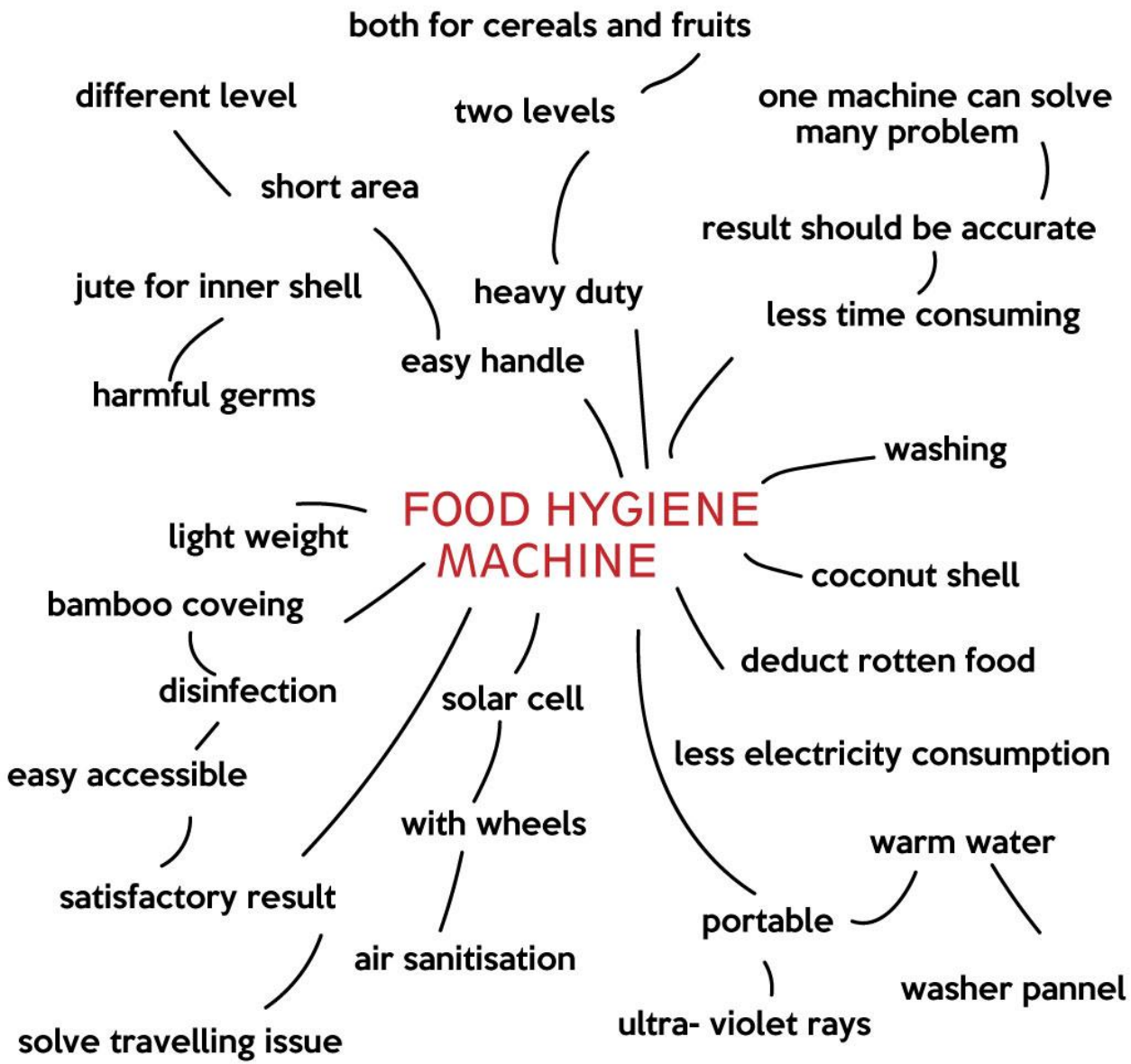
INTEGRATED DESIGN PROJECT

OBJECTIVE

- Taking the inspiration and concern's from the current situation our objective is to develop a handful machinery which solves this issue specially for the fruits and vegetables which comes right from the market.
- To be conscious and spread awareness among people for sanitation and cleanliness in such a disastrous epidemic.
- To overcome the wastage of both water and time.
- To make this daily every household problem very easy and at the same time sanitizing food which can be consumed.
- In some cases a product can prevent this spreading of diseases, because it has disinfecting functionality.
- Major area is the fruits and vegetables which come right from the market and which are touched by many people.
- As well as designing a handful machinery which can not only solve this hygiene issue but a multi tasking product which can be further reused with some other attachments too.

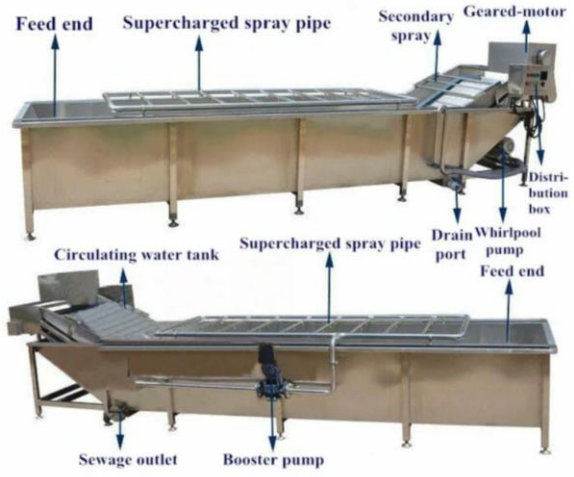
IDENTIFICATION OF PROBLEM

Due to COVID 19, we face many problems in terms of sanitization. Sanitization of fruits and vegetables coming right from the market. It usually takes a lot of time to invest at cleaning fruits and vegetables from our daily busy schedule due to the pandemic COVID19 outbreak. According to our observation, we noticed that in the name of precaution and fear, people are actually wasting a lot of water rather than conserving it and still they are not yet satisfied as well as using different solutions under the name of precautions which may harm the food.


FOOD HYGIENE MACHINE
both for cereals and fruits
two levels
different level
short area
one machine can solve many problem
result should be accurate
less time consuming
jute for inner shell
harmful germs
heavy duty
easy handle
washing
light weight
bamboo coveing
disinfection
easy accessible
satisfactory result
solar cell
with wheels
air sanitisation
solve travelling issue
coconut shell
deduct rotten food
less electricity consumption
warm water
portable
washer pannel
ultra- violet rays


BRAIN
STORM

Already Existing Food Sanitation Product Available:



Already Existing Sanitisation Equipment:

Problems with existing Machines

- Time taking process
- Can’t afford easily
- Every machine is focusing on single function
- Unable to detect germs
- Consume large amount of electricity
- Made of materials which harm the environment
- Absence of division / separations for different food items - fruits ,veges and pulses.
- Can’t detect the requirement of water usage
- Spacious

QUESTIONNAIRE

Respondent Details:

- Name-
- Age -
- Designation -
- Address -

How important proper food sanitation is for you?

- Very Much
- Not Very Much
- Average

- How often do you eat fresh vegetables and fruits coming right from the market?
- Every Day
- Thrice a week
- Weekly

How do you prefer cleaning these vegetables and fruits?

- ❑ With Water
- ❑ With Food Sanitizer
- ❑ With Any other Chemical Compound

Do you prefer frozen vegetables and fruits over fresh vegetable and fruits ?

- ❑ Yes
- ❑ No
- ❑ Sometimes

Do you feel satisfied with the hygiene of frozen fruits and vegetables? Are you sure that they must had gone through proper sanitation processing?

- ❑ Yes
- ❑ No
- ❑ Not So Sure

How much time do you invest in cleaning vegetables and fruits?

- ❑ 2 Minutes
- ❑ 5 Minutes
- ❑ 10 Minutes
- ❑ And Above

After cleaning vegetables and foods by your own hands are you satisfied with the end result?

- ❑ Satisfied
- ❑ Dissatisfied
- ❑ Neither Satisfied Nor Dissatisfied

Have you taken any extra precaution regarding vegetables and fruits after COVID 19 outbreak?

- ❑ Yes
- ❑ No

If Yes, then What … ?

Would you ever prefer a handy mechanism for solving this daily basis problem?

- ❑ Yes
- ❑ No
- ❑ Maybe

Select the following features that you would like to have in that mechanism?

- ❑ Light Weight
- ❑ Quick Cleaning
- ❑ Easy Accessibility
- ❑ Proper Hygiene
- ❑ Less Electricity Consumption
- ❑ Eco-Friendly
- ❑ Ultraviolet rays for final detection

If any other feature you want to add do comment below?

At what price would you like to buy the new handy mechanism ?

- ❑ 2500-3000
- ❑ 3000-4000
- ❑ 4000 and Above

Which existing mechanism feature would you like to have in our new installment?

- ❑ Easy pulling fix to use which promoted (A)
- ❑ Scrubbing feature (B)
- ❑ Tilting technique for straining (C)
- ❑ Ultraviolet detection for safe and security (D)

(A)

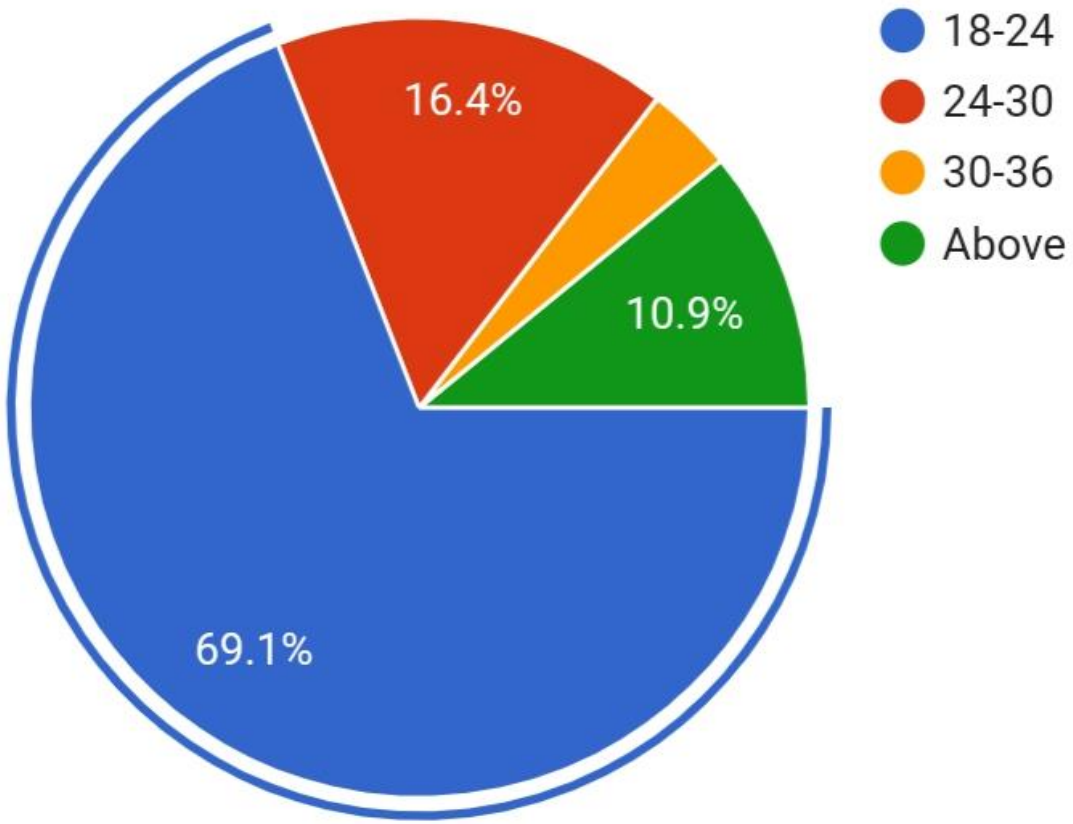
(B)

(C)

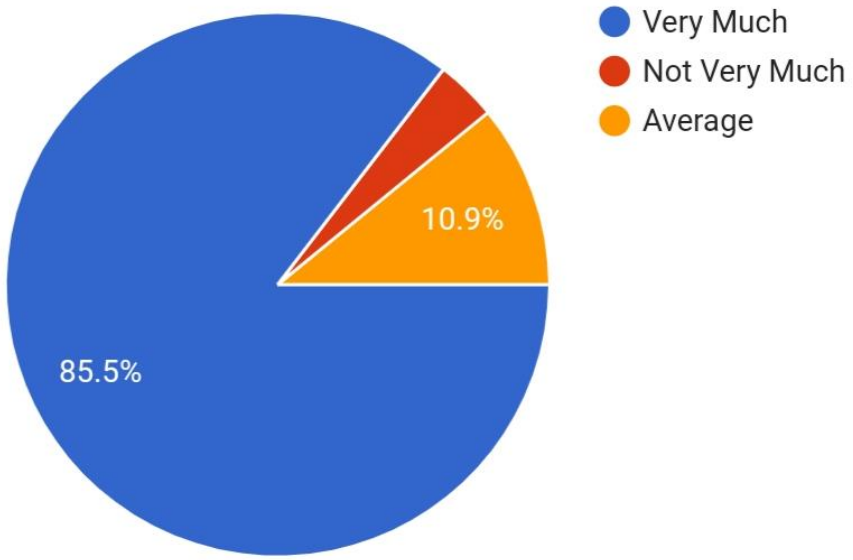
(D)

ANALYSING DATA

Age

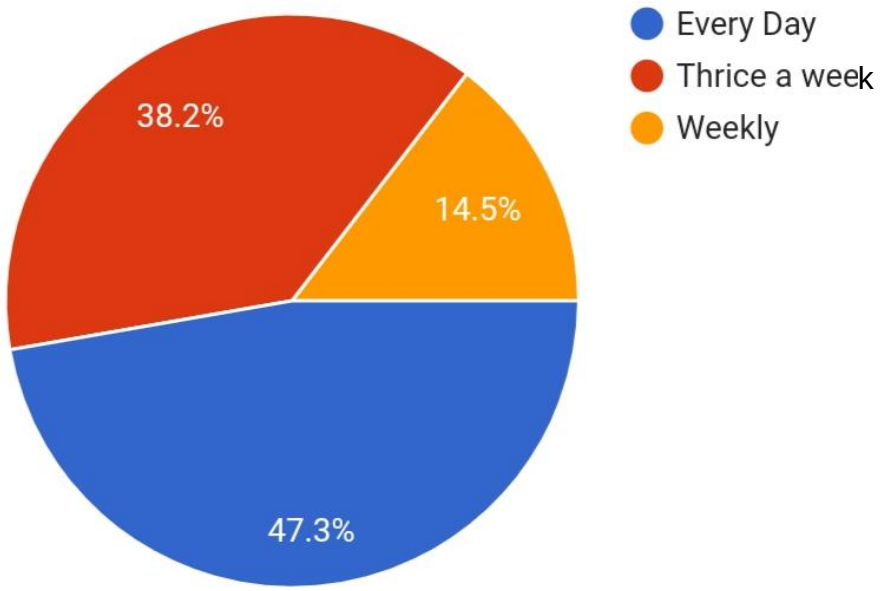


1. How important proper food sanitation is for you?



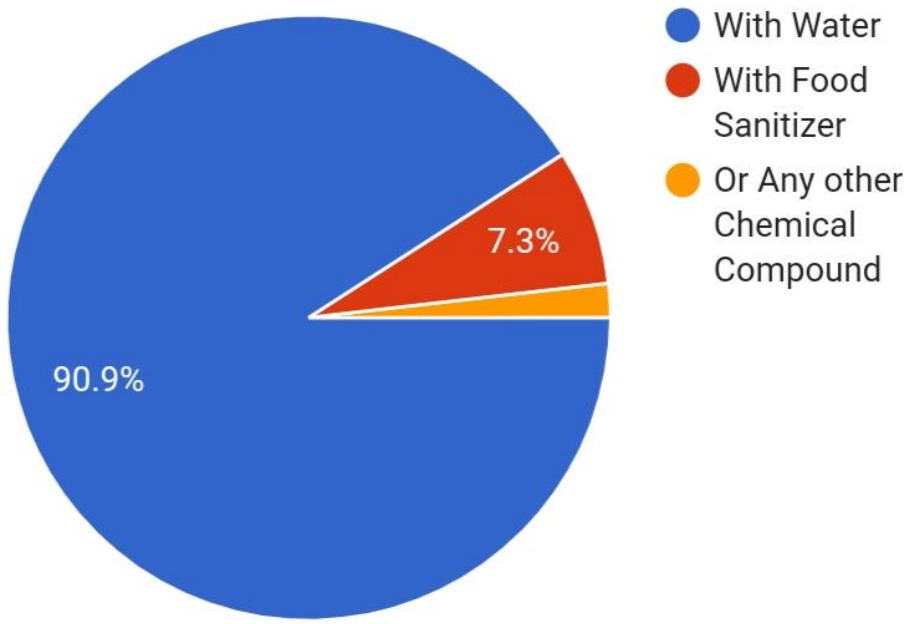
Out of the total 55 response, 85.5% people are very much concerned about the importance of proper food sanitation whereas 10.9% have responded as average concern and 3% are not much concerned.

2. How often do you eat fresh vegetables and fruits coming right from the market?



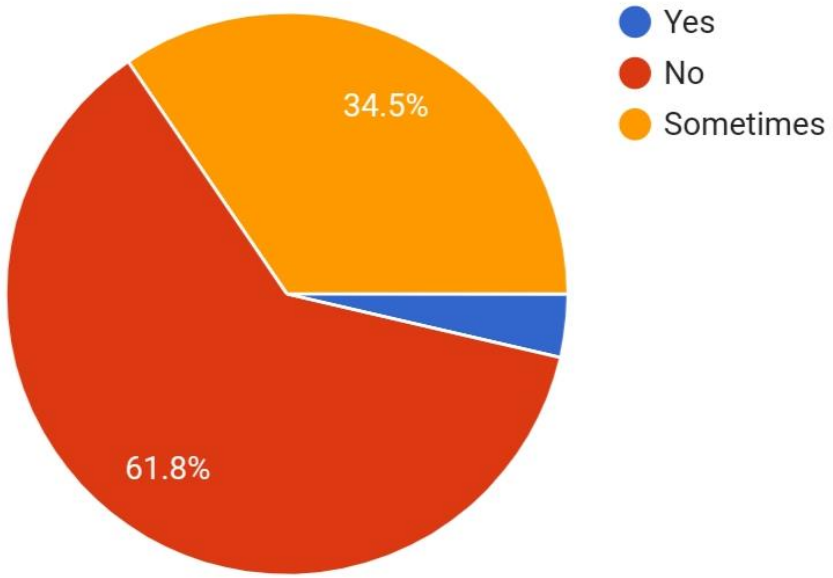
Out of 55 responses ,
47.3% people eat fresh vegetables and fruits right from the market everyday whereas 38.3% thrice a week and 14.7% on weekly basis.

3. How do you prefer cleaning these vegetables and fruits?



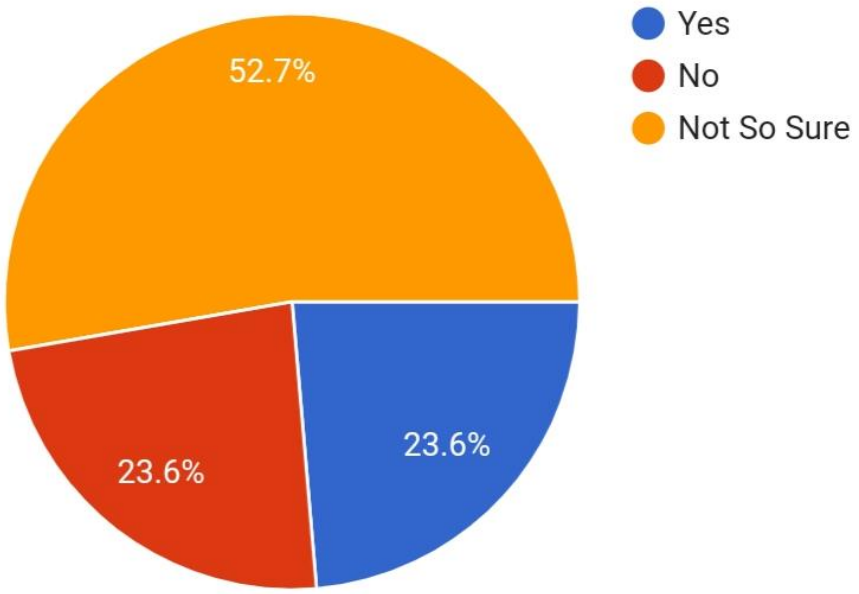
Out of the total 55 response, 90.9% people prefer cleaning vegetables and fruits using water whereas 7.3% with sanitizer and 1.7% people prefer cleaning with some other chemical compound.

4. Do you prefer frozen vegetables and fruits over fresh vegetable and fruits ?



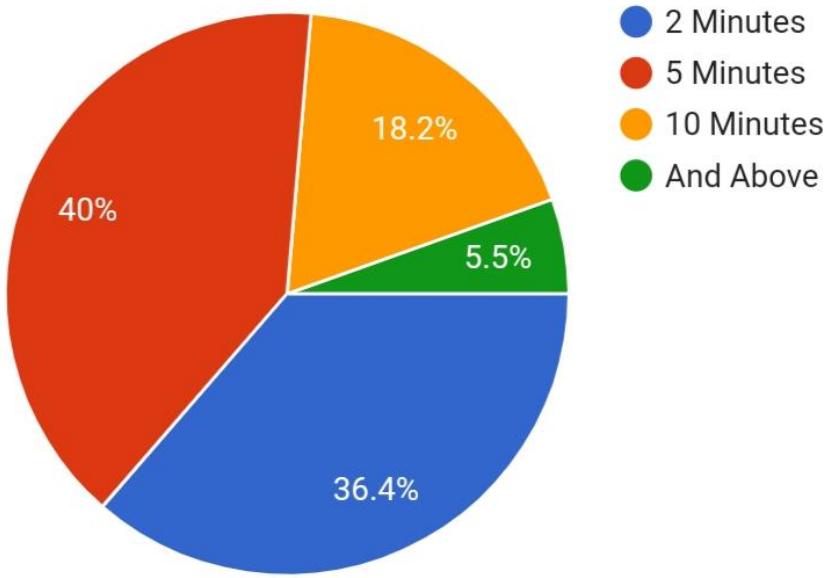
Out of 55 responses 61.8% people preferred fresh vegetables and fruits over frozen vegetables and fruits whereas 34.5% preferred sometimes frozen over fresh and 3% prefer frozen vegetables and fruits.

5. Do you feel satisfied with the hygiene of frozen fruits and vegetables? Are you sure that they must had gone through proper sanitation processing?



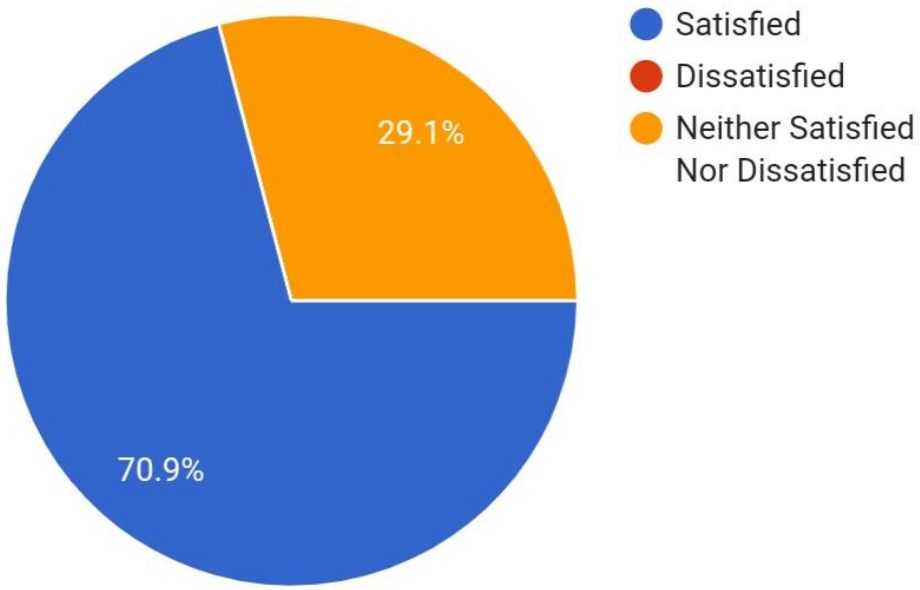
Out of 55 Reponses,
52.7% says that they are not sure about the hygiene of frozen fruits and vegetables and aren't sure that they must had gone through the proper sanitation process whereas 23.6% says YES and 23.6%says NO about the same.

6. How much time do you invest in cleaning vegetables and fruits?



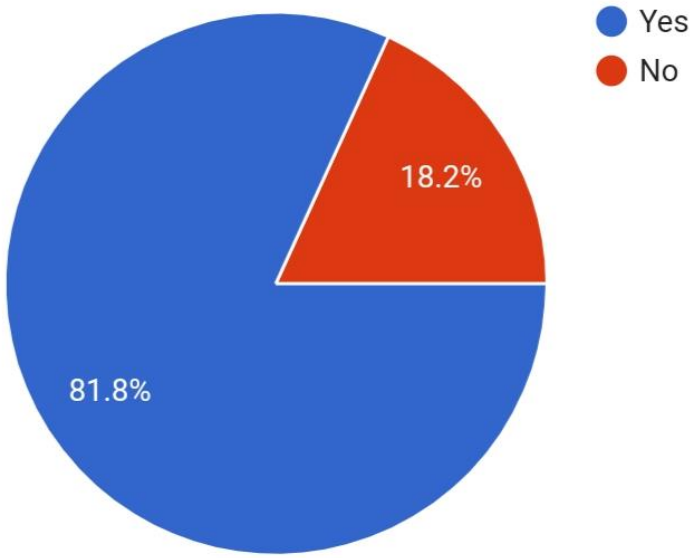
Out of 55 responses, 40% invest 5 mins in cleaning fruits and vegetables whereas 36.4% invests 2mins, 18.2% says10 mins and 5.5% answered above the all.

7. After cleaning vegetables and foods by your own hands are you satisfied with the end result?



Out of 55 responses 70.9% are satisfied cleaning vegetables and fruits with their own hands whereas 29.1% are neither satisfied nor dissatisfied.

8. Have you taken any extra precaution regarding vegetables and fruits after COVID 19 outbreak?

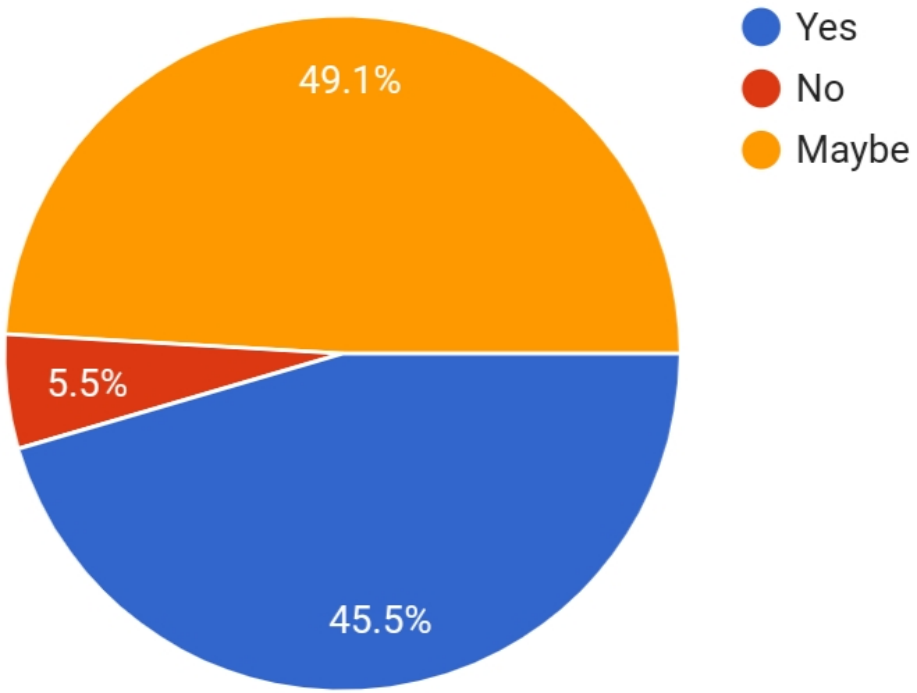


Out of 55 responses 81.8% answered that they had taken an extra precaution for fruits and veges after COVID - 19 outbreak whereas 18.2% says NO

9. If Yes, then what?

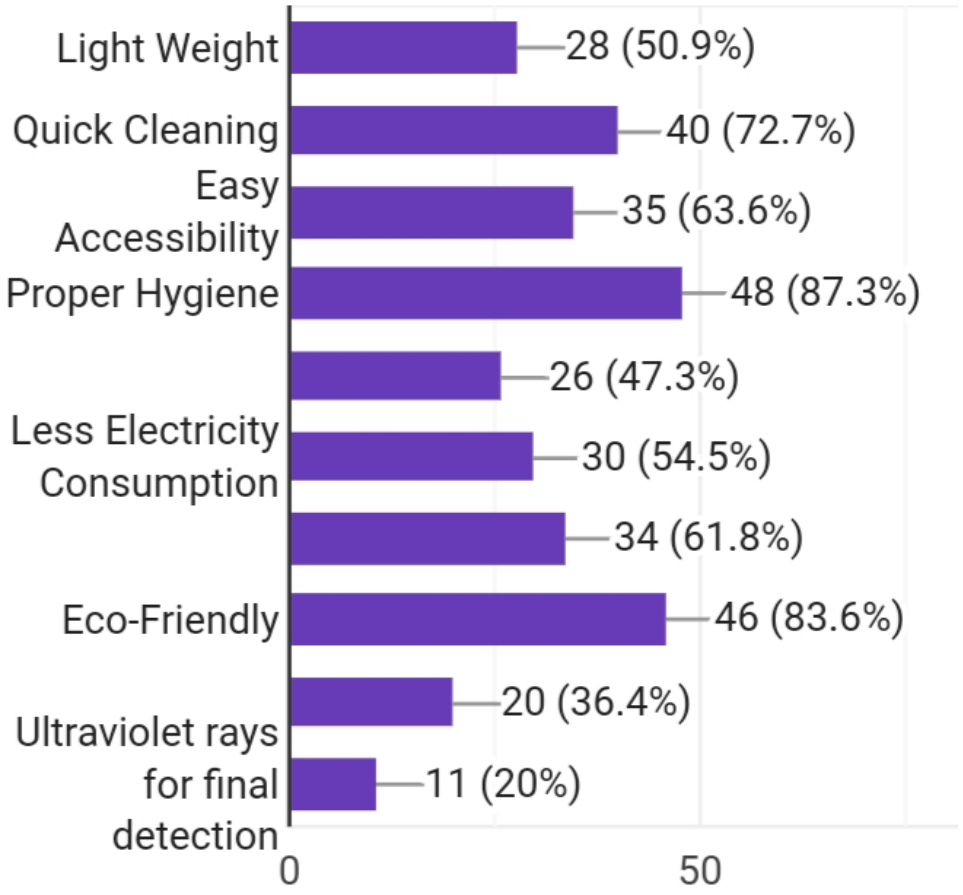
Majority of the people responded conscious cleaning was the step whereas many has numerous suggestions about their extra precaution after COVID - 19 outbreak.

10. Would you ever prefer a handy mechanism for solving this daily basis problem?



Out of 55 responses 49.1% says maybe they will prefer a handy mechanism for solving such daily basis issue whereas 45.5% says YES that they would like to prefer and 5.5% responded as No .

11. Select the following features that you would like to have in that mechanism?



Out of 55 responses.

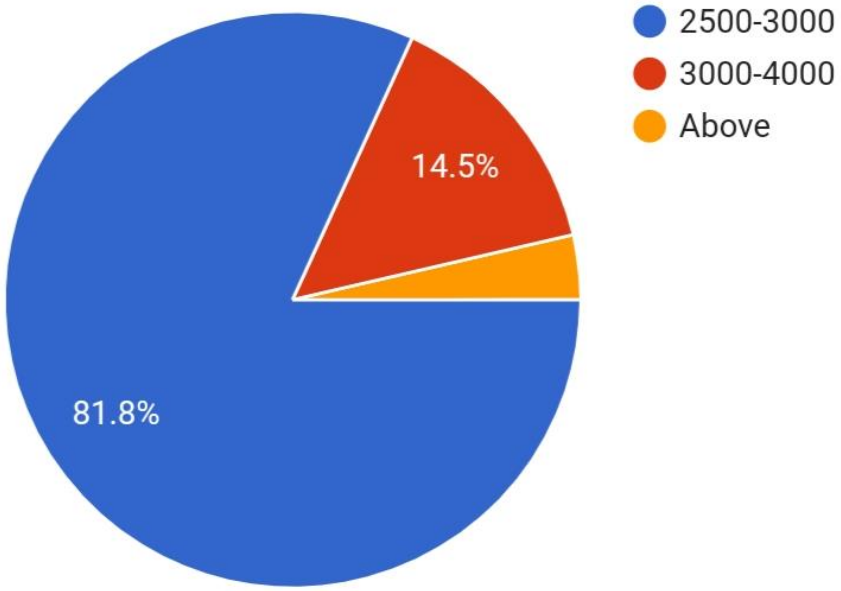
50.9% says they want light weight,
72.7% says they want quick cleaning,
63.6% answered easy accessibility ,
87.3% requires proper hygiene,
54.5% wants less electricity consumptions
61.8% says shouldn't be more expensive,
83.6% answers that they want a eco friendly product
36.4% wants ultraviolet rays for final detection.

12. If any other feature you want to add do comment below?

No
Bigger size
No....
Could have an automated mechanism to use the sanitation resources like water, etc, as per the quantity of the vegetables/ fruits.
Compact, easily portable
Portable
Budget free so that even a poor person can use it

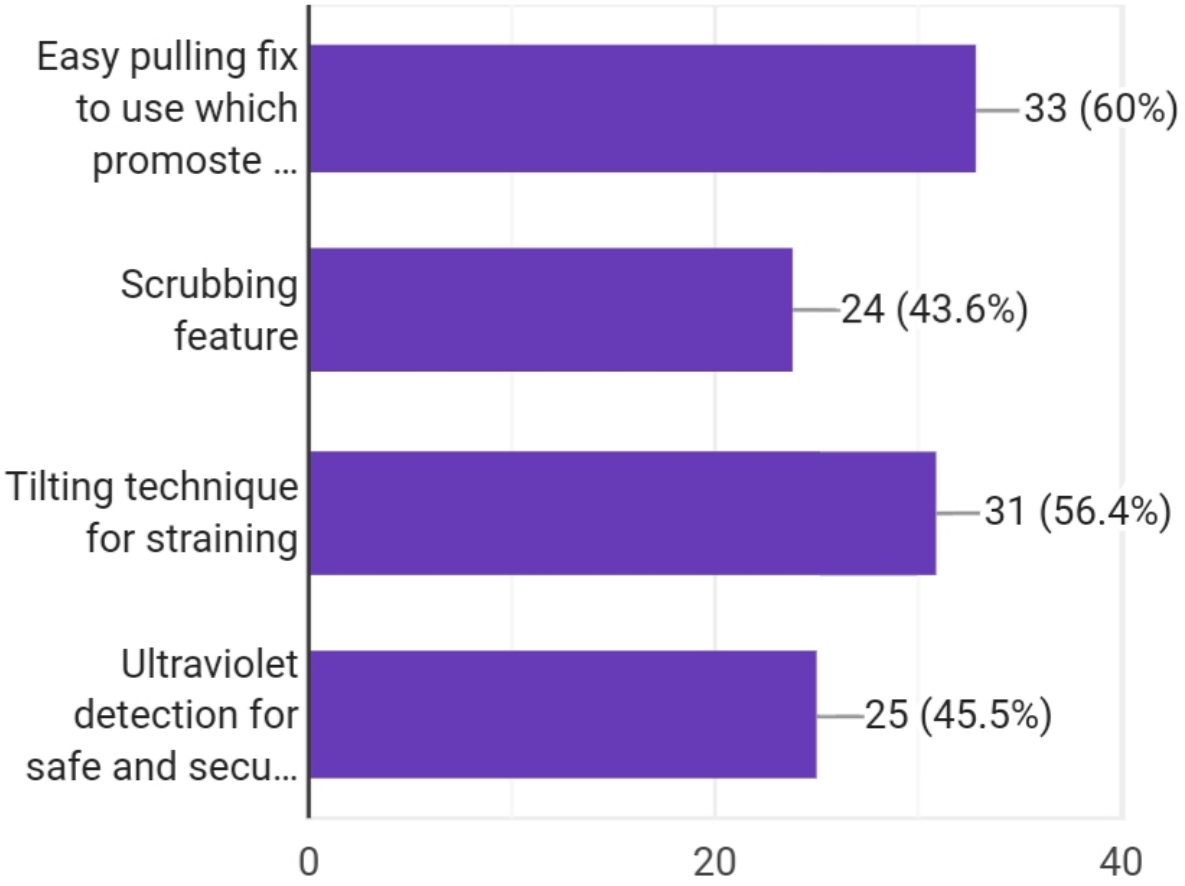
Out of 55 responses majority said they want the product to be portable whereas other had commented numerous suggestions.

13. At what price would you like to buy the new handy mechanism ?

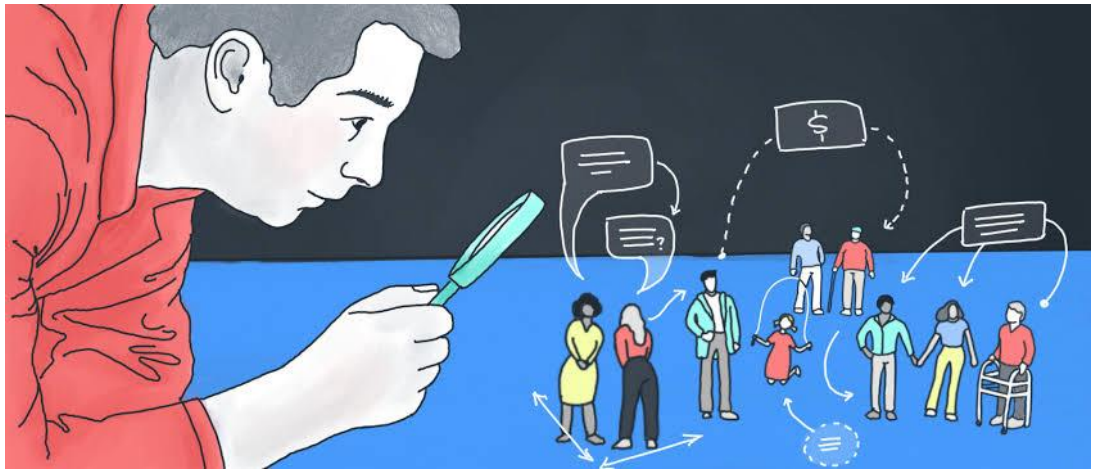


Out of 55 responses, 81.8% people want the price of the handy mechanism to fall between the range of 2500-3000 whereas 14.5% people prefer the price range between 3000-4000 and 1.2% wants the range to be above the all.

14. Which existing mechanism feature would you like to have in our new installment?



Out of 55 responses,
60% answered that they want the easy pulling existing mechanism.in the new product where as 43.6% says that they want the scrubbing feature, 56.4% wants to the tilting technique of straining and 45.5% wants the ultraviolet rays technique for final detection.



DETAILED RESEARCH

UNDERSTANDING THE IMPORTANCE OF FOOD SANITATION

WHAT IS SANITISATION?

Equipment's or machines that helps to keep some object or surroundings clean.

- Sanitisers are substances capable of destroying microorganisms including those bacteria that cause food poisoning and other diseases.

Sanitising is usually achieved using heat, water and chemicals.

Protecting food from the risk of contamination, harmful bacteria's, viruses and other foreign harmful bodies.

THE DETAILED STUDY OF THE DISINFECTIVE FEATURES IS DISCUSSED BELOW?

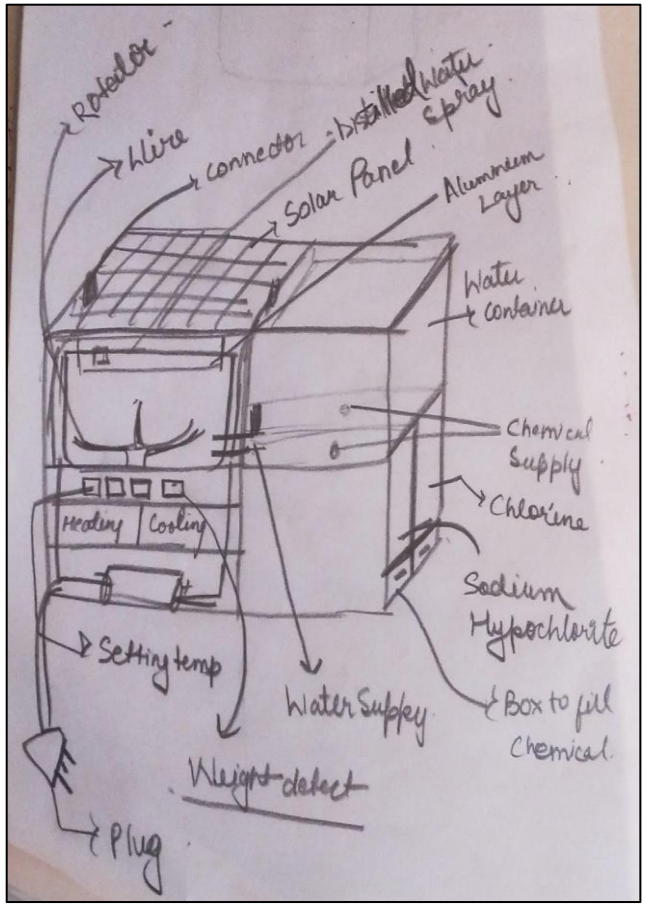
- **O3 (OZONE PURIFYER):**
- The Ozone purification technology removes the chemicals and pesticides from fruits and vegetables while retaining its nutritional value.
- The high voltage electricity generates ozone to kill harmful bacteria, germs, fungus and other pathogens.
- Keeps meat and seafood fresh and clean by removing the odour from them.
- The Ozoniser restores flavor and taste to the food and extends the food life.
- It offers a very simple and effective way to purify the foods we consume every day ranging from cereals, meats to fruits and vegetables.
- This ozonated water breaks down toxic material from vegetables and fruits, freeing them from all the dirt and pesticides.

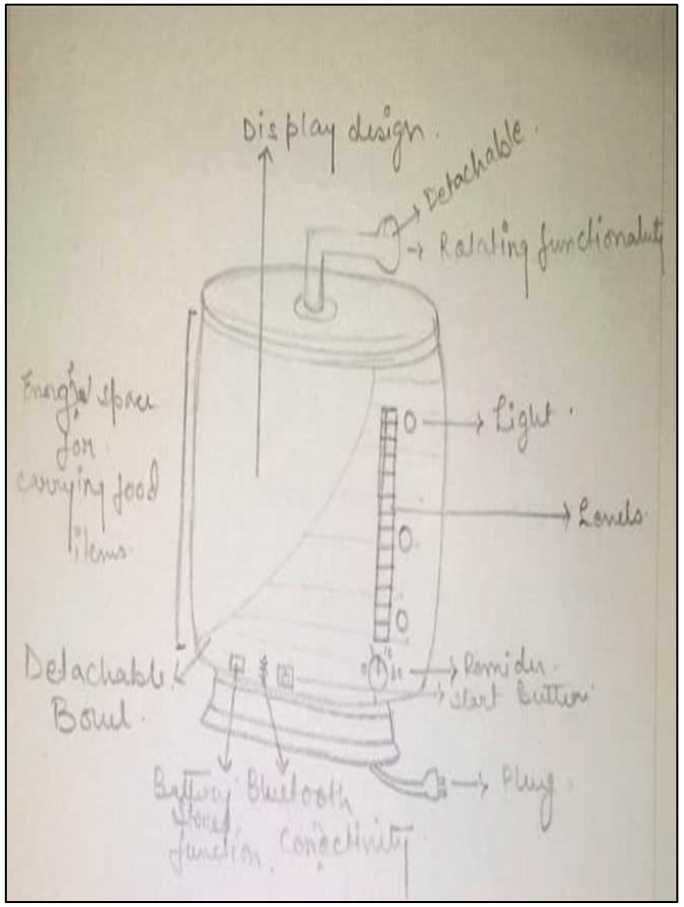
UTRA SONIC SOUND WAVES:

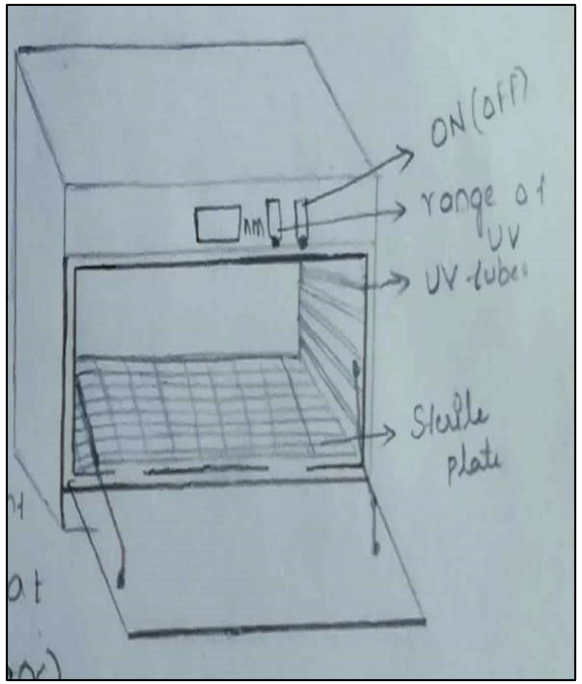
- Ultrasonic sound waves breaks down organic matter. It creates fifty thousand vibrations per second to remove dirt and bacteria from your produce.
- Hence, your fruits and veggies will be cleaner than you can ever imagine. It microscopically cleans veggies and fruits.
- Being highly efficient, it uses forty times less water as compared to conventional washers, and much less power too.
- This feature does not create any noise.

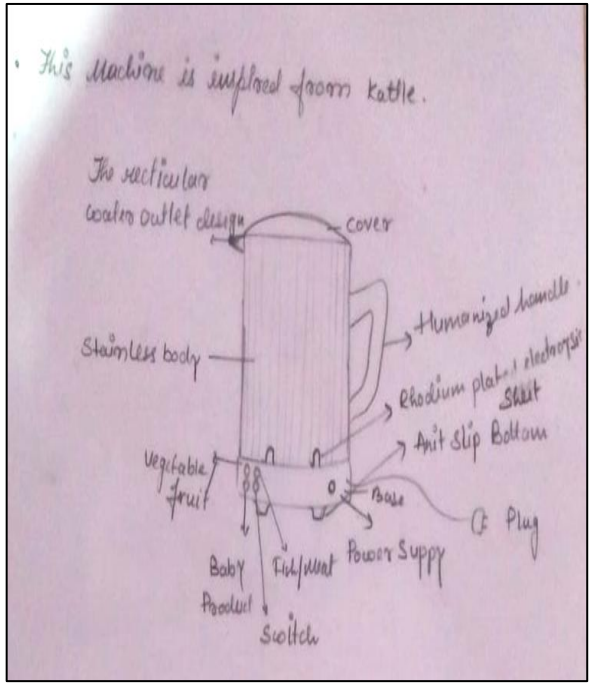
GENERATE IDEAS

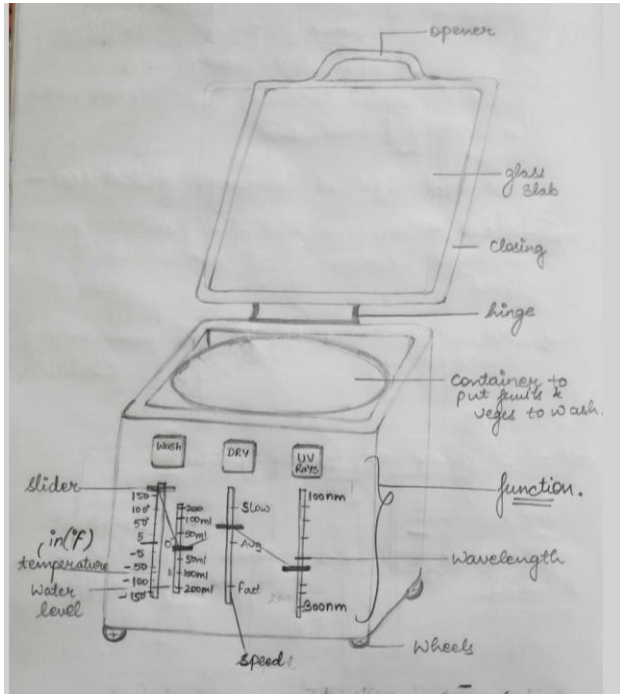
Following are the different possible ideas generated:

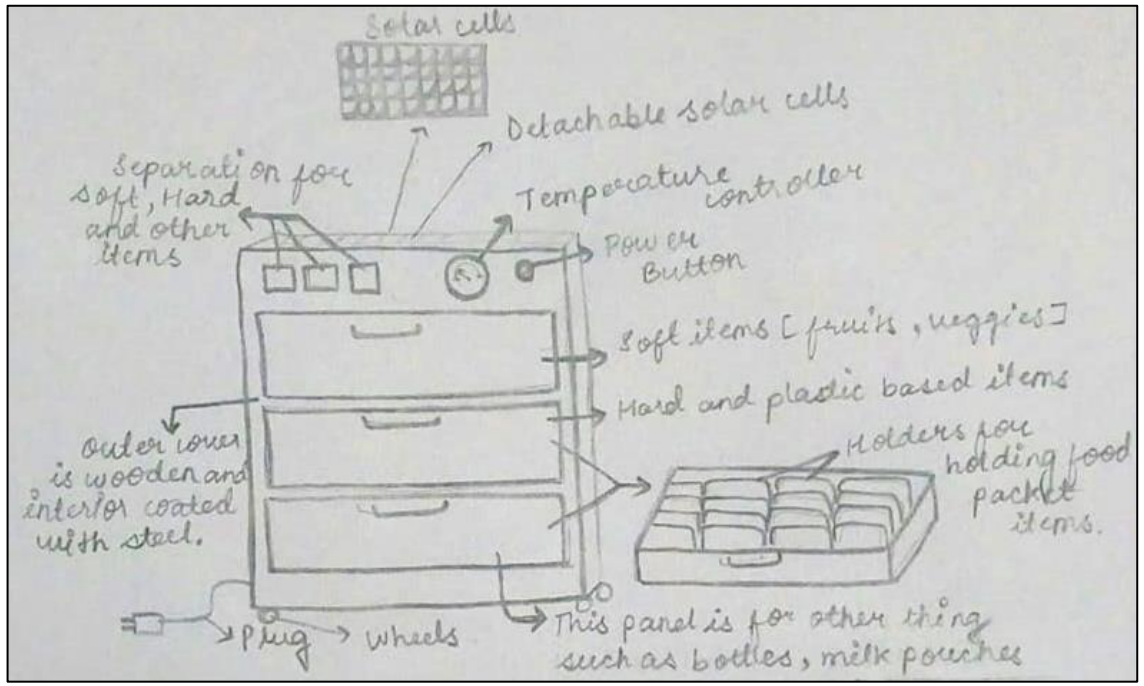


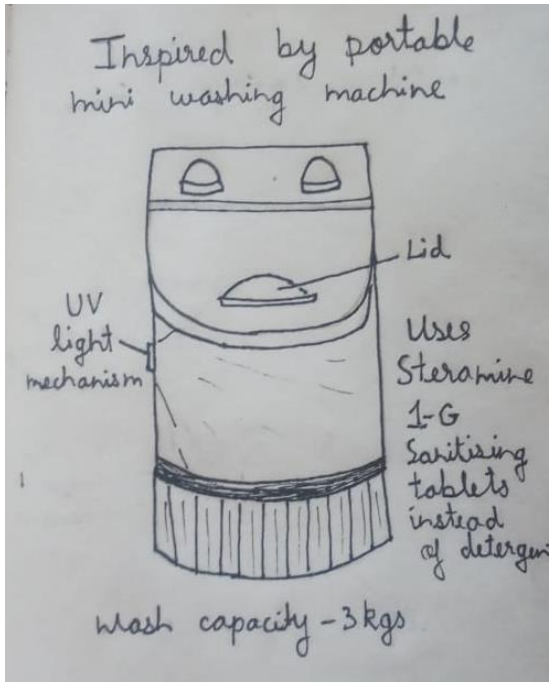



ON(off)
range of UV
UV tubes
Sterile plate


This machine is inspired from kettle.
The rectangular water outlet design
cover
Humanized handle
Stainless body
Rhodium plated electronics sheet
Anti slip Bottom
Vegitable fruit
Base
Plug
Baby Product
Fish/meat
Power Supply
Switch


opener
glass slab
closing
hinge
container to put fruits & veges to wash.
Wash
DRY
UV Rays
Slider
function.
(in(°F)
temperature
Water level
Slow
Avg
Fast
100nm
wavelength
Speed
Wheels


Solar cells
Detachable solar cells
Separation for soft, Hard and other items
Temperature controller
Power Button
Soft items [fruits, veggies]
Hard and plastic based items
Outer cover is wooden and interior coated with steel.
Holders for holding food packet items.
Plug
Wheels
This panel is for other thing such as bottles, milk pouches


Inspired by portable mini washing machine
Lid
UV light mechanism
Uses Steramine 1-G Sanitising tablets instead of detergent
Wash capacity - 3kgs

CRITERIA’S AND SPECIFIC CONSTRAINTS

- Our objective is to design a handful, easily accessible mechanism which not only purifies food elements but also has a further usage.
- To overcome the conservation of water, time and effort.
- It will make people feel satisfied about the sanitation of fruits, veggies, lentils etc. which comes right from the market.
- It is to provide an easy accessible product which solves their concern and their daily basis problem and save time.
- The mechanism will not only save the time of cleaning but will have a further use as the huge storage bowl will be further utilised for storing things under refrigerator, will have a small attachment in the middle of the container which can be attached to the chopping and mixing tool and lastly it will be a silicon container with a plastic covering which can also be used for baking purposes.
- As our final product will have ozoniser i.e. O3 technology feature which mixes well with water and this ozonated water will further kill toxic compounds and will retain the nutritional value .
- The work of sanitizing will be done within 10-20 minutes according to its weight.

ALTERNATIVE POSSIBILITIES OF THE PRODUCT

The product bowl will have alternative three uses are as follows:

1. It can be used for chopping, mixing etc i.e. the bowl will have a small attachment hook in the centre so that the extra tool can be attached.
2. The bowl will have a plastic outer covering and inner covering will be of silicon which will be utilised for baking purposes.
3. The lid of the bowl will have a detachable rotating system which helps the chopping function to work. Later this rotating handle can be detached from the lid and further can store the food in that bowl itself.

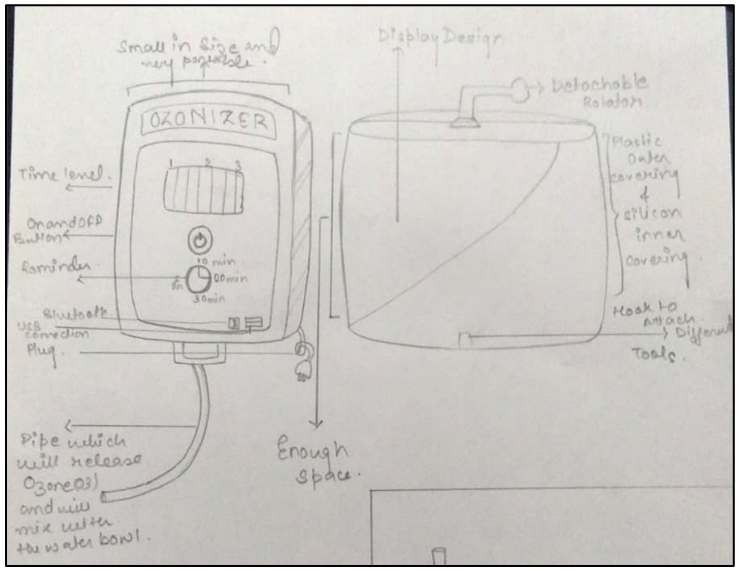
APPROCH SELECTED

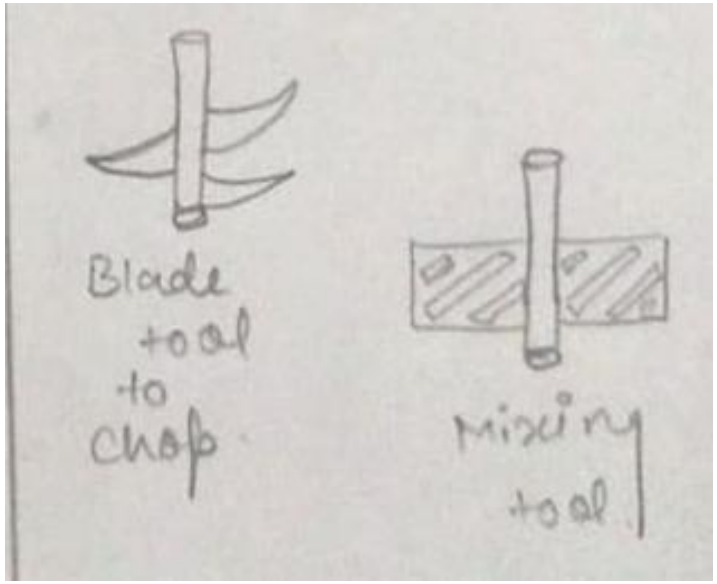
Following are the final approach or features selected:

- Portable
- Lightweight
- Compact
- Spacious
- Different alternative usage
- The ozoniser machine is portable enough
- Easily accessible
- Complimentary tool for chopping and mixing
- Solves the problem of hygiene.

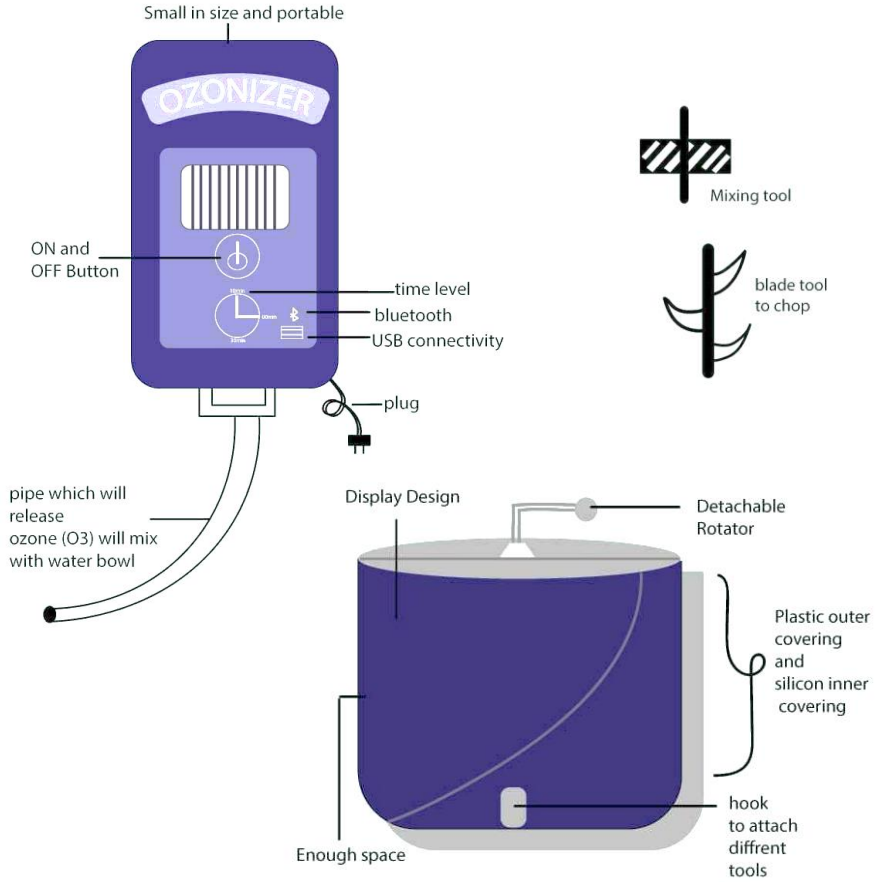
DESIGN PROPOSAL

- As our final product will have ozoniser i.e. O3 technology feature which mixes well with water and this ozonated water will further kill toxic compounds and will retain the nutritional value .
- The device will probably weigh 4.85 lbs and will be very compacting, lightweight and easily portable too.
- Will preserve freshness, will retain nutritional value and will remove odour from the seafood's and meat too.
- The device will probably use 10 watts of power and is eco friendly.
- Plastic vessel will be big enough to carry a good amount of weight and will also be good enough for further usage.
- It will be effective and energy efficient device.





DIGITAL SKETCH OF THE DEVICE



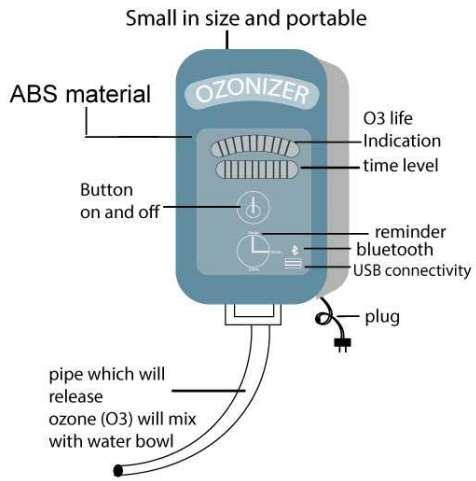
DESIGN SPECIFICATIONS

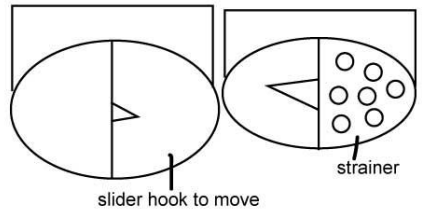
- The device is very much portable and easy to use. For better understanding a small booklet specifying the features, usage and precautionary steps will be mentioned to avoid disputes and misunderstanding.
- The device is compact, lightweight, and safe for people and environment as O3 feature has been approved by the food nutrition scientist.
- The pricing of the product will range between 3000-4000 as it has a spacious multi purpose vessel attached and according to the survey people responded that they will be comfortable with the above pricing as they wanted a USP feature.
- The device will weigh 4.85 lbs which also makes it effective and efficient too.
- The work of sanitizing the food will be done within 10-20 minutes.
- The modern sleek design of the vessel and device makes it look attractive and easily fits and enhance the modern kitchen.
- The vessel which acts as an USP for our product has multi usage which makes it different from the rivalry product.

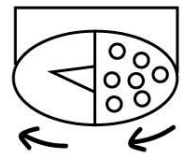
IMPROVED DESIGN

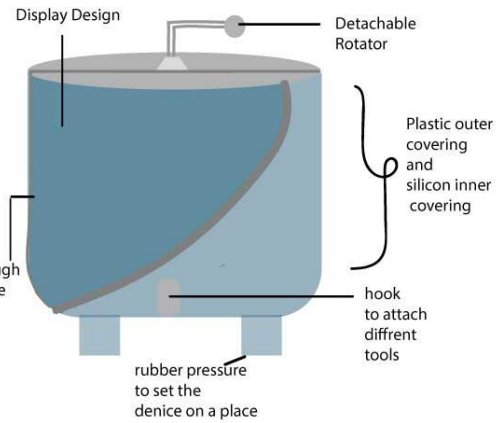
We had improvised our product are as follows:

- The material of the ozonizer device was earlier plastic but instead of that we improved it with a better material named ABS i.e. (Acrylonitrile Butadiene Styrene) is an opaque thermoplastic.
  - This material is better than plastic because id relatively cheaper, attractive and top performing thermoplastic with a wide variety of benefits and uses.
  - It is lightweight and suitable for a vast range of applications.
  - ABS has low heat and electricity conductivity that is especially helpful for products requiring electrical insulation protection. It also offers excellent impact resistance and can absorb shock effectively and reliably.
  - It has low melting point so it can be easily molded and this polymer is actually used for kitchen appliances.
- The device have been provided with an refilling indicator so that one can keep track of the refilling and can neglect any kind of issue as such.
- The vessel have been provided a new feature to make the straining process easier and simple. One can use the slider to move and strain the water itself from the vessel without investing much time while following the steps.

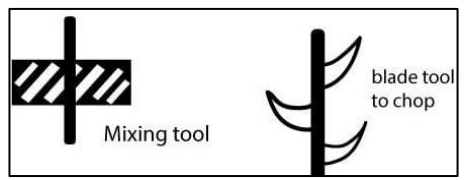


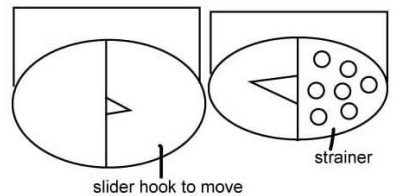


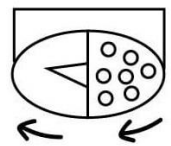


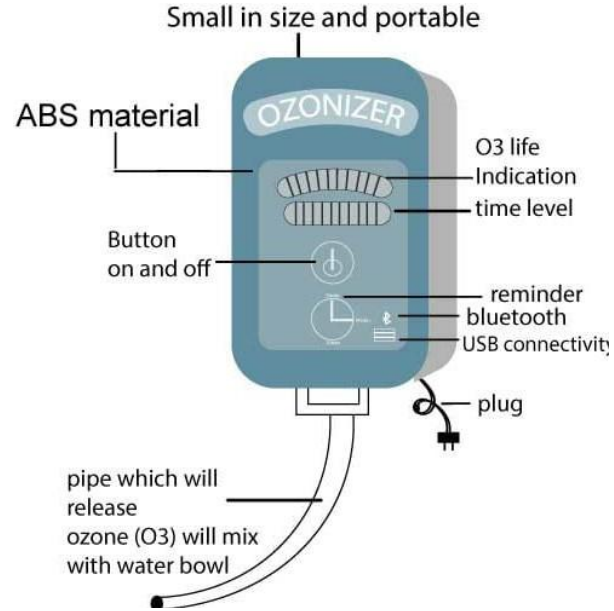


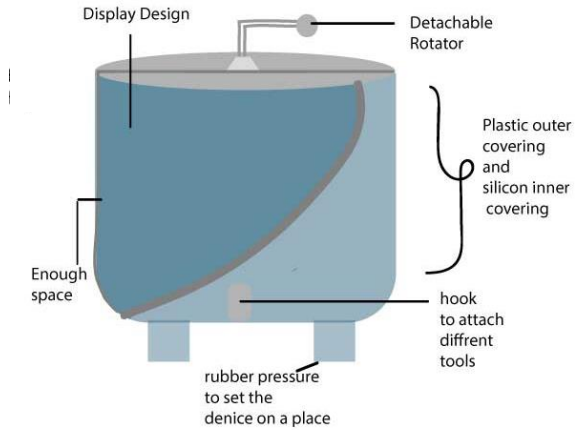
FOOD SANITIZATION MACHINE



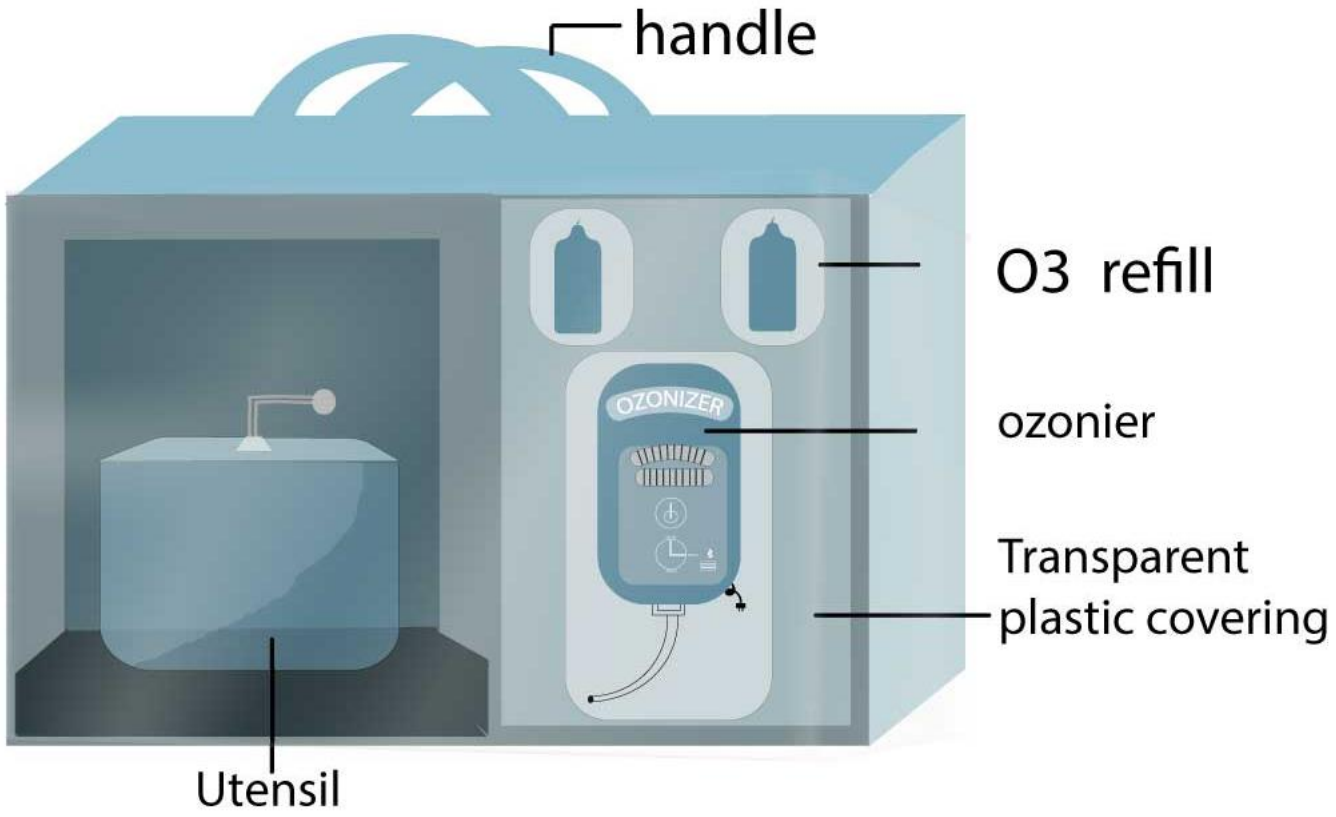








PACKAGING



FOOD
SANITIZATION
MACHINE

ADVERTISING MEDIUM

PAMPHLET

POSTER


PURE & CONVENIENT
OZONIZER
OZONE PURIFICATION
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easy to use
Healthy
Portable
multitasking vessel
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SOURCE OF INFORMATION

For preparing this project following website and other sources were referred.

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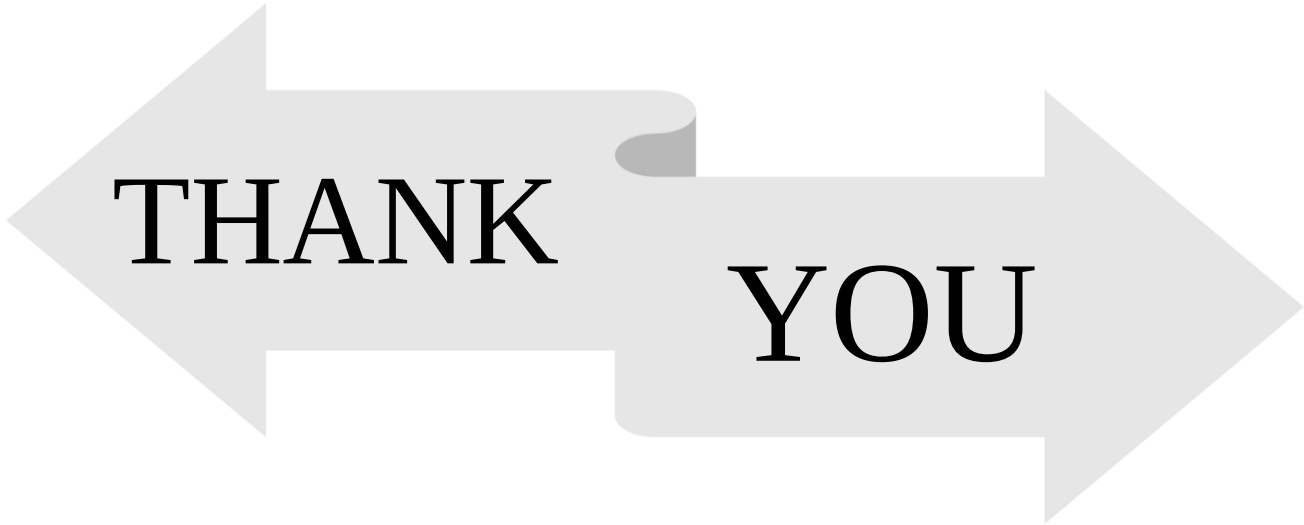
THANK
YOU