a packaging which makes fruit and vegetables last longer

a project
by
Paula Cosima Schwager

Supermarket of the Future

Design and Social Context
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Prof. Ineke Hans
K.M. Maciej Chmara

contents

food waste in germany and around the world

Everyday about a third of the food we produce worldwide is wasted. The food which lands in the trash could be used to feed three- bllion people. In Germany alone this amounts to a foodwaste of 18 million tons annually, of which 10 million tons could be prevented (WWF „Das große Wegschmeißen"). This foodwaste leads to 2,6 million hectars of land being cultivated without being used in Germany. Wasting food is therefore a huge loss of valuable resources like energy, water, and agricultural areas and in most cases avoidable with stricter laws, policies and raised awareness.

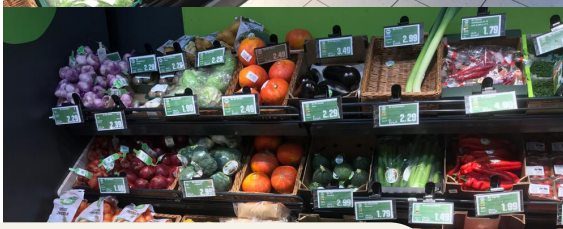

Nektarinen
Nektarinen

food waste in supermarkets

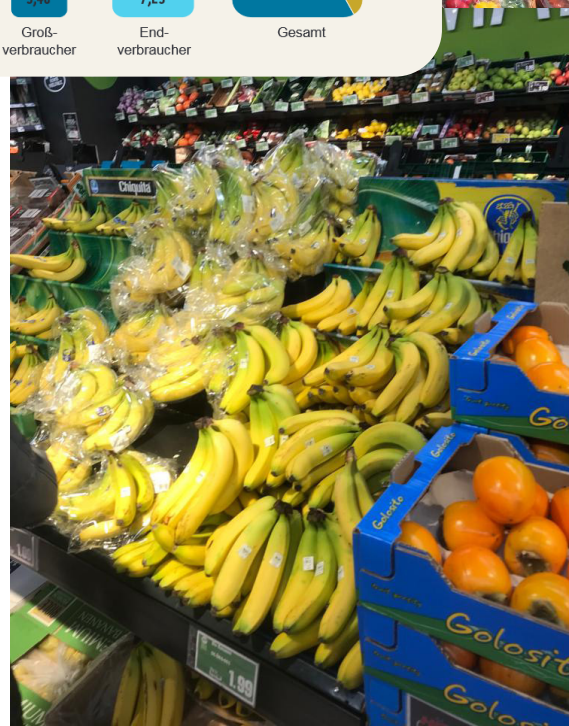
Even though private households are the place where the most food gets wasted, supermarkts and grocery retailers come second.Because of poor shelf managment, consumer habits and the abundance of groceries are huge amount gets thrown away before even making it to the end consumer.

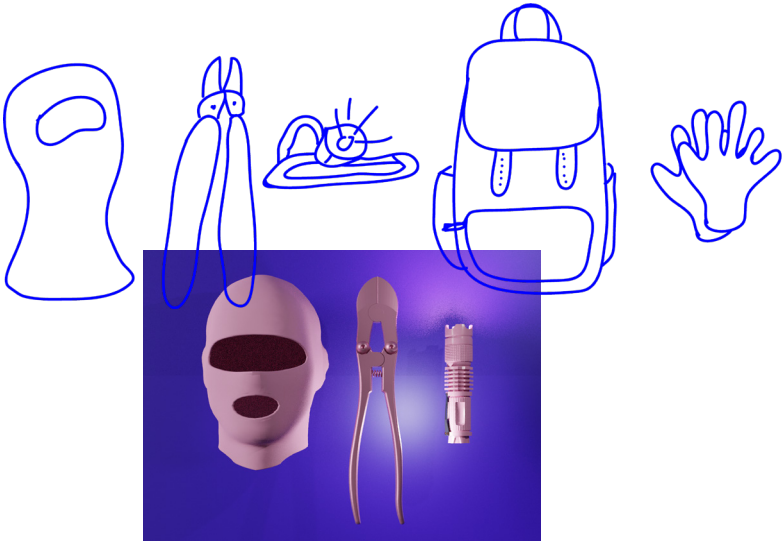
Especially fruit and vegetables are at a high risk to get wasted, because they don´t stay fresh for long. Only seven fruit and vegetables (bananas, apples, tomatoes, lettuc, sweet peppers, pears and grapes) account for about 50 % of supermarket foodwaste.

In my project I wanted to find a possible solution to reduce foodwaste in supermarket, with a focus on fruits and vegetables.



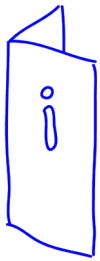

Tonnen
0,98
1,59
2,61
2,58
3,40
7,23
Ernte-verluste
Nachernte-verluste
Prozess-verluste
Verteilungs-verluste Groß- und Einzelhandel
Groß-verbraucher
End-verbraucher
Gesamt


Chiquita
Golosita

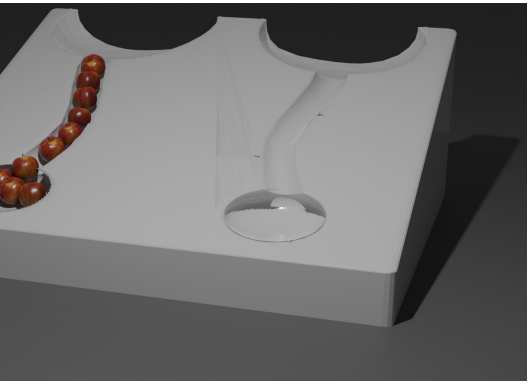


guerilla dumpster diving set

mirrors to create the illusion of abundance



a new aesthetic of scarcity



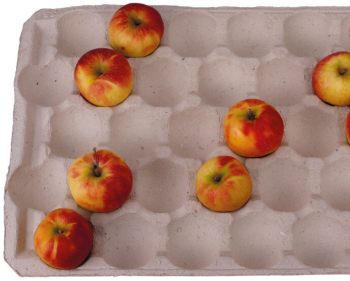
first in- first out slide for fuit and vegetables

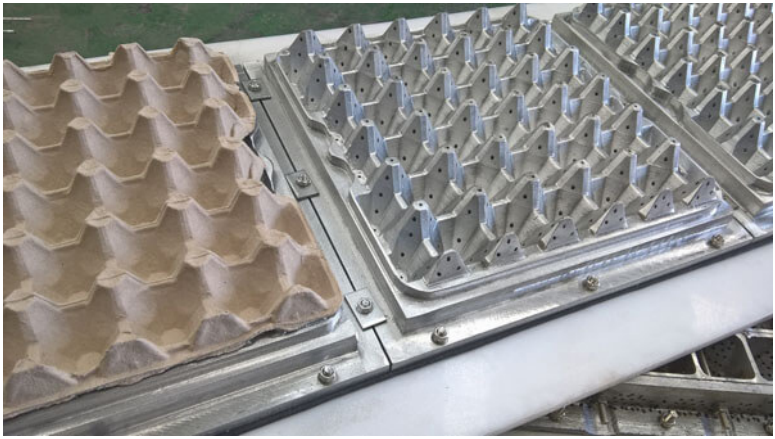
ethylene removing device for fruit crates

integrating a mineral with ethylene adsorbing properties into fruit packaging

Supermarkets display fruit and vegetables often in boxes made out of moulded pulp. If the boxes themselves have properties which makes fresh produce last longer, a lot of food waste could be prevented. This is the idea of „immerfrisch". A mineral with ethylene removing properties, in this case zeolite, is integrated into the material of the packaging and therefore the fruit stored in it will last longer.

When made industrially the fruit trays are made by pulp moulding. Paper waste and water get mixed and with the help of vacuum forming new forms get made. Zeolite can be added to the mixture of water and cellulose and give the material new, ethylene adsorbing properties.





pulp moulding process

industrially made moulded pulp forms

zeolith

zeolites

Fruit and Vegetables emit the gas ethylene in the ripening process. Ethylene is responsible for making the fruit ripe and ready to eat. Some fruit emit more ethylene like apples. Other fruit emit less, like berries, but all fruit and vegetables are affected by it. That´s why apples shouldn´t be stored next to bananas because they will speed up the ripening process of the bananas.

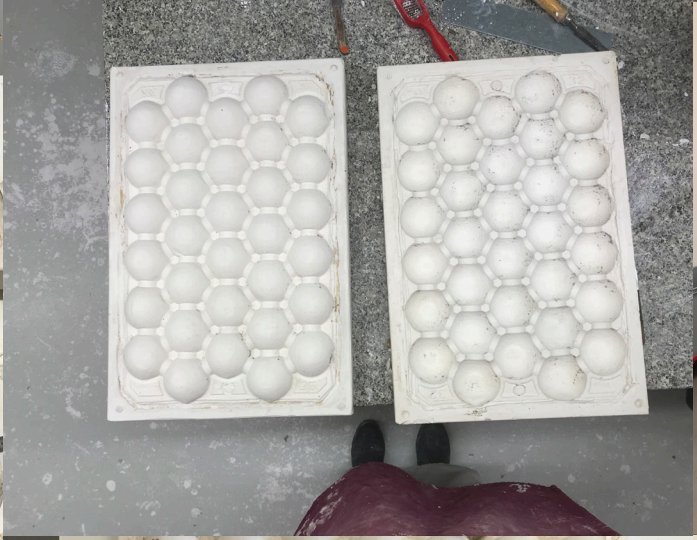
Zeolite is mineral which has gas adsorbing properties. Zeolites can occur naturally, bur also be manufacterd artificially on a large scale. It can bind ethylene and therefore slow down the ripening process of fruits and vegetables.

concept

ripening process of two bananas over the course of 10 days,one in contact with zeolite , one without.

first tries with the final material (paper,water& zeolite)

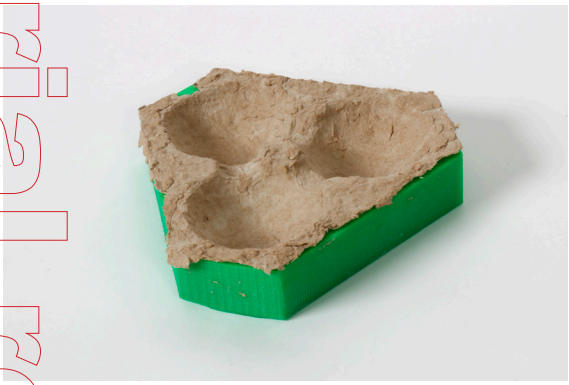
process

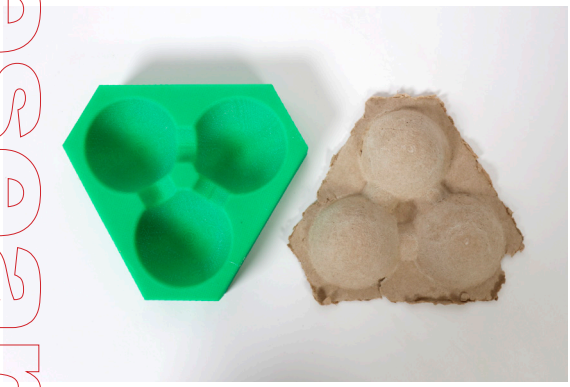


process

material research & prototypes

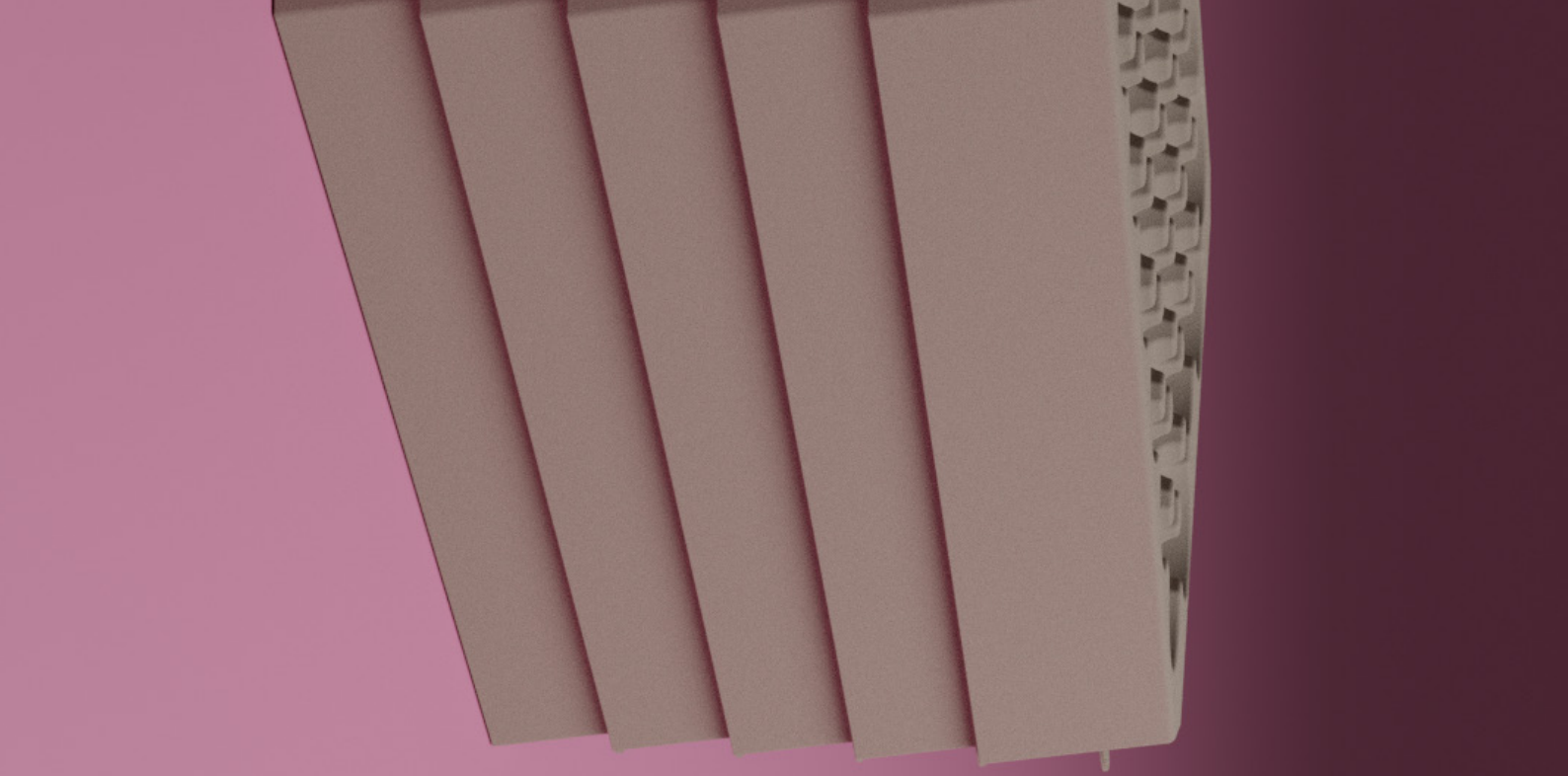


3-d printed form for diy paper-moulding.
Only the infill was printed so the form is permeable to water. Wih the help of a industrial vacuum cleaner the prototype was made.



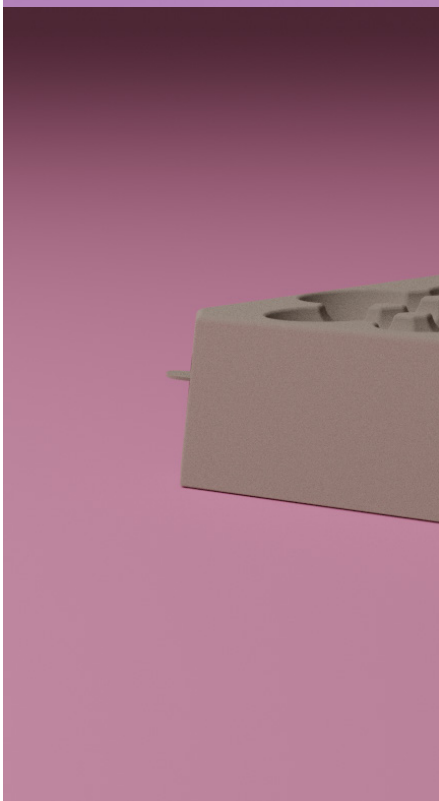
Material prototype made out of paper, cellulose and zeolite.

material research & prototypes



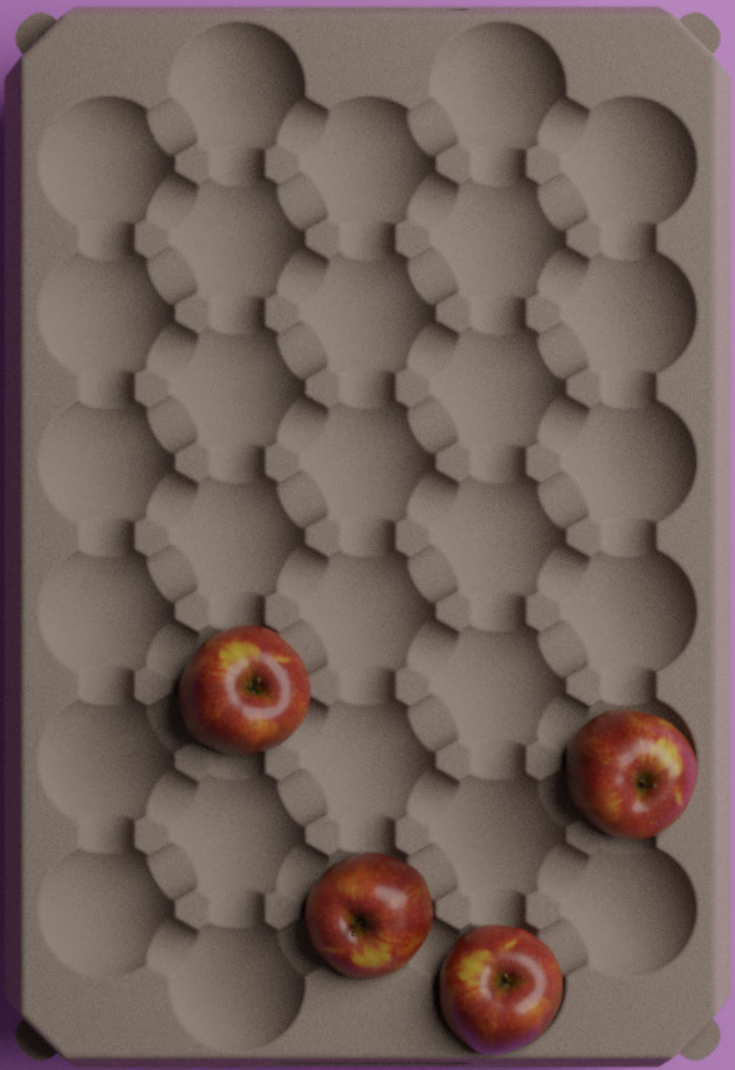
final design

The final boxes are stackable to create a closed room where the maximum amount of ethylene can get adsorbed. For transportation the boxes can be pushed flat.




final design

final design



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Contact:

p.schwager@udk-berlin.de
017635424468