URBAN FARMING INCUBATOR

– Guide to Urban Farming in Shanghai & Berlin

CITYMAKERS
URBAN FARMING
INCUBATOR

INTRODUCTION

By Cecilia Antoni

Dear friends of urban gardening,

Urban gardening is more than just harvesting your own delicious tomatoes: it helps strengthen communities, bring people together, and combat loneliness. It teaches natural processes and refines sensory perceptions. It provides the benefits of exercise – especially for the back and arms – and burns calories. It provides the freshest food, is free of chemicals and pollution when protected and with a location within the city, means little to no CO^2 emissions. It provides a green oasis within concrete cities. Some clinics even offer gardening lessons because patients need fewer prescriptions for pain, depression, hypertension, and diabetes. In short: Gardening is good for you!

But how do you start your own edible urban gardening space in a big city like Shanghai or Berlin? With tips and experiences from our hands-on experts from China and Germany, this guide book is here to help you build up new community urban farming spaces or get connected to already existing ones. We collected over 30 case studies in China and Germany with different growing systems – rooftop, raised beds, aquaponic, hydroponic – to give you an overview of the ongoing and expanding urban farming scene. We created a platform of Sino-German knowledge exchange, compiled a detailed list with resources, and set up our own demonstration garden places in Shanghai and Berlin. In Shanghai, we built a school rooftop garden prototype on a primary school with the focus on education. The children now have an exciting learning field to observe nature, see vegetables grow and taste them. In Berlin, our demo space is part of an intercultural community garden which was a former school garden but is now run by its neighbours. We built a special raised bed box as part of the "Flächenbuffet" of the Weltacker. Here we planted all the ingredients for one portion of the popular Chinese dish "Yu Xiang Qie Zi" (Szechuan eggplant) to show how much land use is necessary for one meal. To stay with the tasty part of gardening, we also give you tips on how to grow and prepare traditional Chinese and German vegetables.

Who we are?

We are an interdisciplinary team of Sino-German Citymakers – within the CITYMAKERS China – Germany programme, funded by the Robert Bosch Stiftung – united by a passion for urban farming. Our vision is to build garden partnerships between Shanghai and Berlin with parallel events and exchange on "Intercultural Education in the Garden".

中 CITYMAKERS
| 城市 CHINA
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This is us:

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Social entrepreneur, founder of Institute of Sustainable Environment and Energy, owner of Ecoland Club Farm – the first "Schrebergarten" in China

WU Yi Meng | Project Leader Germany
Designer and artist, founder of Studio Wu 無 (Berlin), artistic director of CITYMAKERS China – Germany, passionate urban gardener

Claire (Kelai) Diebel
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GONG Wenye
Landscape architect degree from TU Berlin, urbanist; advocate for community urban gardening

Dr. CHENG Yi Heng
Adjunct Professor at Tongji University at the College of Design and Innovation

Dr. Eva Sternfeld
Senior consultant on Chinese urban and rural development, environmental protection and food safety, former professor at FU Berlin (Sinology)

Cecilia Antoni
Cultural manager, author, filmmaker, expert on cooking with pulses (beanbeat.de)

Maxim Paul
Horticulture student at Humboldt University in Berlin and practical advisor

A STEP BY STEP GUIDE TO BUILDING A ROOFTOP GARDEN

Our demonstration garden in Shanghai

Text by Dr. PAN Tao , Photography (left) by QIAN Chen

Why build a rooftop garden on a school?

- Schools need a place where kids can learn about nature
- Kids need to know where their food comes from
- Parents are eager to participate in interactive activities with the school community
- The City is so crowded that only the rooftop is available for activities that are close to nature

Who is who?

Shanghai ShiXi Public Primary School

The ShiXi School is located near the Jin'An temple, in the heart of downtown Shanghai. Ms. Cai (the school principal) and her team have a vision for creating a green school for kids. They have three large rooftops and are looking for greening solutions. They are planning on working together with NGOs to create a rooftop garden, mainly for educational purposes. Some experiments with vegetable planting have already been carried out on one of the rooftops and a nice wooden floor was laid down last year.

Urban Farming Incubator (UFI)

The Urban Farming Incubator project is sponsored by the German Robert Bosch Stiftung and is looking for scalable solution for urban farming under the framework of the Citymakers program.

WeGarden

WeGarden is a Shanghai-based social enterprise dedicated to the promotion of community gardening. It did an experimental trial with the ShiXi School last summer for vegetable planting. The activity was sponsored as a part of a company CSR program. They want to work together with UFI to create a scalable module garden.

The three parties are eager to work together to build a school rooftop garden.

Let's get started!

1. Prepare the planting box

Cut the planks of wood into 1 m long pieces. Each standard piece of wood should be 9 cm wide, 1 m long and 1.5 cm thick. Put 3 planks of wood together on each side and use metal and screws to secure the wooden frame.
Measure the two diagonals of the wooden frame to make sure it is a square. If it is not, adjust the frame to make it squared. To complete the box, nail the pieces of wood to the frame. The exact dimensions are 27 cm high, 100 cm long on each side.

2. Place the planting box on the rooftop and prepare the soil

Each wooden box weighs approximately 30 kg so carrying it to the rooftop will be a two person job. Once they have been brought to the roof, place the two boxes side by side. Before putting organic soil into the boxes, add a layer of geotextile to prevent soil leakage. This time, we purchased organic soil from taobao.com but in the future we can use organic compost collected by the school itself.

3. Plant vegetables and water them

Once the soil is ready, you can start to plant vegetables in the boxes! Since it was winter time when we began growing, we were only able to plant three different types of baby plants: celery, chive and Shanghai pak choi. Of course after planting, we need to water our plants (even on rainy days).

4. Build a mini-greenhouse for the vegetables

There are two reasons for installing greenhouses. The first reason is to keep plants warm in the winter. The second reason is to keep air and precipitation pollution out of the soil and away from the vegetables.
You can use use PPR water pipes to create the frame of the greenhouse. This type of pipe is widely used in home improvement and can therefore be easily found in any hardware store. The frame needs to be attached to the wooden box.

5. The last step will be installing a plastic film to form the greenhouse!

All the fixture materials are those typically used in the agricultural greenhouses in Shanghai.

Once you have finished, your vegetable garden can look something like this.

CHECKLIST FOR PLANNING YOUR OWN URBAN GARDENING SPOT

With tips from our gardening expert, Dr. Pan Tao from Shanghai

Choosing the right location

Sun light/shade: Is there enough available for the kind of plants you are planning on planting?
Wind/pollution: If too windy or too close to polluted areas, make sure the plants are protected or use greenhouses.
Soil: Toxic due to pollution? Use raised beds.
Rooftop: The roof should be waterproof, strong enough for a person to walk on, and have a wall with a height of at least 1 m.

Building raised bed boxes (check out our construction plans on pages 18–19)

Wood: Pine is recommended because it lasts long (approx. 10 years) and doesn't need a lot of extra care. Avoid composite wood.
Costs: Around 500 RMB (approx. 65 Euros)
Construction time: About 1 hour for two people
Transportation: Easy to disassemble by taking out the screws and nails.

The Soil

Good quality: The soil should be free of toxins and able to store water well.
Fertilizer: Add compost and plant legumes in rotation.

Planting (in a raised bed)

Choose the right plants: No plants with deep roots or plants that grow too high. Avoid thirsty plants and plants that dominate others.
Pay attention to the required vegetation period in your climate zone.
Seeds vs. baby plants: Baby plants usually have better chances of surviving.
Mark the plants with little name tags.
Protection against snails or diseases: Pan Tao uses spicy pepper water or garlic water (as a spray) and, if necessary, he installs an anti-insect UV light. In the summer, he also uses nets to protect his plants.

“CHILDREN LOVE CUTTING PLANTS WITH SECATEURS”

– We spoke with Caro of the garden blog “Hauptstadtgarten” about her gardening group at a primary school in Berlin-Friedrichshain.

You are a graphic designer, garden blogger and proud gardener. Can you tell us about your work with children in the school garden?

My own children are seven and nine years old and a beautiful garden was set up at their school a few years ago. A garden is quite a lot of work and the teachers were already busy with their teaching so a volunteer was needed for the afternoon gardening club. I was thrilled to work with children and for almost a year now, I have been organising a weekly gardening class.

There are eight kids participating, aged seven to ten. It’s a class of all girls at the moment. This was not intentional and I am hoping for some boy gardeners next season.

What kind of activities are offered in the garden?

We garden outside in the summer. We grow vegetables and flowers. Our aim is also to grow plants like fennel or poison ivy for bugs, caterpillars, bees, and butterflies. They are very important to have in modern cities to keep our ecosystem intact. In the garden, the kids learn how our food grows and for example, how long it takes for a tomato seed to become a plant, which eventually will provide us with a ripe tomato 6 months later.

In the fall, we built some raised beds, which we then filled with branches and fallen leaves from which bacteria and worms will make some great compost over the winter. Soon, we will be able to sow the first seeds in this new and powerful soil.

During the winter, I offer a variety of craft projects with natural materials: we harvested flower seeds, made bird food, rolled seed bombs, painted flowers and grew microgreens. Soon we will upcycle empty milk cartons into self-watering planters and sow the first vegetables.

What are the challenges of working with children of different ages in a group?

It’s totally fun to work with the kids but you have to accept their different approaches. Younger kids can only concentrate for a shorter period of time, while you have to find a way for the task to be cool enough for the bigger girls.

One general piece of advice for gardening with children: they see the world differently than adults do and they will not always react the way that we expect them to. You might plan a workshop with something you assume is fun but it might not excite the kids at all or they might love a task you expected them to find boring. My favorite example: my gardening kids love to use secateurs and one of their favourite things to do is to cut off flowers and branches. For this reason, next season we will grow lots of flowers and I will try to teach them how to make flower bouquets.

On the other hand I thought it would be nice to write descriptions of different plants to create a knowledge base for our gardening so we went to the library to look for books and do some research. The kids thought this was really boring and I now know that it was too theoretical for them to do in the winter when they couldn’t see the actual plant.

What is the lasting effect of a gardening class? What do the children take home?

The children have completely different backgrounds: some parents have their own garden and the children know their way around the garden quite well, while others don’t even know basics, like that there are plants that you can’t grow in winter. As there is always a wide range of fruits and vegetables in the supermarket, they don’t know what is in season. I would really love to teach them the cycles of nature.

Gardeners also have a kind of responsibility for the plants and if something goes wrong, there will be no harvest. The school garden is a great place to experience that.

How could the school garden be better integrated into the classroom?

Theoretically, there would be an elective “gardening” class in 5th and 6th grade but for this, you need committed teachers and volunteers who take care of the garden in the meantime. Right now, I am planning a few opportunities for the whole school to profit from our gardening: we will plant a potato bed and then turn the harvested potatoes into a soup that everyone can enjoy.

Do you get inspiration for your garden blog by working with children?

There is a section in my blog about “gardening with kids”, which is a relevant topic for many gardeners. What can I do with children so they have fun while I still get my tasks done? For this, I am offering tutorials for several small projects and I would like to publish an e-book at some point in the future.

What kind of intercultural gardening project with China can you imagine for the children? What could a cooperation between Urban Farming Incubator and your gardening group look like?

50% of the children at our school have a migrant background so they already have a cultural openness. It would be great if we could grow plants from China in our garden. This way we could teach the children that people in other countries eat different things and that they consider it normal food while we might find it quite exotic. The kids and I would also enjoy a short lecture about the culture of gardening in China. Is there also an urban gardening movement in China? Are there school gardens in China and what do they look like?

Here are Caro's favourite tips for gardening with children:

1. Be patient

Don't expect little children to do classic gardening tasks like weeding etc. They like to join in but only for a short amount of time. Children can help you stop being a perfectionist. The process of contributing to the garden is more important than having a perfect result.

2. Storytelling

Gardening should be fun for the children and the teacher. Don't pressure them, accept their limitations and offer them playful tasks. Collecting leaves in the fall was a big hit for our group because I told the kids beforehand that we would set up a five-star restaurant for earth worms, as the autumn foliage is the worms' favourite dish. As a result of this, they produce wonderful compost that we can then use to feed our vegetables and flowers. The girls loved the idea of worms feasting on the leaves and the task was completed really quickly.

3. Do cool things they normally don't do and keep the age of the kids in mind

Smaller children might like different things than older ones or they approach them in a different way. I would advise you to get a feel, for how the kids in your group tick and then find an approach that gets them excited. For example, my gardening kids like digging in the soil and getting themselves dirty, as they normally don't get the chance to do that.

4. Be prepared

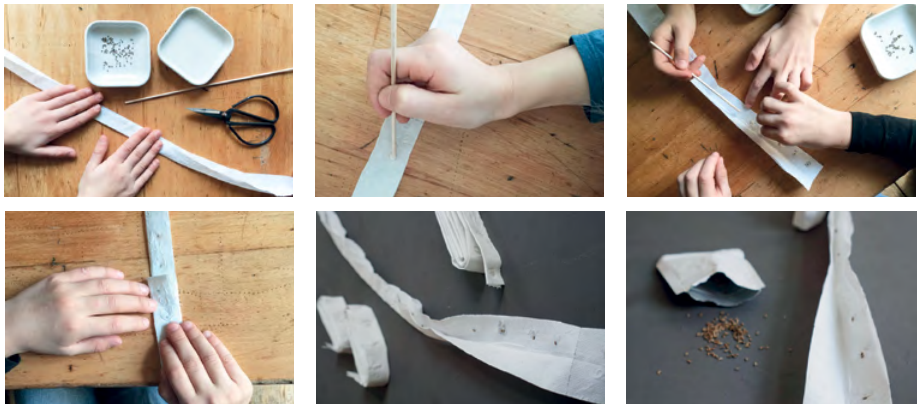
If you are planning complex projects, I find it quite useful to try them at home first. This way, I can find out if there are mistakes in the tutorial or tools missing and I get an idea of which difficulties might arise. This way it is much easier for me to assist the kids with their projects during class.

5. Sow some fast growing plants like radishes or nasturtium

Some vegetables or flowers take a very long time to grow. Try to mix them with plants that grow quickly like small radishes, baby leaf salad or nasturtium. This way, you will have a first harvest after a few weeks, which will be quite encouraging for further gardening work.

Quick DIY with primary school kids – making seed-strips

When sowing carrots a lot of seeds often go to waste. The seeds are so tiny that it is difficult to sow them with the proper spacing. As a result, too many seedlings will develop, which you then have to thin out. As a solution to this problem, we recently made some seed-strips for carrots and onions. It was so much fun, that I would like to share it with you.



What you need

Seeds / toiletpaper / scissors / thin wooden sticks (e.g. toothpicks) / 2 tablespoons of wheat flour
1 tablespoon of water / small bowl or cup / spoon

What to do

Mix the flour with water until you get a sticky paste (due to the gluten, flour is a great natural glue). Take a strip of about 10 pieces of toilet paper (in one piece) and cut it in half (lengthwise). Fold the strip in the middle (again, lengthwise) and open it again. Now put small drops of the flour-glue on the paper. Mind the spacing (for carrots, about 2–3 cm between each drop) and glue one seed per drop to the toilet paper. Try to go easy with the glue, as too much liquid might start the germination of the seeds. When you are all done, fold the other side of the paper strip over, and glue the layers together.
Let the seed-strip dry and keep it rolled until you use it. Be careful to label which kind of seed is inside because you will most likely forget sooner or later.
To plant the carrot seeds, dig a small line of about 2–3 cm, place the unrolled seed-strip down and put the soil back on top. Water as usual. After a while, the first green of your perfectly spaced carrots will appear.

Get more gardening tips on Caro's blog: https://www.hauptstadtgarten.de

“THE BENEFIT DOESN’T ONLY COME FROM THE EATABLE PLANTS BUT ALSO FROM THE ATMOSPHERE”

Interview with Tracy (Fang Fang), owner of a rooftop garden café at Wangfujin Shopping Mall in Chengdu

Text by GONG Wenye, Photos by HUII Coffee and Dr. Eva Sternfeld

HUII Coffee is a rooftop café located on top of the Wangfujing shopping mall in Chengdu. Its uniqueness lies not only in the delicious coffee that it serves, but also in the nearly 200 square meters of rooftop garden that lies in front of it. The garden has small rivers and bridges, paths along the flower bushes, and café guests can enjoy their coffee on the open air garden terrace at any time.

In order to better integrate the café with the garden, the owner also planted edible plants in different areas. This magical rooftop garden is not only an oasis among the concrete city but also a well-designed rainwater circulation system that absorbs part of the city’s rainwater. All the engineering and construction behind the system is the design of Tracy, the café owner. She gave us some insight into how she operates this rooftop garden.

Can you tell us about how you came up with the idea of building a rooftop garden and how do you achieved it?

This rooftop garden project began in 2015 and was an extension of my café-restaurant, which is also on the rooftop. When I decided to build a rooftop garden, my partners were all against the idea. I had to work on my own to get everything done, from design to construction. We also had to sort out the construction allowance from the shopping mall, find out the maximum bearing load of the roof, prepare the necessary waterproofing layer, ensure the emergency escape route on the roof, and so on.

Can you describe the drainage system that you built in the garden?

The drainage system is the trickiest part of a rooftop garden. The canals were made because the rainwater had to be collected inside of the garden area. The rainwater cannot flow naturally as it would trickle down the roof’s edge. The waterproofing layer should be made under the canals and also under the plant soil. The soil level is about 40 cm with 4 layers of different soils so it is quite important to calculate the weight to ensure that the roof can bear the load.

How have you been maintaining the garden?

At the beginning it was my coffee roster who took care of all the plants. Unfortunately, it didn’t go well because of his lack of gardening experience. Even though it is an extra cost for the café, we had to hire an extra person to nurse the plants. We had to calculate the costs to see if the garden would be financially sustainable and then think about what kind of plants are more relevant to the coffeehouse. Plants won’t offer any output in the first year but in the third year, they are grown enough to bring benefit. The benefit doesn’t only come from eatable plants but also from the atmosphere that they bring to the lovely garden environment.

How is the garden used? Is it only visited by customers?

Our customers definitely love the rooftop garden. We use the garden herbs to make fresh tees, the vegetables from the garden in the salad, and the garden fruits to press fresh juices. Customers who have the membership receive our harvest box. We also organised some workshops to invite the neighbours and school kids to our garden and teach them how to grow plants. We are considering introducing permaculture to make our garden more ecological.

COMMUNITY GARDENING IN THE "MAX PFLANZEN" GARDEN IN BERLIN

By WU Yi Meng

We are happy to have found a place for our Sino-German demonstration garden in the "Max Pflanzen" Garden, a community garden situated in the Max Plank Gymnasium close to Jannowitzbrücke in Berlin-Mitte. The area's social make-up is interesting because it is surrounded by high-rise flats from the former GDR, giving the area an anonymous and grey character. A lot of the area's residents are elderly people, often with a lower income. This setting is ideal for an little green oasis that can enrich the "Kiez" (Berlin term for neighbourhood).

The school garden has a total of 2000 m², comprising of an urban garden and a biotope that shows different botanical zones like forest and dunes. The urban garden (approximately 400 m²) has been maintained by a young intercultural team of volunteers since 2015. The school garden was founded in the 1990s but had been left unattended due to a lack of garden-enthusiastic teachers. It was an alumni from the school who decided to revive the old garden and thereby found the "Max Pflanzen" Garden as a community garden project. The group tries to involve students, teachers and residents in the maintenance of the garden.

The initiators of "Max Pflanzen" Garden are open to cooperating with Urban Farming Incubator as they wish to encourage more social interaction and gardening activities that benefit the community. We are happy to have had the opportunity to set-up raised beds as our urban farming demonstration site, where we will plant German and Chinese vegetables. A special vegetable box will be part of the "Flächenbuffet" of Weltacker (see page 26).

We are looking forward to the official beginning of our intercultural demonstration garden in April 2018 and to carrying out our vision of a "Classroom under the Tree", with workshops and events where we can benefit from an intercultural setting and learn from experts (also from the CITYMAKERS-network) on the following topics:

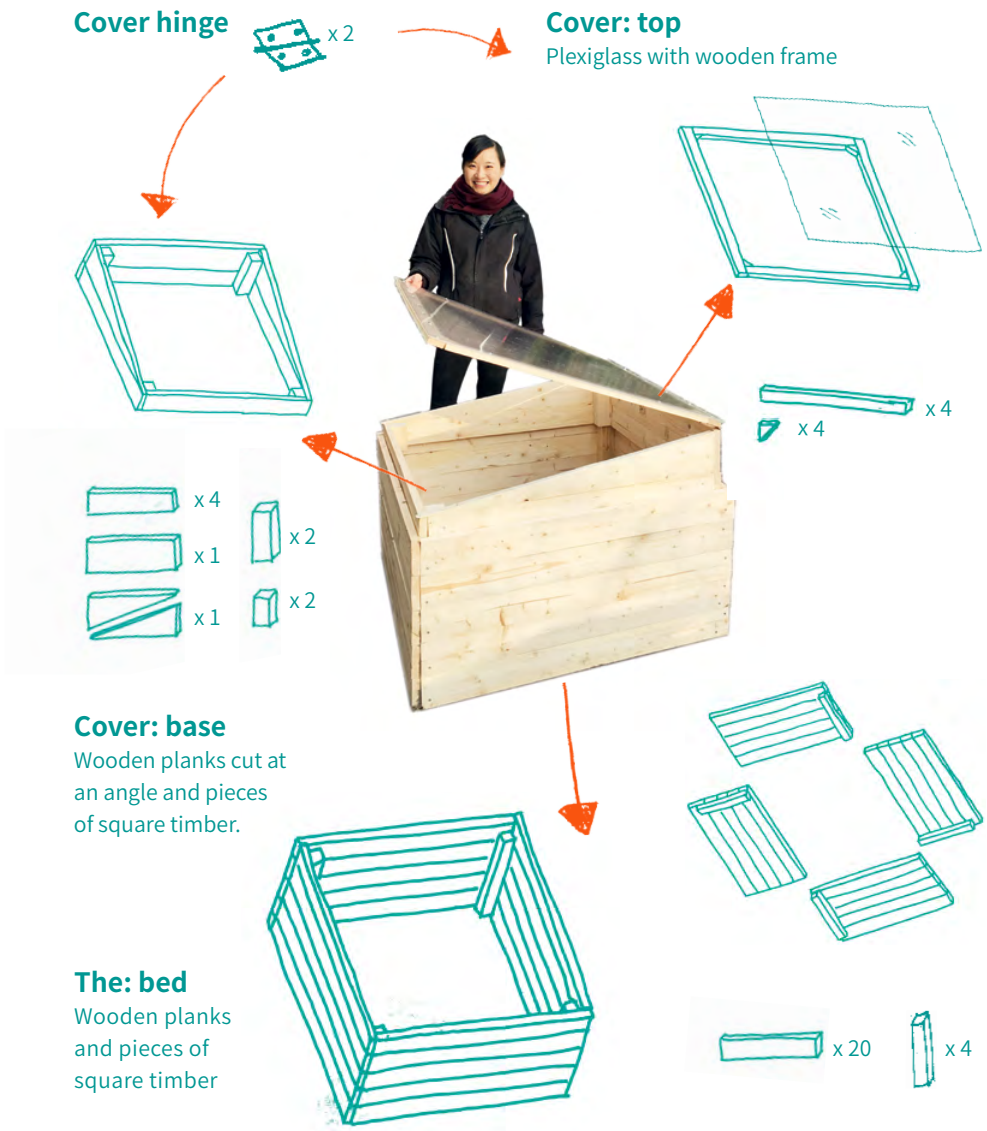
- Ecology and urban life
- Healthy food
- Nature and culture

The events will be open to different groups like students and teachers from the Max Plank Gymnasium, residents from the surrounding area, the Chinese community in Berlin, and all urban garden lovers.

But first, we are rolling up our sleeves and doing some gardening!

DIY: WICKING BED SYSTEM

By GONG Wenye (illustration) and Maxim Paul (text)



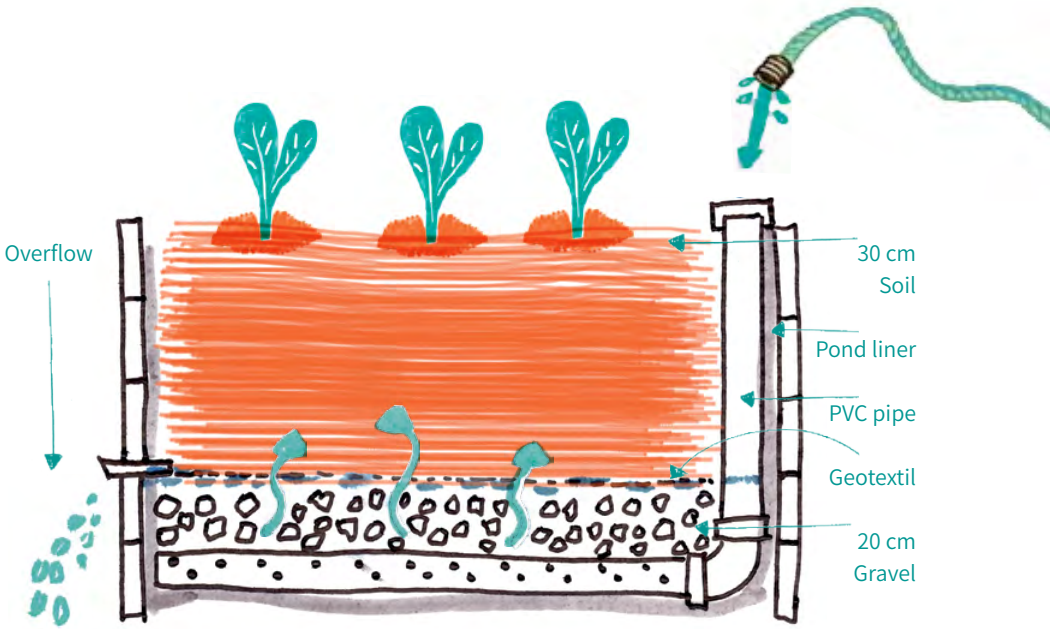
Instructions:

Here's the description of our two-part self-watering planter box. One special feature is the removable top with a plexiglass window. The base is a self-watering wicking bed.

First, we built the 1 x 1 m box from 10 cm wide boards, five on each side. For the corners we we used four 45 cm long, 6 x 6 cm pieces of timber. It is important to leave 5 cm of space, so the upper part can fit in later. We connected five planks to one piece of square timber, getting four side walls that we then connected to form the box.

The upper part/cover top consists of an inclined frame and a plexiglass window. The two are connected with hinges. This way the cover can be removed in the summer and the window can be slightly opened for warmer spring days.

For the wicking system we used pond liner, PVC pipes, gravel, and a geotextile between the earth and the gravel. This helps the water get wicked up.



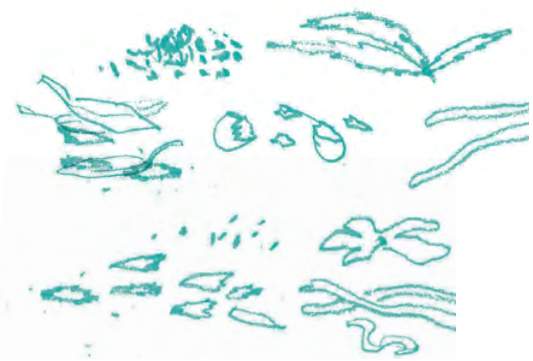
DIY: COMPOST

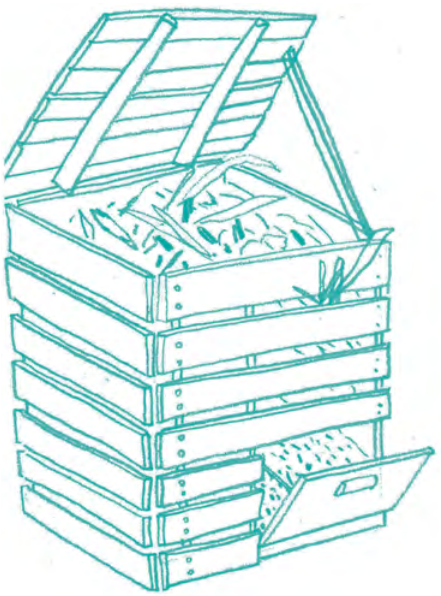
By Cecilia Antoni

Compost for fertilising the soil in your urban garden can be easily made from organic waste. Tips for making your own compost:

The site

The ideal spot for compost is a sheltered and partially shaded space under a tree or behind a hedge.
The base/floor should not be sealed, otherwise rotting might occur. Earthworms should be able to come in. Keep a minimum distance of 0,5 m to the neighbouring property. The compost heap should not be higher than 2 m in total.





The composter

You can use a simple composter made of a wooden frame (see picture) or wrapped wire racks, which you can get for quite cheap at any hardware store. If possible, two chambers or frames should always be set up. This way, when the first composter is full, a second compost pile can already be created.

Once the composter has been set up, cover the floor with shredded wood and other coarse material to ensure proper ventilation from below. Now the compostable material can be introduced. It is important that many different materials be well mixed into the compost so it remains loose and well ventilated.

What to put on the compost?

Dung of livestock and pets
Kitchen waste (fruit and vegetable peels, coffee grounds, egg shells ...)
Garden waste (leaves, hedges, grass and shrubbery, wild herbs ...)
Wood ash (max 3%)

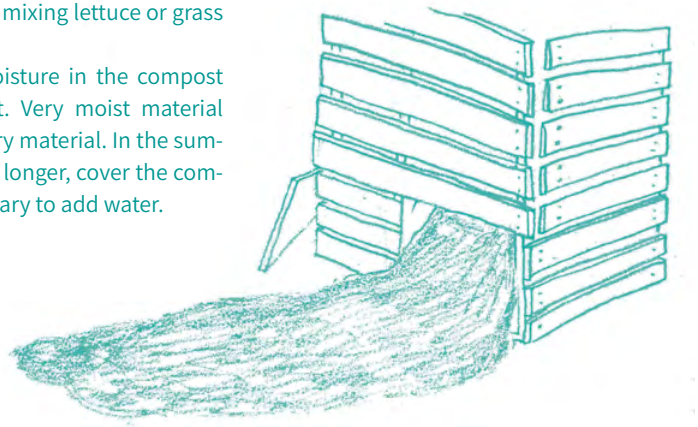
What should not go into the compost?

Road sweepings
Dust bags
Glass, metals, plastics, textiles
Meat leftovers or cooked leftovers

To get good compost

- The compost should be well ventilated. It is helpful if small materials are mixed with large ones. For example, mixing lettuce or grass clippings with shrubs.
- In addition, the moisture in the compost heap should be right. Very moist material must be mixed with dry material. In the summer, when it is dry for longer, cover the compost. It may be necessary to add water.
- If a lot of kitchen waste is produced, some fresh topsoil can be mixed in with it.
- If you have a lot of grass clippings, they should be dried beforehand (by letting them sit out before raking them up).
- Wood residues and coarse shrubbery are to be shredded and chopped in advanced. The fibrous structure encourages decomposition thanks to the presence of microorganisms.

The entire compost should be rotated or turned over at least twice a year. This ensures good mixing and ventilation.
After about a year, the compost is ready. Sieve the humus and mix it into the garden soil.



Popular German vegetables

Selected by Cecilia Antoni

Kale / Grünkohl

Kale (German: Grünkohl, Latin: Brassica oleracea) is a cultivar of cabbage grown for its edible green or purple leaves and belongs to the Brassicaceae botanical family. Until the end of the Middle Ages, kale was one of the most common green vegetables in Europe. It is usually an annual plant grown from a seed with a wide range of germination temperatures. It is hardy, thrives in wintertime, and can survive in temperatures as low as -15 °C. Kale can become sweeter after a heavy frost. A whole culture has developed around kale in northern Germany, where many social clubs will have a "Grünkohlessen" or "Kohlfahrt" (kale tour) between October and February and visit a country inn to consume kale stew, pinkelsausage, kassler, and mettwurst.

Radish (German: Radieschen, Latin: Raphanus raphanistrum subsp. sativus) is an edible root vegetable of the Brassicaceae family that was domesticated in Europe in pre-Roman times. It germinates quickly and grows rapidly. Smaller varieties can even be ready for consumption within a month. The root skin colour ranges from white, pink, red, purple, yellow to green and to black, but the flesh is usually white. They are characterised by their sharp flavour and are usually eaten raw as a crisp salad.

Radish / Radieschen

Rhubarb / Rharbarber

Rhubarb (German: Rharbarber, Latin: Rheum rhabarbarum) belongs to the Polygonaceae botanical family and is a herbaceous perennial growing from short, thick rhizomes. The rhubarb plant has large leaves that contain oxalic acid and are somewhat triangular, with long fleshy edible stalks. Rhubarb loves the sun and has a deep root, so deep soil is important and a loamy-sandy soil is ideal. In culinary use, the raw leaf stalks are crisp (similar to celery, although they do not share the same family) with a strong, tart taste. Although rhubarb is not a true fruit, in the kitchen it is usually prepared as if it were. Most commonly, the stalks are cooked with sugar and used in pies, crumbles, and other desserts.

Beetroot / Rote Beete

Beetroot (German: Rote Beete, Latin: Beta) is a cultivated form of turnip and belongs to the Amaranthaceae botanical family. It is a classic winter vegetable in Germany. Sowing can take place from mid-April to early-July. Depending on the type, beets are ready for harvest after about three to four months. The harvest may extend to just before the first frost. The deep purple and spherical roots are eaten boiled or roasted as a side dish, or raw in a salad. The green leaves are also edible. The young leaves can be added raw to salads, while the older leaves are most commonly served boiled or steamed and have a taste and texture similar to spinach.

Turnip cabbage (German: Kohlrabi, Latin: Brassica oleracea var. gongylodes) is a biennial vegetable, and a short, stout cultivar of cabbage of the Brassicaceae botanical family. There are only 12 to 20 weeks between sowing and harvesting, depending on the variety and location. Kohlrabi can be eaten both raw and cooked. The taste and texture are similar to that of a broccoli stem or cabbage heart, but milder and sweeter with a higher ratio of flesh to skin. The young stem in particular can be as crisp and juicy as an apple, although much less sweet. The leaves are also edible and can be used interchangeably with collard greens and kale.

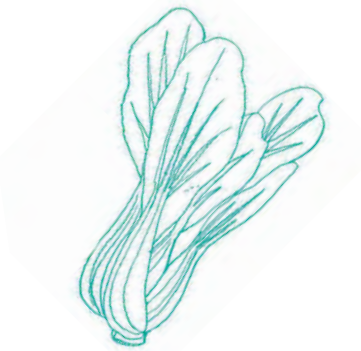
Turnip cabbage / Kohlrabi

Black salsify / Schwarzwurzel

Black salsify (German: Schwarzwurzel, Latin: Scorzonera hispanica) belongs to the Compositae botanical family, and is a hardy, perennial plant. Its edible brown to black coloured root is cylindrical, up to 4 cm in diameter and between 30 and 50 cm long. The soil must be loose, deep and easy to work with, otherwise the roots will remain short. The skin and the white fleshy interior of the root contains so-called "milk tubes" and gets sticky when pierced. The harvest season begins when the salsify leaves wither – usually around October – and can extend into April of the following year. Salsify is a very tender vegetable and can be used in diverse ways. In general, salsify is prepared similarly to asparagus, but you can also eat it raw or grated as a salad.

Popular Chinese vegetables

Selected by WU Yi Meng



Pak choi / 青菜

Pak choi, also known as Chinese cabbage or Shanghai vegetable (Chinese: Qing Cai 青菜, Latin: Brassica rapa subsp. chinensis), is the most popular vegetable in the Shanghai area, throughout China and in all of East Asia. It is related to the napa cabbage (Bai Cai) and similar to German chard (Mangold). This cabbage is winter-hardy and can thus be cultivated in Northern Europe. The best planting period is between summer and autumn because the seeds can begin to sprout with a temperature of 12 °C. Harvest time is then 6 to 8 weeks later. However, most European pak choi comes from greenhouses in the Netherlands. A classical Shanghai dish is fried pak choi.

Garlic chive, also known as Chinese leeks (Chinese: Jiu Cai 韭菜, Latin: Allium tuberosum), tastes like onion with a garlic undertone. It is a perennial plant with white, edible flowers that appear in the summer. However, it is not recommended to eat the leeks after the flowers have blossomed, as the plant will have turned bitter. Originating from the Southwestern part of China, garlic chives have around 5,000 years of history. They grow well in rich soil and love the sun. The smell of the plants work as a natural anti-pesticide, when planted next to other vegetables. Garlic chives are often prepared with eggs or used as fillings for jiaozi dumplings.

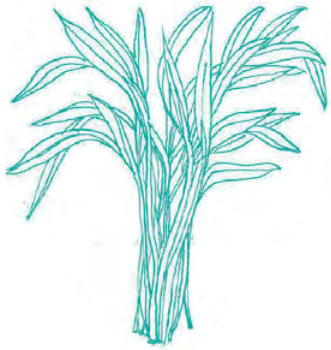
Garlic chives / 韭菜

Wax gourd / winter melon / 冬瓜

The wax gourd (Chinese: Dong Gua 冬瓜, Latin: Benincasa hispida) belongs to the pumpkin family and is widely grown throughout Southeast and East Asia. The name refers to the waxy skin of the longish fruit, which can weight up to 40 kg. Originally coming from tropical areas of Papua New Guinea, the wax gourd loves warm and dry places with a temperature above 25 °C but it also grows in temperate climates. In China, the fruit of the melon is often cut into pieces and used in nourishing meat soups. The fruit and other parts of the plant are used in traditional Chinese medicine to lower blood sugar levels and as an anti-inflammatory.

Water Spinach, also referred to as Chinese spinach, kang kong or swamp cabbage (Chinese: Kong Xin Cai 空心菜, Latin: Ipomoea aquatica) is a semi-aquatic pan-tropical plant famous for its leaves with hollow steams and spinach-like taste.

It belongs to the same family as the morning glory plant and is also related to the sweet potato. Popular in tropical Asian areas, water spinach easily grows in waterways. It can also be cultivated in non-tropical areas: for example, in water containers with a lot of sunlight. This plant can be grown from seedlings or from the seed found in its flower. The most common Chinese dish is water spinach fried with a lot of garlic.



Water Spinach / 空心菜

Asparagus lettuce / 莴笋

Asparagus lettuce or stem lettuce (Chinese: Wo Sun 莴笋, Latin: Lactuca sativa var. augustana), is an ancient lettuce which emigrated to China from the Mediterranean region during the Tang Dynasty (600–900 AD). The plant has thick white stems that have the same shape as asparagus and are more nourishing than the young leaves. The plant can be sown outdoors between March and April on a sunny spot with loose soil. The stems can be harvested at a height of 30 cm from July until September. In Shanghai, the stems are often eaten raw or simply marinated with soy sauce and sesame-oil – a refreshing side dish for the summer.

Edamame is the name for green soy beans (Chinese: Mao Dou 毛豆) that are harvested before they have reached full maturity. This cooked seed pouch of the soy plant contains several beans, is rich in protein and a popular snack in Asia. The beans can be planted directly outside, starting at a temperature of 10 °C until July, and will grow to become 80 to 100 cm tall. They need rich soil with a lot of nitrogen and a sunny location. Regular watering after sowing is important. Harvest time is after two months, when the beans are visible in their pouches and covered by thin hairs. The pouches are cooked in salted water for eight minutes and can be seasoned with other spices.

Edamame / 毛豆

How many square meters do we need for a portion of Yu Xiang Qie Zi?

By Dr. Eva Sternfeld

Urban Farming Incubator Berlin has linked up with the Weltacker (Global Field Club) in Berlin (https://www.2000m2.eu). In the Weltacker, which will be realised in the Botanical Garden Blankenfelde-Pankow this year, one can see the available cropland per person in the world (2000 square meters) and the most important arable crops. In addition, garden activists and urban gardening initiatives have joined the Weltacker club to carry out parts of the Weltacker in their own gardens all over Berlin. Our contribution will be a demonstration plot where we show how much arable land is needed to grow a Chinese dish.

Our calculation for the most important ingredients:

Arable land required for Yu Xiang Qie Zi (Sichuan Eggplant) with rice (1 portion)

	Arable land required (m^2) per kg	Arable land (m^2) per portion	List of plants
Chillis green 3	0.439	0.004	1 plant
Eggplant 200 g	0.256	0.051	1 plant
Garlic 15 g	0.382	0.005	1 plant
Ginger 15 g	0.935	0.014	1 plant
Rice 150 g	1.471	0.206	2 rows 48 cm
Soybeans 10 g	5.55	0.055	1 plant
Sunflower oil 20 g	6.41	0.11	2 plant
Total		0.445	

Source for yield 2014-2016: http://www.fao.org/faostat/en/#data/QC

We are planning to grow the most important ingredients for Yu Xiang Qie Zi (Sichuan Eggplant). Here is the recipe:

Yu Xiang Qie Zi (Sichuan Eggplant) 鱼香茄子

Prep time: 10 mins
Cook time: 20 mins
Total time: 30 mins

Ingredients

2 eggplants
3 chillis, finely chopped
1 tablespoon of bean paste (Doubanjiang)
2 garlic cloves, chopped
1 tablespoon of chopped ginger
2 green onions, white part and green part chopped separately
Coriander for decoration
2 tablespoons of vegetable cooking oil
1 teaspoon salt for soaking

Stir fry sauce

1 tablespoons light soy sauce
1 tablespoons black vinegar
1 tablespoon cooking wine
2 teaspoons cornstarch
1 teaspoon sugar
1 tablespoon water Salt as needed

Instructions:

- Cut washed eggplants into long strips (try to keep some skin on each strip). Soak the eggplant strips in salty water for 15 minutes. then drain.
- Prepare a bowl: mix all the ingredients necessary for stir-fry sauce and set aside.
- Heat up 2 tablespoons of oil in wok (eggplants need more oil than other vegetables).
- Add eggplants and stir-fry until soft. The eggplants will first absorb almost all the oils in the wok and then return some moisture after 2 or 3 minutes.
- Remove the eggplants or push them to one side of the wok. Then add garlic, chopped peppers, white part of the onion, and ginger to the stir-fry. Add doubanjiang and continue cooking for 1 minute. Then mix everything together in the wok.
- Stir in the sauce. Mix well and make sure the eggplants are well coated.
- Remove from wok. Sprinkle the green part of onion and the coriander leaves onto the dish.

Note:

Since both doubanjiang and soy sauce contain salt, there is no need for too much additional salt!

Recipe by China Sichuan Food at https://www.chinasichuanfood.com/yu-xiang-qie-zi-sichuan-eggplant/

Useful websites and resources

Urban Farming Websites

Topic/Title	Comment
www.ruaf.org	RUAF Foundation (urban agriculture magazine)
http://www.iclei.org/details/article/two-cities-awarded-for-their-work-and-more-news-from-the-iclei-ruaf-city-food-network.html	ICLEI RUAF City Food Network
http://www.fao.org/urban-food-actions/en/	FAO Urban Food Actions platform
http://www.fao.org/fcit/fcit-contacts/dgroups-list/en/	Food for cities list serve: The discussion list food-for-cities@dgroups.org To join the network, connect to http://dgroups.org/fao/food-for-cities or contact Makiko Taguchi.
http://cordis.europa.eu/news/rcn/141393_en.html	Horizon 2020 Urban GreenUP – New Strategy for Re-naturing Cities through Nature-Based Solutions (with participation of Chengdu)
https://www.dezeen.com/2018/01/15/video-sky-scraper-plantagon-urban-farm-world-food-building-movie/	Plattoon designs office block containing a 60-metre-high urban farm
https://gruenanteil.net	Introduces Urban Farming Projects in Germany and other European Countries (in German Language) Ideas, projects (interactive map), networks etc.
http://www.meine-ernte.de	Plots for urban gardners (vegetable gardens) in 25 German cities
https://www.facebook.com/groups/maxpflanzen/	Max Pflanzen –Community and school garden project near Jannowitz Brücke in Berlin

Urban Farming Books

Carpenter, Novella, Rosenthal, Willow (2011): The Essential Urban Farmer. Penguin

Clauzing, Hans; Clausing Nuno (2016): Urban Farming. Aerial

Cockrall-King, Jennifer (2012): Food and the City: Urban Agriculture and the New Food Revolution. Prometheus

Despommier, D. (2010): The vertical Farm: Feeding the world in 21st century. St. Martin's Press

Faires, Nicole (2016): The Ultimate Guide to Urban Farming: Sustainable Living in Your Home, Community and Business

Fox, Thomas (2011): Urban Farming: Sustainable City Living in Your Backyard, in your Community and the World. Companion House Books

Giseke, U. et al (2015): Urban Agriculture for Growing City Regions. Connecting Urban-rural Spheres in Casablanca. Routledge

Grüne Liga (2017): Vorstudie für eine Internationale Konferenz zu den Themen Urban Gardening/Urban Farming/Urban Agriculture

Lohrberg, F. et. al (2015): Urban Agriculture Europe. Berlin Jovis

Markham, Brett (2010): Mini Farming: Self-Sufficiency on ¼ Acre

McLaughlin, Chris (2012): Vertical Vegetable Gardining: A Living Free Guide. Alpha

Müller, C. (2011a): Urban Gardening. Über die Rückkehr der Gärten in der Stadt. Oekom Verlag. München

Müller C. (2011b): Urbane Landwirtschaft als postfossile Stregie- von Stadtpflanzen und Refugien des Selbermachens. In: Politische Ökologie 124, 67-72

Müller, C. & Paech, N. (2012): Suffizienz & Susistenz. Wege in eine Postwachstumsökonomie am Beispiel von "urban Gardening". Der kritische Agrarbericht 2012. http://anstiftung.de/downloads/Publikationen/Christa_Mueller/Mueller_Paech.pdf

Sustainable Food China Websites

https://www.chinafood-watch.com	A project of the Institute for Agriculture and Trade Policy – provides a databank of NGOs and foundations promoting fair and sustainable food systems in China

Rooftop Farming Websites

www.upfarming.net	Upfarming
http://www.roofwaterfarm.com	Project in Berlin. Supported by TU Berlin
https://vimeo.com/239523351 (video about roof water farm, online courses offered by TU Berlin	

Rooftop Farming Books

Alternatives and the Rooftop Garden Project (2008): Guide to Setting up your own edible Rooftop Garden

Mandel, Lauren (2013): EAT UP: The Inside Scoop on Rooftop Agriculture, New Society Publishers

Novak, Annie (2016): The Rooftop Growing Guide: How to Transform Your Roof into a Vegetable Garden or Farm, Ten Speed Press

Plakias, Anastasia Cole (2016): The Farm on the Roof: What Brooklyn Grange Taught us About Entreoreneurship. Community, and Growing and a Sustainable Business, Avery

Rooftop Farming China

https://www.dezeen.com/2017/10/21/rural-urban-framework-builds-post-disaster-housing-china-rooftop-farms/	Alyn Griffith: Rural Urban Framework builds post-disaster housing in China featuring rooftop farms.

Companies/Technology

https://www.freudenberg-pm.com/Stories/Green_Roofing	Freudenberg Green Roofing

Education (Education of Food, Nutrition, Urban Gardening, Environment)

www.2000m2.eu	Weltacker, Global Field 2000 m²
Grüne Liga (2017) School Garden Root Network	Book about school gardens in Costa Rica, Cuba, Maorocco, Ethopia, Kenya and the Philippines
Bohn, Katrin; Ritzmann, Kristian: Spiel/Feld Urbane Landwirtschaft (2015): Ökoölogische Bildung und praxisorientiertes Entwerfen (Playing/Field Urban Agriculture: Ecological education and practice-based design. Universitätsverlag der TU Berlin. Available at https://issuu.com/stadt_ernaehrung/docs/spiel_feld_urbane_landwirtschaft	Spiel/Feld Marzahn is an urban agriculture project aiming to establish community-led food growing on a deserted urban site in a Berlin housing estate. The book provides a good overview of urban gardening initiatives in Berlin.
https://www.grueneliga-berlin.de/themen-projekte2/international-urban-farming-conference/dokumentation/	Urban Farming Conference Documentation 2018 by Grüne Liga

Case Studies China

Collected and photographed by Claire Diebel

Anken Green

Founders
Good to China, 2010
Size 400 m²

Address 668 Huai'an Rd, Jing'an Qu, Shanghai Shi, China, 200000
Features The garden is maintained by small businesses at Anken that each take on a plot to spread the farming effort and provide nature-based activities.
System Green Roof Farm

Chai Wan City Farm

Founders
Osbert Lam, 2016
Size 465 m²

Address 13/F, Cheung Wei Industrial Building, 42 Lee Chung Street, ChaiWan, HK
Features After a series of rooftop farming workshops, urban farmers gain the experience to rent out and tend to raised beds with hundreds of crops on roofs in Hong Kong.
System Raised Beds on Rooftop

Waterhouse Hotel

Founders
n/a, 2010
Size 300 m²

Address Maojiayuan Rd 1–3, Shanghai, China
Features Aromatic herbs are grown on the roof of a boutique hotel and used for the rooftop bar and kitchen in Shanghai.
System Green Roof Farm

Jin Qiao Mall, City Garden Farm

Founders Shanghai City Agriculture Construction Development Ltd. and Chong Bang Group, 2014
Size 150 m²

Address City Farm Garden ,3/F, Block 7, Jin Qiao Mall, 3611 Zhangyang Rd, Pudong Xinqu, Shanghai Shi, China, 200136
Features The roof of a massive shopping complex exhibits various roof garden styles and a raised bed community garden.
System Raised Beds on Rooftop

K11

Founders K11 Cocepts, 2013
Size 150 m²

Address 300 Huai'hai Middle Rd, Shanghai Shi, China
Features An urban farm offers a resting point for shoppers and fresh greens for the restaurant next door at the K11 art mall.
System Raised Beds

Shendu

Founders n/a
Size 700 m²

Address Huangpu, 1368 Tibet Rd , Shanghai Shi, China
Features This roof grows vegetables and herbs with an aquaponic system on top of an office building in Shanghai.
System Aquaponics; Green Roof Farm

Skyfarm Jiashan Market

Founders Good to China, Francesca Valsecchi, with Tongji and NYU students.
Size 400 m²

Address Shaanxi S Rd, 550 Lane, 25–37, XuHui, Shanghai, China
Features Above Café Sambal, you'll find a quaint vegetable garden with fig trees, orange trees, and a resident cat and chicken. Individuals and coorporate teams can rent out roof plots to grow organic food in the city.
System Green Roof Farm

Sze Hing Lung Industrial Building

Founders
Gardens & Co.
Size 300 m²

Address 44 Lee Chung St , Chai Wan, Hk
Features Hydroponics and raised concrete beds are growing leafy greens in the heart of Hongkong's urban density.
System Raised Beds; Hydroponics

Hong Kong University

Founders
Mathew Pryor, GE Student Team (GEST), Bijas Vegetarian Restaurant, and the Bank of China, 2012
Size 400 m²

Address 5/F, Runrun Shaw Building, HK
Features The HKU roof farm began in with students and staff as a way to foster a sense of responsibility and connection to nature. Year-round garden maintenance for both communal and individual plots is shared between about 20 students.
System Raised Beds on Rooftop

Kwun Tong City Farm

Size 185 m²

Address Rooftop of Wai Yip Industrial Building, 171 Wai Yip Street, Kwun Tong, Hong Kong
Features rooftop garden
System Raised Beds on Rooftop

Case Studies Germany

Collected and photographed by Claire Diebels

Dgwh Humboldt University Haus 12

Founders Haus. architekten and Humboldt University, 2015
Size 600 qm²

Address Hannoversche Straße 27, Berlin
Features Berlin's only rooftop green house sits on top of a 1945 Humboldt University Building as a scientific lab for botanical bachelors, masters, and PhD work groups.
System Rooftop Greenhouse

Ecf Farmsystems

Founders Christian Echternacht and Nicolas Leschke, 2015
Size 1800 qm²

Address Bessemerstrasse 16, 12103 Berlin
Features The ECF Farm enables year-round vegetable, herb and fish production within an urban environment. Produce from the ECF aquaponic farm is available in all REWE Supermarkets in the Berlin Region.
System Aquaponics

EDEKA Saphire

Founders Infarm, 2017
Size 4 qm²

Address Chausseestr. 43, 10115 Berlin
Features 10 kg of leafy greens grow from seed to harvest in just 4m² in Berlin Edeka supermarket.
System Hydroponics

Garten Deck

Founders Nomadischgrün, 2011
Size 1400 qm²

Address Große Freiheit 62–68, Hamburg
Features A small group of volunteers tend to a non-profit roof farm at one of the last remaining open spaces in St. Pauli . The principle at Garten Deck is the urban dwellers non-commercial "right to the city".
System Raised Beds on Rooftop

Good Bank

Founders Infarm with Ema Paulin and Leandro Vergani, 2017
Size 8 qm²

Address Rosa-Luxembourg-Str. 5, 10178 Berlin
Features This vertical farm to table salad bar in Berlin-Mitte grows your lettuce exactly where it's harvested. The plants are grown hydroponically with nutrient-laden water, while pink LED light is shed onto the crops to match the photosynthesis need of plants.
System Hydroponics

Himmelbeet

Founders The Himmelbeet Organization Gmbh
Size 1700 qm²

Address Ruheplatzstraße 12, 13347 Berlin
Features After plans for a roof farm were halted in 2013, the municipality lent vacant land to Himmelbeet to create a community garden in Berlin Wedding. Urbanites can rent out community garden beds to exercise their green thumbs and get a little closer to nature.
System Raised Beds

Klunkerkranik

Founders Horstwirtschaft eV; Technische Universität
Size 1000 qm²

Address Rooftop Neukölln Arkaden, Karl-Marx-Straße 66, 12043 Berlin
Features Volunteering garden enthusiasts take care of a blooming roof garden above the Neukölln Arcaden.
System Raised Beds on Rooftop

Prinzessinnengärten

Founders Nomadisch Grün,2009
Size 7000 qm²

Address Prinzenstraße 35-38, 10969 Berlin
Features Prinzessinnengärten transformed a brownfield at Mortizplatz into a vibrant community garden and place for sustainable living.
System Raised Beds

Roof Water Farm

Founders TU Berlin Dep. of Urban & Regional Planning, Fraunhofer Institut, TUB – ZEWK kubus, inter 3 GmbH,TERRA URBANA ,2011
Size 400 qm²

Address Bernburger Str. 22, 10963 Berlin
Features Waste water is converted into plant nutrients for an experimental hydroponic and aquaponic system in Berlin Kreuzberg. The main results show that linking decentralized treated wastewater with food production is technically feasible.
System Hydroponics; Aquaponics

Tomaten Fisch

Founders Leibniz Institute (IGB), Innovative Aquaponics for Professional Application (INAPPRO), 2013
Size 2000 qm²

Address Str. zum FEZ 2, 12459 Berlin
Features The TomatenFisch project was introduced in one of the greenhouses at the Öko-Insel of the FEZ children's center. Day-long programs are available for third to sixth graders about protecting the world's oceans, agriculture, the ecosystem between fish and tomatoes, and how to cook with food grown in class.
System Aquaponics; Raised Beds

Imprint

CITYMAKERS URBAN FARMING INCUBATOR

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Crossing spheres, linking ideas.

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Global-Field 2000 m2 Project
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