

11th Edition of the Note by Note International Contest

Topic: Food Waste

Creation: The Ugly Apple
The ugly apple turned to a delicious crumble

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Table of Contents

1. Introduction.....	5
1.1 Inspiration.....	5

2. The creation.....	7
2.1 Overview.....	7
2.1.1 Materials.....	7
2.1.2 Ingredients.....	8
2.2 The Recipe.....	8
2.2.1 The Apple Insert.....	8
2.2.2 The Crumble.....	10
2.2.3 The Ice Cream.....	10
2.2.4 The Glaze.....	11
2.2.5 Assembly of the Ugly Apple.....	12
3. Results.....	15
3.1 The Apple Insert.....	15
3.2 The Crumble.....	16
3.3 The Ice Cream.....	17
3.4 The Glaze.....	18
3.5 The Final Product.....	19
4. Discussion.....	20
4.1 The Apple Insert.....	20
4.2 The Crumble.....	21
4.3 The Ice Cream.....	21
4.4 The Glaze.....	21
4.5 The Assembly.....	21
4.6 The Ugly Apple.....	21
5. Conclusion.....	23
Appendix.....	24
A1. Extraction of Gluten and Wheat Starch.....	24

1. Introduction

The 11th Note by Note Cooking Contest centres on the challenge of food waste. Note by note is a pioneering technique that uses pure compounds to shape every facet of a dish - from texture to flavour, to scent and appearance, and more. This technique has the potential to solve hunger and environmental issues by revolutionising food production through mass produced chemical components. While note by note has been witnessed in restaurants and

events, it requires further development to be integrated into households and to curb the waste linked to crops and livestock.

In the face of rising food demands, sustainable food production is becoming a requirement. The planet's limited resources are strained, reinforced by more than a third of the food produced being lost or wasted according to the FAO. The 11th International Contest tackles the pressing issue of food waste by prompting participants to delve into this critical topic, while harnessing the potential of note by note cooking.

1.1 Inspiration

The inspiration for my creation came from the fact that a myriad of fruit and vegetables are constantly thrown away because of their failure to conform to conventional appearances. The mere fact that a carrot is purple, a lemon is deformed, or an aubergine is twice its standard size, results in its disposal. However, these items are perfectly edible and have used valuable resources to be grown. Intermarché, the French supermarket chain, noticed the substantial waste stemming from aesthetics and initiated a campaign promoting the “ugly” produce.

Intermarché purchased the odd-looking produce directly from farmers and sold it at a reduced price relative to their aesthetically pleasing counterparts. The supermarket made soups and juices to show consumers that despite the unconventional appearances, the produce is just as tasty. The heightened awareness encourages consumers to think twice whilst purchasing to reduce food waste in their homes. Hopefully, the increasing awareness could even prompt a relaxation of stringent appearance norms on an industrial scale – minimizing waste even further.

The campaign achieved a remarkable success, and this prompted me to recreate one of Intermarché's iconic campaign items: the Ugly Apple.

Note by note cooking presents a compelling solution to the issue of food waste by directly using compounds that can be created in a laboratory. My creation therefore leverages note by note techniques as much as possible to recreate the Ugly Apple as a testament to the needless squandering of such foods. Moreover, note by note cooking is not, it seems, about recreating existing foods, but about venturing into uncharted culinary territories. This therefore inspired me to reimagine a common dish featuring apples within the realm of the Ugly Apple concept: an apple crumble served with vanilla ice cream. The aim: to showcase that even the least appealing apples can offer great flavour, whilst highlighting the transformative potential of note by note cooking to curb food waste.



Figure 1: Wasted apples from a tree in my garden

2. The creation

2.1 Overview

(a)



(b)



Figure 3: The final product showing in (a) the overview of the apple, and in (b) the apple cut in half to show the components.

The presentation: my creation mirrors the looks of Intermarché's ugly apple.
The taste: recreation of the apple crumble served with a vanilla ice cream.

The layers within the apple:

- Centre: a sweet apple insert
- The base: a crumble
- Around the centre: a vanilla ice cream
- Coating: an apple green glaze

2.1.1 Materials

- Saucepan
- Immersion Blender
- Dehydrator / oven (for the gluten if extracting from flour)
- Blender (for the gluten and wheat starch if extracting from flour)
- Small semi-spherical mold
- Large spherical mold
- Ice cream churn (not necessary if not accessible)
- Whisk
- Bowls and cutlery

2.1.2 Ingredients

- NH pectin
- Coconut oil
- Water
- Agar agar
- Sugar*
- Apple essence**
- Gluten[®]
- Wheat starch[®]
- Corn flour
- Vanilla essence
- Xanthan gum
- Greek yoghurt
- Glucose
- White chocolate
- Green food colouring

*When sugar is used, “Sugarly” by Canderel is used instead as it seemed more fitting to note by note cooking as the ingredients are: Erythritol with 0.25% Aspartame and 0.17% Acesulfame-K. This can be replaced with a sweetener of your choice.

**The apple essence was made by boiling apples in water for 2h. The apples decomposed and the liquid was strained. The collected liquid was boiled to remove the water and the remains collected as the “apple essence.” This is not the most rigorous method but I wanted to minimise spending and did not have a huge amount of time.

[®]The gluten and wheat starch were extracted by hand from flour. See appendix A1 for the extraction method.

2.2 The Recipe

2.2.1 The Apple Insert

Ingredients:

- 1,5g NH pectin
- 15,5g coconut oil
- 200mL water
- 2g agar agar
- 30g sugar
- 25g apple essence



Figure 4: Ingredients for the apple insert

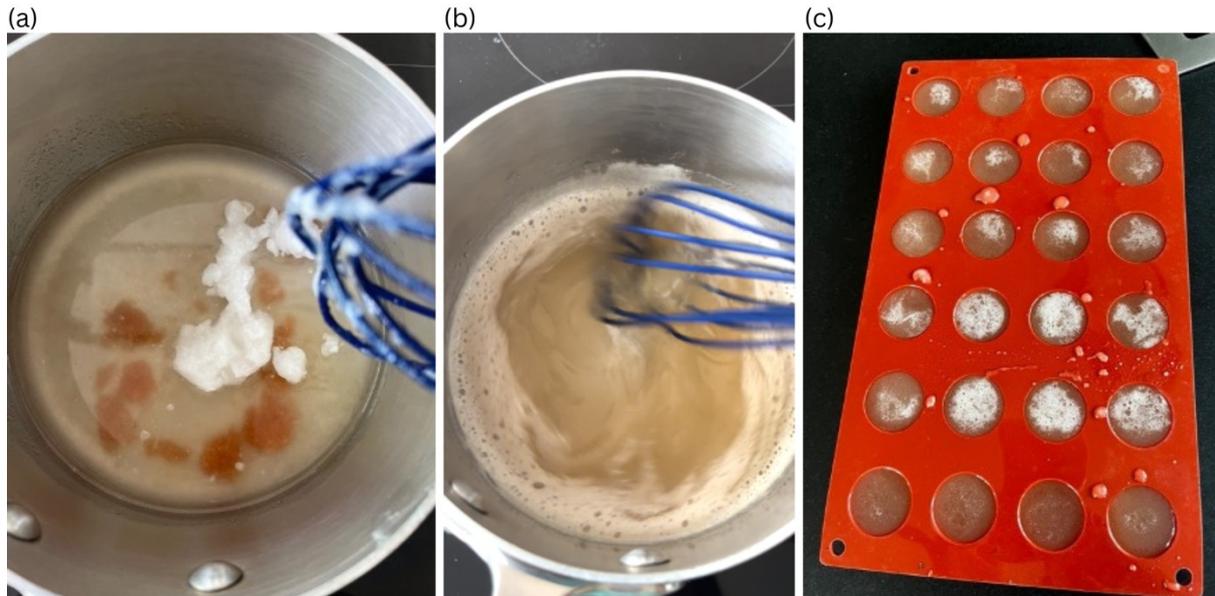


Figure 5: Method for making the apple insert with (a) the ingredients in the saucepan, (b) the whisking of the simmering mixture, and (c) the mixture ready to set in the mold

Method:

1. Put everything in a saucepan and bring to a boil whilst whisking
2. When everything is incorporated, keep whisking for 2-3 minutes with a small simmer
3. Pour into a half-spherical shaped mould
4. Leave to cool

2.2.2 The Crumble

Ingredients:

- 17,5g coconut oil
- 15g gluten
- 20,5g sugarly - canderel
- 10g corn flour
- 5g wheat starch

Method:

1. Mix all of the ingredients together until combined

2.2.3 The Ice Cream

Ingredients:

- 12g vanilla extract
- 50g canderel - sugarly
- 500mL water
- 5g xantham gum
- 30g coconut oil
- 30g corn starch



Figure 6: Ingredients for the ice cream

Method:

1. Combine everything in a saucepan except a portion of the water and the corn starch
2. Heat on low whilst whisking
3. Mix the water and corn starch in a small recipient until combined and add to the saucepan and whisk all together
4. Transfer the mixture to a tall recipient and blend with an immersion blender
5. Transfer to ice cream churn



Figure 7: Whisking of the ice cream mixture

2.2.4 The Glaze

Ingredients:

- 142g greek yoghurt
- 30g glucose
- 150g white chocolate
- green food colouring

Method:

1. Mix the yoghurt and glucose and put in the microwave for 1 minute
2. Combine
3. Pour the hot mixture over the white chocolate and stir until combined
4. If there are pieces of solid white chocolate, put in the microwave for 15s intervals
5. Add the green food colouring until the desired colour is reached
6. Use at room temperature (store in fridge and remelt in the microwave for a few seconds to thin the glaze if needed)

2.2.5 Assembly of the Ugly Apple

1. Place the crumble at the bottom of the spherical mold (repeat on a few molds)
2. Add a spoonful of ice cream to cover the base
3. Place two semi-spheres of the apple insert in the centre of the ice cream
4. Fill the remainder of the mold with ice cream
5. Place in the freezer over night or until completely frozen
6. When frozen, unmold two apples
7. Place a knife under hot water, and create a flat base for the apple to stand
8. Shave the other apple down to a smaller size using a thin cheese grater or zester
9. Slightly melt the ice cream using the hot knife, and stick both apples together
10. Place in the freezer
11. Once frozen in the new shape, remove from freezer and place on an inverted cup over a large plate
12. Pour the room temperature glaze over the apple, making sure it covers the whole thing. The glaze should cool quickly onto the apple due to the cold nature
13. Place an apple stem at the cross section of both spheres
14. Place in the freezer once more to make sure the glaze sets
15. Let warm slightly and transfer to a presentation plate
16. It is recommended that this dessert is eaten after being out of the freezer for 5-10 minutes depending on the room temperature so that it is not too frozen in the centre



Figure 8: Assembly of the ugly apple by steps: the crumble first in (a), then some ice cream in (b), then the apple insert in (c), then ice cream to fill the mold in (d), and then the frozen apple in (e). (f) shows the shape of the final ugly apple with some of the old glaze which did not work on top.

(a)



(b)



Figure 9: Glazing of the ugly apple with (a) prior to glazing and (b) after the glazing

3. Results

3.1 The Apple Insert

No picture taken of the apple insert outside of the mold on its own. In figure 10, we see the glossy sphere of the apple insert during the assembly of the full creation.



Figure 10: The apple insert in the mold

3.2 The Crumble

Picture of the crumble component after mixing together with a spoon seen in figure 11.



Figure 11: The crumble ready to be used

3.3 The Ice Cream



Figure 12: The finished ice cream with (a) before freezing and (b) after freezing

3.4 The Glaze



Figure 13: The glaze ready to be used

3.5 The Final Product



Figure 14: The final product of the ugly apple.

4. Discussion

4.1 The Apple Insert

The apple insert worked well with the notes of apple coming out through the apple essence. There was a small caramel like flavour also coming from the way the apple essence was made which was fitting for an apple crumble. If using a proper apple essence, a caramel and perhaps cinnamon essence could be also added to recreate the flavours of the traditional dish.

The texture was jelly-like which mirrored the apples slightly caramelised in the sauce as in a traditional apple crumble.

As seen below, when the insert was left to cool in the mold, many air bubbles remained trapped at the surface. To avoid this, one could whisk less vigorously when making the insert, or use a wooden spoon to avoid incorporating air bubbles. The only issue for this seems to be esthetic; this is not an issue as the semi-spheres are placed together to make a full sphere hidden in the centre of the apple.

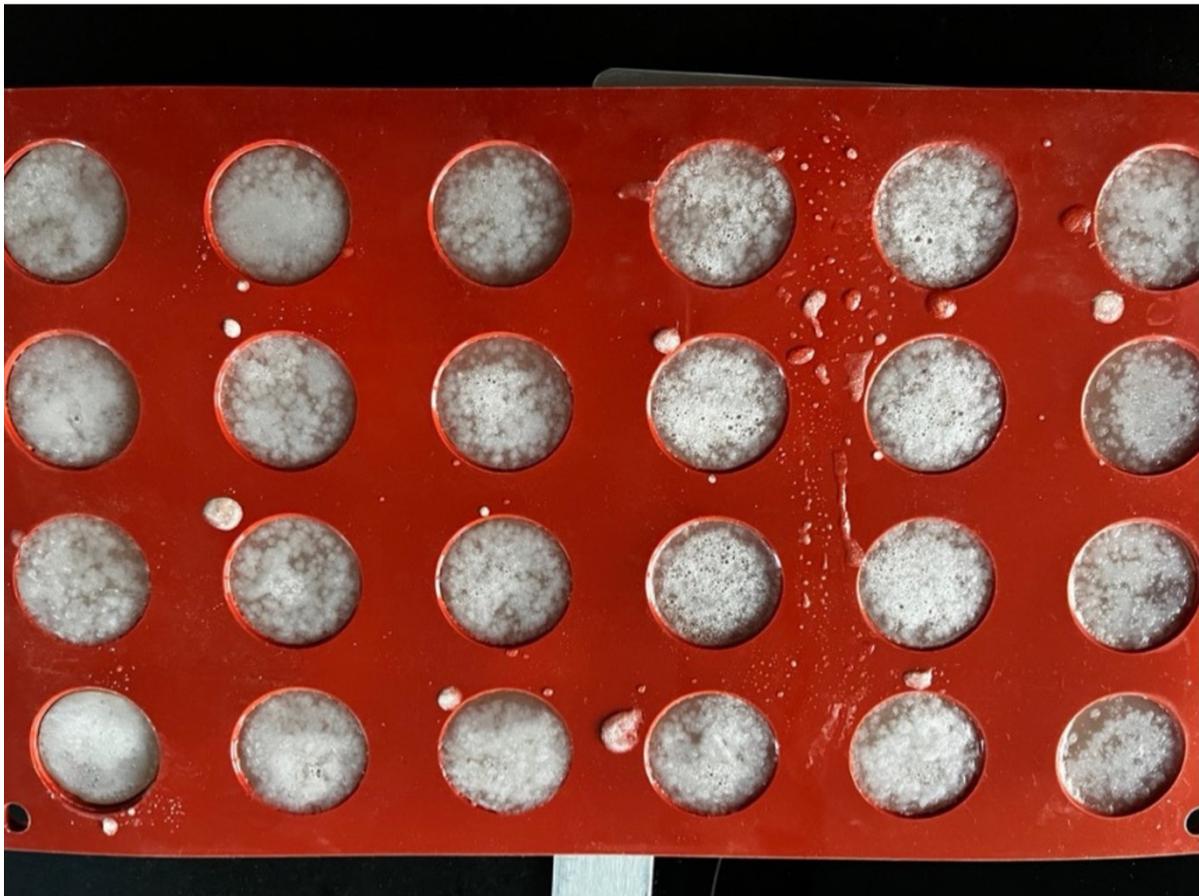


Figure 15: The apple insert once gelled showing white air bubbles

4.2 The Crumble

The crumble turned out well with a slight crunch from the gluten and sugar. The gluten was perhaps not fine enough because my blender was struggling to fully break down the dehydrated gluten. This added an extra crunch which may not be found if using a finer gluten powder. The texture of the crumble resembled a traditional crumble due to the oil binding everything together, and the other ingredients giving the grainy appearance and mouthfeel.

4.3 The Ice Cream

The ice cream turned out well with a creamy texture due to the xanthan gum and corn starch which are thickeners. More fat could be added to the mixture to give a creamier texture after freezing. It seems like there may be too much water in the mixture giving a more icicle like texture rather than an ice cream like one.

Aside from this note, the ice cream turned out as expected.

4.4 The Glaze

Initially, another glaze recipe was tested using agar agar for the glaze to set onto the frozen apple upon contact. However, this glaze was too transparent so did not cover the apple in a green colour properly. Furthermore, I had a freezer malfunction which caused the freezer to stop working for a few hours so the creation was not cold enough to be glazed and the ice cream would melt off with the glaze. The last issue was that I used a spinach extract as the green food colouring and this had quite a strong spinach flavour to it which does not fit with the apple crumble flavours I was trying to obtain.

Another glaze recipe was instead used. Due to lack of time to research ways of making this recipe closer to note by note, the recipe uses more traditional ingredients than I would have liked (such as white chocolate and Greek yoghurt). However, once my freezer was working again and the apple was fully frozen, the glaze was very easy to pour on and immediately stuck onto the apple. I was also happy with the apple green colour.

4.5 The Assembly

The assembly was simple enough to carry out. One must take care when manipulating the frozen apple at room temperature as it can melt quickly. Once the glaze is on the apple, one must also not touch the surface otherwise a fingerprint will be left on the apple. I added an apple stem as I did not have enough time to think about how I would make this using note by note techniques. (I did think of making a biscuit like stem as I like the idea that everything displayed on the plate should be edible).

4.6 The Ugly Apple

The final product resembles well the “pomme moche” by intermarché. The English translation on their banners appeared to be “a grotesque apple”. I used the name “the ugly apple” for my creation as I want it to be a symbol for all ugly fruit and vegetables which are wasted.

The smooth texture of the glaze resembles a granny smith but could perhaps be a bit shinier – this could perhaps be achieved by adding a bit more glucose.

The rest of the components work well together, with vanilla ice cream being a great addition to any apple crumble!

The apple is best eaten thawed for 5-10 minutes at room temperature so that the inside is not frozen. Once it thaws, it can be enjoyed by everyone (or at least it is approved by my family members!).

(a)



(b)



Figure 16: The final creation of the ugly apple showing in (a) the frozen apple with an apple cut open, and in (b) an apple that is thawing.

5. Conclusion

The 11th Edition of the Note by Note Cooking Contest cleverly brings awareness to an unsustainable approach to nourishing our planet, whilst simultaneously providing a potential solution through the advancement of note by note techniques. My symbolic note by note ugly apple has been crafted to represent the multitude of discarded produce, merely due to their appearance. Concealed within this representation of an ugly apple lies a delicious apple crumble served with a vanilla ice cream, possibly evoking childhood memories for some. The ugly apple is a call to tackle the escalating food waste issues at an individual and industrial level; a challenge which reverberates on environmental and societal fronts. Note by note techniques are embraced as much as possible to create this dish, bringing a solution to the problem of food waste. By exclusively using pure compounds, the need to cultivate resource-intensive crops and livestock is circumvented – effectively curbing pollution and the use of unnecessary resources. Note by note therefore emerges as a beacon of hope, proffering a transformative solution to the food waste dilemma, portrayed by the ugly apple.

Appendix

A1. Extraction of Gluten and Wheat Starch

I decided to extract gluten and wheat starch from flour to reduce total spend on the project. In the following part, I will briefly detail the steps used to obtain the gluten and wheat starch.

Knead 3 ½ cups of flour and 1 ½ cups water together to form a dough for 10 minutes.



Wrap in a cling film and put in fridge for 10 minutes.

Mass in cling film = 584g

Rinse out the dough in water by stretching and squeezing it and keep the water from the first few rinses.



Keep rinsing out the dough under water until the water comes out nearly clear. The dough at this point is very stretchy.

Mass of hydrated gluten = 159,3g

Chop up the dough into small pieces and place on a baking sheet. The smaller the pieces, the quicker the dehydration (these should have been cut smaller).



Place in a dehydrator or oven at 70oC until the gluten is fully dry and does not stretch anymore.



Once the gluten is dehydrated, blend it to reduce it to a powder.
Mass of gluten = 52g



During the dehydration process, place the white water in a large Tupperware (or multiple). Leave over night for the water to separate from the wheat starch, then drain the water. Place the wet wheat starch on multiple large baking sheets to dehydrate. Once done, place in a blender to obtain the wheat starch.

