



## The Long-Term Plan for the Student Garden

### *An International-Swabian Garden*



Authors: Athena Birkenberg  
Dusha Manoharan  
Fadi Kanso  
Katie Mackie  
Isabel Schlegel  
Pavlos Georgiadis  
Philipp Poferl  
Steffen Schweizer

[fresh.studentgarden@googlemail.com](mailto:fresh.studentgarden@googlemail.com)

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## **1. The Idea**

Our experience in Hohenheim and in our various backgrounds has been very fruitful; however, within FRESH, we felt that the deeper understanding and connection to agriculture could not be completed without hands-on application of our acquired knowledge. Therefore, we were inspired to offer an opportunity for students to participate in the conception of a garden and in maintaining its diverse plants.

Every season and its harvest bring with it new knowledge, obstacles to overcome, and pure pleasure. This is also true of our first season maintaining and supporting the Student Garden on the University of Hohenheim's campus. We have taken the theoretical knowledge obtained in the classroom, disseminated it within a group of students and utilized this vast amount of information in planting, growing, and harvesting organic produce.

When discussing the most adequate layout for our garden we finally agreed on the international swabian garden, as it combines the urge for diversity with the conservation of traditional swabian practices. It is our intention to emphasize the structure and beauty of Swabian gardens, which highlight the diversity of flowers, fruit trees, and produce in unity. However, as an international agricultural university we plan on incorporating seeds from different regions. Therefore, students visiting Hohenheim can feel welcome to bring parts of their home and culture to the university. It is a new method of learning diversity within this world, while working with our own hands and knowledge. It is also an opportunity for students to exchange and socialize their knowledge and to observe the cycle of food, from the soil to our plate in an honest, natural way.

Now that the first plants were harvested we see that there are still improvements to be made. However we are more than satisfied with the results that we received. Thus, we are motivated to continue our efforts for the next growing season and hopefully become a constant part of Hohenheim's campus.

The Student Garden should function as a demonstration of how biological and seasonal horticultural production can be implemented. A variety of local herbs and vegetables shall be shown and the cultivation management will serve as a way to conserve the regional produce in its traditional origin. As a natural sequence, we then intend to offer the diverse products of the garden at campus events and, thus, establish a field to plate circle on campus.

## 2. The First Season

In the first season (May 2008 until October 2008) of the Student Garden, we experienced trials and tribulations as that of every farmer. Due to the conception of a new idea, the necessity of properly articulating this idea, and discovering a supporting professor at the Hohenheim, the first season began much later than is optimal. Our season began in the middle of May, which was a few weeks too late for many crops. However, the motivation was strong and it was agreed that all of our initial varieties would be planted, whether or not it was the proper seeding time. With the friendly and generous manner of the Versuchstation für Gemüsebau and the Versuchshof Kleinhohenheim we still were able to establish a full and green garden. Our main varieties were: Sweet corn, bush beans, pumpkin, fire beans, tomatoes, onions, eggplant, kale, red beets, lettuce, cabbage, carrots and swiss chard.



Irrigation was our largest hurdle to be overcome. As the garden plot was in the middle of the Goldener Acker, there was no easy access to a water spigot. A large rain barrel was bought so that it could be filled once a week and those irrigating would not have to walk the distance to Meiereihof. However, the problem was then to fill the barrel. The attempt to utilize manpower and carry dozens of water buckets from Meiereihof to the plot quickly proved to be too time consuming and too demanding. It was then discovered that the Institut für Pflanzenbau und Grünland was kind enough to allow us to borrow a flat two-wheeled cart in which to push many buckets at one time. Therewith, we could reduce the workload and make the whole project more feasible. Luckily, the weather was quite cooperative and further reduced our need to water.

Unexpectedly, we did not have a big problem with pests and disease. There were some minor infestations with white fly in the cabbage and our tomatoes had to struggle with phytophthora infestans, still both gained fair and delicious yields. Due to weak nutrient management the eggplants and sweet corn faced nitrogen deficiency. However, once compost was obtained from Kleinhohenheim and incorporated into the soil the plants began to thrive again.



As an end to our first successful season, we celebrated our efforts in an End of Harvest Party on campus. On this occasion we provided homemade dishes, which were composed of our own produce, such as, pumpkin soup, cabbage salad, red beet spread and more. We were happy that so many members of the university, students and otherwise, came to support our work.



### **3. This Season**

#### **3.1 Structure of the Garden**

The future structure of the student garden is founded in the elements of a traditional swabian garden. The elements that we are most interested in incorporating are the following:

- crosswise paths separating various areas
- palisades
- binding with box trees or other shrubs or big stones
- often a rondel in the middle which is also bound either by box trees, shrubs or sunflowers
- bower and compost
- various vegetable patches which are framed by herbs or flowers
- shrubs, berries and fruit trees are used as boundaries and for aesthetic reasons
- the paths are either covered by mulch, gravel or sand

The traditional swabian garden is most often built in a rectangular form; however, the plot that the university is likely to lend us is in the form of a triangle. This will naturally change the traditional structure, but we are hopeful in maintaining the key aspects.

In the path of the traditional garden, our future student garden will be separated in at least 4 parts. We will take this opportunity to establish a crop rotation and incorporate the ideals of organic farming, which are in line with the principles and values of FRESH. Of the four parts, the first section will contain plants with little nutritional needs, which will be grown without the addition of fertilizers, such as, onions, beans, lettuce and herbs. In the second section, plants with median nutritional needs (ca. 1.5 kg N/ m<sup>2</sup>), such as, carrots and red beets will be cultivated. The third section will consist of vegetables with a high requirement of nutrients (ca. 3kg N/m<sup>2</sup>), such as, courgette, tomatoes, potatoes, and cabbage. In the fourth section, the soil fertility should be engaged via green manure, such as, clover, lupines or lucernes. The vegetable groups, with their differing nutritional needs, are rotating each year. Thus, every third year a new plot will lay fallow. An additional measure to maintain soil fertility is fertilization. According to respective needs of the cultures, the usage of manure and/or other biological fertilizers will be utilized. Also mulch will be used to improve the soil structure, suppress weeds and to maintain soil moisture.



The cultivated crops should represent the variety of vegetables, which can be grown under moderate climatic conditions. Nevertheless, a specific focus should be on traditional varieties. In order to do the multicultural and international composition of the FRESH group justice “foreign” vegetables will also be cultivated. Thus, international students can bring seeds from their respective homelands and cultivate them in the FRESH student garden. Therewith, knowledge and culture exchange can take place.



In respect to crop cultivation methods, intercropping and a specific crop rotation will play a leading role when organizing the garden since these techniques have positive effects for the nutrient status, the soil fertility and plant health.

### 3.2 Crop Rotation

In order to assure the best nutritional supply and to avoid the occurrence of plant disease, an elaborate crop rotation plan has been established. It divides the crops into three categories, concerning their nutritional needs:

- High nutritional demand (H)
- Medium nutritional demand (M)
- Low nutritional demand (L)

Furthermore, one quarter of the area will lie fallow (F) each year in order to restore soil fertility. On the fallow area a mixture of legumes and grass will be planted. Peas might be incorporated which might even be harvested.

The three nutritional categories will be split into two plots each. This gives us the opportunity to separate different plant families to avoid plant disease and still plant them according to their nutritional demand.

Concerning plant families we differ between Brassicaceae, Solanaceae and Apiaceae which fit to the high nutritional demand, Cucurbitaceae and Fabaceae which fit to the medium nutritional need and mainly Apiaceae and Asteraceae which have a low nutritional demand.

#### First Year:

Plot A 1 <b>L</b> <i>Apiaceae</i>	Plot B 1 <b>M</b> <i>Cucurbitaceae + Fabaceae</i>
Plot A 2 <b>L</b> <i>Asteraceae</i>	Plot B 2 <b>M</b> <i>Chenopodiaceae + div.</i>
Plot C 1 <b>H</b> <i>Brassicaceae</i>	Plot D 1 <b>F</b> <i>Green manure</i>
Plot C 2 <b>H</b> <i>Solanaceae + Alliaceae</i>	Plot D 2 <b>F</b> <i>Green manure</i>

After the first season the whole scheme will rotate to the next position. Thus, on former plots of low nutritional demand a fallow season will follow. Medium plots will turn to low demand plots and High demand plots will turn to Medium demand plots. The green manure will be turned to high demand plots and eventually be further fertilized with organic manure.



Second Year:

Plot A 1 <b>F</b> <i>Green manure</i>	Plot B 1 <b>L</b> <i>Apiaceae</i>
Plot A 2 <b>F</b> <i>Green manure</i>	Plot B 2 <b>L</b> <i>Asteraceae</i>
Plot C 1 <b>M</b> <i>Cucurbitaceae + Fabaceae</i>	Plot D 1 <b>H</b> <i>Brassicaceae</i>
Plot C 2 <b>M</b> <i>Chenopodiaceae + div.</i>	Plot D 2 <b>H</b> <i>Solanaceae + Alliaceae</i>

After four seasons the same plot will have the same nutritional category as in the first season. To avoid the negative impacts of growing the same plant families on the same plot now there will be a switch in the subplots. Thus, what previously grew on Plot A 1 will now be planted on Plot A 2. With this concept it takes eight seasons until plant families occupy the exact same plot again. This is sufficient time for the soil to withstand any prevalent diseases.

### 3.3. Budget Plan

The budget plan for the first season 2010 is given below. The seeds listed are representative, but do not include every variety and sort that we will be planting in the garden. In total, without donations, we would require approximately €1,000.00.

<b>CATEGORY</b>	<b>ITEM</b>	<b>PRICE (in euro)</b>
Seeds	Broccoli	2.90
	Cabbage	2.40
	Carrot	2.70
	Cauliflower	2.90
	Common bean	2.90
	Corn	2.30
	Cucumber	2.30
	Garlic	4.00
	Herbs	2.40/variety
	Lentil	1.90
	Onions	4.00
	Parsnip	2.10
	Peas	2.80
	Potatoes	2.30
	Pumpkin	2.40
	Radish	2.00
	Red beets	2.10
	Fire bean	2.10
	Brussel sprouts	2.20
	Swiss chard	2.40
	Tomato	2.40
	Topinambur	4.80
	Catch crops	7.80
	Flowers	8.90
<b>Tools</b>	Hoe (2)	10.14/ea
	Hoe (2)	51.90/ea
	Shovel	11.85
	Shovel handle	5.59
	Spade	43.24
	Rake (2)	14.96/ea

<b>Miscellaneous</b>	Compost box	60.00
	Wheel barrow	30.00
	Stones	275.00
	Foil	62.00
	Small Greenhouse	275.00
	Seedling tray	3.00

The following budget plan illustrates the needs for the second season 2011. As with the 2010 budget, the seed list is representative and open to change in order to incorporate new and international seeds. Without considering the ability for us to save seeds from season to season, the total would be approximately €100.00.

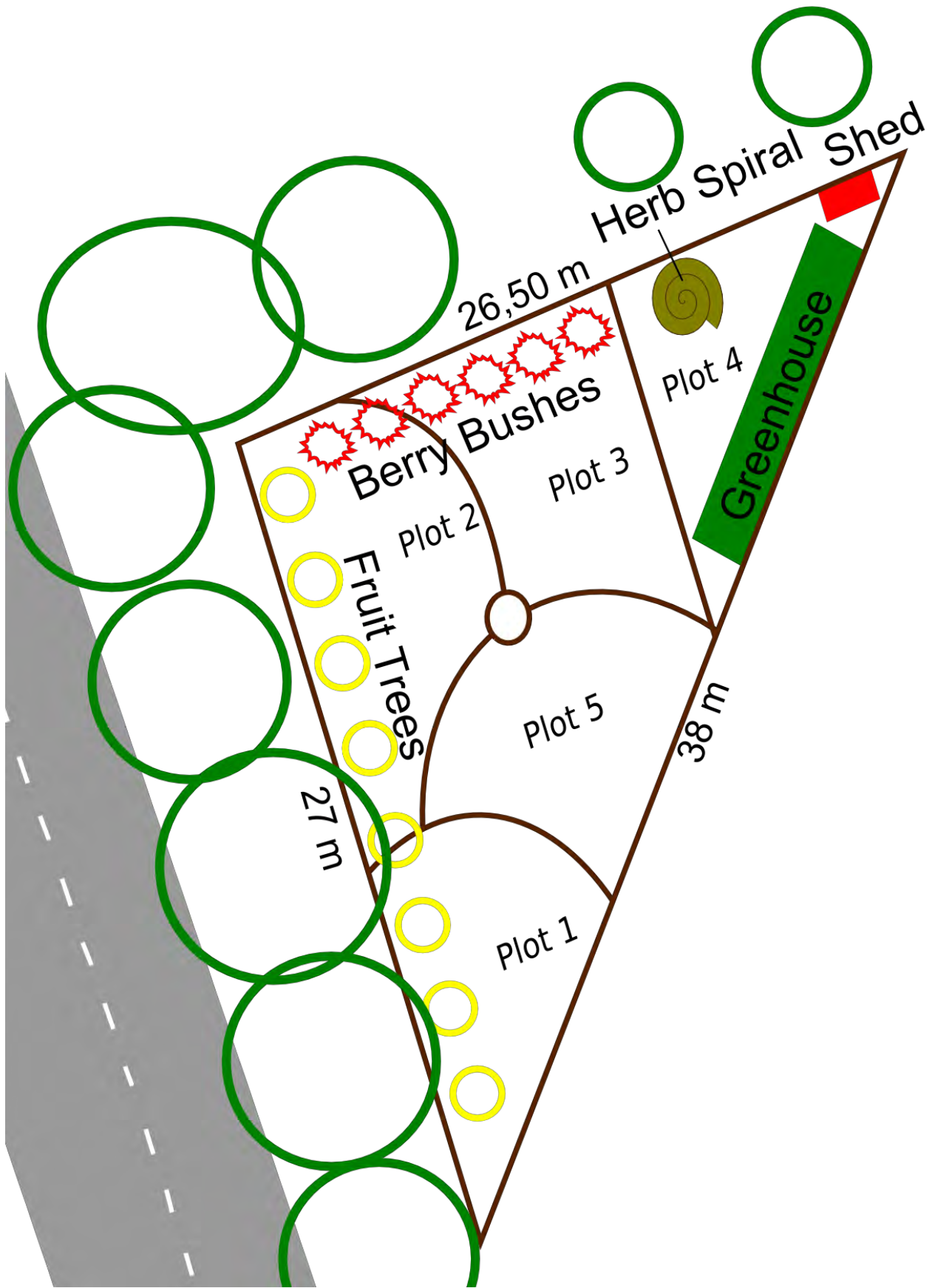
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	Lentil	1.90
	Onions	4.00
	Parsnip	2.10
	Peas	2.80
	Potatoes	2.30
	Pumpkin	2.40
	Radish	2.00
	Red beets	2.10
	Fire bean	2.10
	Brussel sprouts	2.20
	Swiss chard	2.40
	Tomato	2.40
	Topinambur	4.80

	Catch crops	7.80
	Flowers	8.90

Therefore, the majority of costs are start-up costs that are incurred only one time. The following seasons the costs only include those of seeds and young plants that we are not able to save from the season before.



3.4 Garden Design



It should be noted that plots 1, 2, 3, and 5 in the graphic would be the plots involved in crop rotation. Plot 4 will only contain the greenhouse, shed, herb spiral, berry bushes, and some flowers.

## 4.0 Seasons to Come

### 4.1 Fostering the FRESH Vision

As a leading Agricultural University, with a commitment to sustainable natural resource management, Hohenheim carries great responsibility for the future of agriculture. FRESH is devoted to ensuring and promoting sustainability and pleasure in the foods we eat. Central to our philosophy and motivation is, that the best organic food is what is grown closest to you. In order to fully understand what *Food* really means, it is necessary to go beyond discussing about where we source it from, if it is sustainably produced or how we eat it. It is equally important to get a firm understanding of how the production process takes place.

We are convinced that this should be an issue for all agricultural students and for this reason we engage in a series of actions. Providing FRESH, wholesome and nutritious food through our *Cooking Events*; advocating for a *Better Mensa*; and proposing the implementation of more *Ethics & Philosophy* in the agricultural research and practice. The FRESH Student Garden integrates all these actions and brings the right message at the right time. What better opportunity than this to stimulate the interest of agricultural students about where their food comes from and why that is important?



The FRESH Student Garden provides a new dimension to this vision, while offering students fun and hands-on experiences that we hope will inspire healthy eating habits for life. More importantly, the Garden helps FRESH to promote and foster community spirit and volunteerism within the university by growing our own food through sustainable agriculture practices. It is a student-led initiative aimed to cater to students' needs. We also aim to generate interest and excitement towards sustainable farming and local food; towards learning and practicing ecologically functional agriculture practices; fusing the old and new in terms of traditional and academic knowledge and combining application with innovation. Open to all undergraduates and graduate students from any faculty across the university; whether an experienced gardener or not, or whether they crave some hands on experiential learning beyond the classroom walls.



Such a process creates great hopes for the future of agriculture. Students learn not just how to grow a tomato or a cabbage, but rather how to grow soil and a complete diet. Through experience, they also get a better understanding of the efforts required for the production of the food we eat in daily life. This comes to fill an important gap, enabling future agriculturalists to restore the essential communication between farmers and scientists. In this way, they can actually learn how to create abundance, feed themselves and the world and provide great diversity of very high quality food crops to the student community.





## 4.2 Co-operation within the University

As students gaining degrees at University of Hohenheim and with a passionate interest in learning about agriculture, it is our intention that the Student Garden is also a part of the university and not only built within its grounds. It is important that there is a cooperative relationship between the two bodies in myriad of ways. Two paths that are most central to FRESH are links with the established research farms on campus and with various institutes and the possible integration within the class.

The cooperation of the Versuchsstation für Gemüsebau and the Versuchshof Kleinhohenheim were essential in our first season. Although the extent of their generosity in the first year is not expected in those to come, this is a connection that we would like to foster. This is because it is possible to have access to young plants and seeds and, therewith, create a close connection between students and institutes. This will expand the diversity of the Student Garden even further.

It is also essential that we bridge the gap between practical understanding and theory within the Master's programs. Therefore, we think that it would be beneficial to involve these programs in the problems, solutions, and designs of the garden. In this way, the garden can provide students and professors a real-life agricultural situation on campus and they can provide us with new ideas, perspectives, and eventually, solutions. Some ideas that we have in mind are bridging the AgriTropics Interdisciplinary Case Study with the Garden to design a permanent irrigation scheme through the help of the Fg. Agrartechnik. The Organic Food Chain Project or a possible project within CropSciences might design a fertilization management or crop rotation plan best suited for organic farming and a variety of diverse plants. The Bachelor students can also become involved through practical experience and short excursions, such as, the Horticulture or Soil Science classes observing organic techniques or soil identification and fertilization, respectively. The relationship between the garden and the university can be diverse, fun, and functional.

The community surrounding the campus can also become partners in this project. The Student Garden can be an exhibit and a real-life playground for kindergarten and elementary school students or a place to understand plant growth in hands on way. Demonstrations about soils, vegetables, flowers can be given after the garden has been established and can continue year round to show the cycles of the plant community.

## **5.0 Prospects**

We have had a successful harvest producing honest, organic food here at Hohenheim. It is our wish to continue this project into the future, expanding our agricultural knowledge and skills.

In the far future, we can see the Student Garden being more than a demonstration and small production garden. We can see the Student Garden growing large enough to sustain our own TMS Cafete and even the Mensa. This would make the cycle concrete and, although it would require the activity and support of both students and professors, it would illustrate our commitment to sustainable agriculture and the passion we have for Hohenheim. What better way than to grow honest food for a university that fosters the development of the agricultural sector in general? We can even imagine this expanding to provide our produce to the Speisemeisterei. Although these are only ideas, yet to be realized in feasibility, legalities, and restrictions, it illustrates our perspective and our faith in how successful the FRESH Student Garden can be.

This year was our first season and our first harvest and we are very happy and proud of the achievements that have been made. It was a great season! We would like to officially ask for a permanent piece of land, an opportunity to become an institution within the university. We hope to have your support and encouragement for a permanent Student Garden and the experiences and knowledge it will provide to the University of Hohenheim for years to come. We are convinced that this can be an excellent opportunity for the university to continue to demonstrate diversity on our beautiful campus. We thank you for your time and involvement; we are looking forward to your further suggestions and input.