quality control point, different markets may deal with different

producers. So if one supplier has an aphid problem, the other is usually aphid free. And then there is the ability to compare prices.

All suppliers receive 'diligence visits' and are given a written specification for all the products. It is important that only top quality produce is accepted. To ensure this, all parties must know exactly what quality of produce is acceptable and what must be rejected. The sandwich will only be as good as your initial ingredients.

Specification includes size. If tomatoes are too large, it can cost up to £200 extra per day due to portioning by slice. The larger the slice, the fewer slices to a box.

Goods-in staff must be trained not only on how to recognise sub-standard produce, but also on the corrective action to take. Product must be fresh and hold that freshness during its on sale period, which can be day of production plus three days - that is, four full days.

We test all products on receipt for micro-organisms. Salad veg is checked before prep and again afterwards. We send samples away to a specialist laboratory and have them tested for:

- TVCs
- Coliforms
- E coli
- Staphylococcus aureus
- Listeria
- Salmonella

TVCs are total viable colonies - the total number of bacterial colonies present on a sample. This includes spoilage bacteria as well as pathogenic or potentially poisonous micro-organisms. The other bacteria tested for are potentially dangerous and our aim during the preparation is to limit these to a safe number or completely eliminate them.

We have a rigid accept/reject level for tested product, but we must bear in mind that the results we get back from the laboratory are retrospective, and the ingredient will have been eaten by a consumer well before we get the results of the testing.

This means that a regular testing pattern is essential to ensure a continuing good state of product, and poor or unacceptable results must be thoroughly investigated and re-tested immediately. It is not enough to investigate and take action; all findings and corrective action must be documented and proven as part of any possible 'diligence' defence.

Possibly the most difficult salad veg to process - and the most used - is iceberg lettuce. Firstly there are choices to be made - do you buy it in prepared and washed, or do you prep it yourself?

I have visited a number of salad prep units and they are as varied in their standard of quality and process as most other industries. Some are very good and well controlled, and others I would not like to deal with at all.

Most good veg prep companies use similar methods of preparation, and are quite happy to deliver two or three times per week in gas-flushed bags which help to extend the life of the product. We have in the past used pre-prepared lettuce, but now find it more cost-effective

and practical to prepare our own. Lettuce is bought fresh, light in weight, crisp and aphid free, and must have no signs of rot or deterioration. It is checked by both the goods-in and the QC staff.

The reason for stipulating 'light in weight' is that after unwrapping and de-boxing the heads of lettuce, we destalk and literally 'tear the heart' out of it. This is done by hand, holding the head firmly then sharply tapping the stalk end on the prep table so that the heart can be eased out of the head.

We remove the heart because the nice crisp centre is almost white and therefore not very good as a garnish. More important, this is the first section of the iceberg lettuce to show brown and to deteriorate.

The lettuce is then broken into quarters and the leaves separated as they are put into a 'cold' hypochlorate wash tank. At no stage do we touch the lettuce with a knife as metal touching the leaves causes the veins to 'bleed', secreting a brown fluid which starts the deterioration process very quickly.

This is another reason for plunging the leaves into a cold wash tank. The cold water causes the veins to contract and helps to seal them after breaking the leaves. We use a solution of hypochlorate which gives us 100-150ppm of usable chlorine.

All salad veg is washed in this solution, which is agitated either manually, mechanically or by air bubbles for 10-15 mins. Each solution is checked for the presence and level of chlorine. It is not enough to check these factors but, like everything else in the high risk food production industry, it must be recorded.

After the wash, the lettuce is spun dry in a specialist gentle spin drier before being chilled ready for use.

It is at this stage that we take samples for the 'after wash' challenge testing. Needless to say, the bacterial counts should be considerably less than before the wash. If the improvement is not satisfactory, then a full investigation into the methods, time and chlorine concentration must be carried out and once again a record of actions taken and findings must be kept. Again a re-test must be carried out immediately.

All ingredients, both salad and other, are chilled to around 2°C before being constructed into the sandwich.

Tomatoes are a little more straightforward. De-boxing and de-stalking takes place in low care. Then they are also washed in 100-150ppm hypochlorate before being accepted into high care.

The same procedure is carried out for all other salad veg, taking extra care with things like:

- rubber bands on spring onions
- polystyrene trays - some veg producers use these, and if they are broken, they produce small balls of plastic by the million. Once they get into the wash tanks, they are extremely difficult to get rid of

- pepper seeds - extra care must be taken with red and green peppers, as the small seeds are again difficult to control
- soil or sterile peat base on which cress is grown. The cress must be cut off 10mm above the peat base to ensure no soiling of the product

Items like tomatoes and cucumber need to be sliced before they can be put on to a sandwich. There are many machines available to perform this operation, from a simple hand push to very complex automatic machines.

We have found that for tomatoes a simple machine using two sets of sliding blades gives us the best results. This machine, though comparatively lightweight, in the hands of an experienced operator can slice a 6kg box of tomatoes in next to no time. It will slice a ripe tomato and still leave every slice fully intact with seeds and flesh.

Rotary blade machines tend to smash the tomato slices indiscriminately, though they are excellent for dicing and slicing cucumber.

Most sliced items like cucumber and tomatoes are portioned on to the sandwich by slice (an average allowance for one slice of tomato is 6-7g and for one slice of cucumber 5-6g).

Any fluctuation will reflect your finished sandwich weights, so using the correct cutting setting is very important.

Sliced onions are particularly susceptible to E coli. So even though they are considered relatively safe by most EHOs (our own told me that there is very little chance of pathogenic bacteria on onions), we still carry out the same rigorous high care handling and washing.

We have found that we must never take anything for granted and safety is only assured with:

- regular monitoring
- good staff training
- good communication
- full staff involvement

Any product is only as good as your staff and systems. HACCP is one of the best ways to recognise, control and reduce food safety hazards and produce quality problems to acceptable levels.