



**gardens to grow**

URBAN HORTICULTURE FOR INNOVATIVE AND INCLUSIVE EARLY CHILDHOOD EDUCATION



Co-funded by the Erasmus+ Programme of the European Union



**explora**  
IL MUSEO DEI BAMBINI DI ROMA

UNIVERSITÀ DI PARMA



**STePS**

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**COSMOS kids**  
NURSERY AND KINDERGARTEN



**MUSEIKO**  
America for Bulgaria Children's Museum



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FUNDACIÓN TIERRA INTEGRAL



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# PROJECT BACKGROUND

# 1. PROJECT BACKGROUND

## 1.1 INTRODUCTION

School gardens are spreading all over Europe, as natural places where children can have: real contact with nature, discover the origin of their food, observe flowers and vegetables growing, experiment with natural growth, learn life skills such as responsibility, cooperation and self-confidence through achieving. However, the permanent exploration of school gardens is often difficult to achieve due to several factors: unsuitable school location (land availability or contamination), difficulty accessing water, lack of funds, access and maintenance limitation during the school holidays, lack of specialised teachers or personnel for permanent and expert garden care besides pedagogical activities.

GARDENStoGROW Urban Horticulture for Innovative and Inclusive Early Childhood Education is a project co-funded by the Erasmus+ Programme of the European Union, that aims to create educational gardens and training courses for early childhood teachers and school managers to develop basic, civic and transversal skills for the 3-6 age group.

The GARDENStoGROW project has been created because the improvement of education in the earliest stages of development can reduce disparities and inequalities at their roots, with a considerable socio-economic return in later years. The Commission has emphasised that “access to universally available, high quality inclusive Early Childhood Education and Care (ECEC) services is beneficial for all. It not only helps children to unlock their potential, but can also contribute to engaging parents and other family members with related measures to improve employment, job-related training, parent education, and after school activities” (Report of the Working Group on ECEC).



According to the Commission Communication “Early Childhood Education and Care: Providing all our children with the best start for the world of Tomorrow”, “high quality early childhood education and care can make a strong contribution – through enabling and empowering all children to realise their potential – to achieve two of the Europe 2020 headline education targets: reducing early school leaving to below 10% and lifting at least 20 million people out of the risk of poverty and social exclusion” (COM(2011) 66 final). The project also refers to the Strategic framework – Education & Training 2020, more specifically to the EU benchmark for 2020 “at least 95% of children (from 4 to compulsory school age) should participate in early childhood education”.

The project encourages the adoption of innovative and inclusive pedagogical practices at pre-school level, based on urban and social horticulture, through a series of outputs and a flexible and open training programme, so that ECEC teachers can transform gardening into inclusive and effective educational activities for the development and acquisition of transversal, social, civic and intercultural competences.

Gardens created within the GARDENStoGROW project will allow children from different backgrounds to participate in an inclusive learning environment, with no prejudice to any kind of discrimination, enhancing the access, participation and learning performance of disadvantaged learners.

The project also aims to strengthen the profile of the teaching profession, by: making the careers of teachers and school leaders more attractive through a European opportunity; supporting teachers in dealing with diversity in the classroom (including pupils with a migrant background), through hands-on and non formal activities based on horticulture, supporting them in adopting collaborative and innovative practices; strengthening leadership in education, through an active involvement from the school leaders.

This publication is the result of the intellectual output “GARDENStoGROW Inventory”, an inventory of educational vegetable gardens found in schools and other organisations and a collection of training needs and skills for teachers and school managers who are willing to create vegetable gardens in their schools.

## 1.2 PROJECT PARTNERS

The GARDENStoGROW Inventory has seen the collaboration of partners from Italy, Bulgaria, UK and Spain:

• **MUSEO DEI BAMBINI SCS ONLUS:** Explora is a privately run non-profit children’s museum based in Rome, a permanent structure dedicated to children aged 0 to 12 years, schools and families. It fosters and helps children’s natural urge to learn with exciting suggestions and exhibits, designed for all age groups; offers parents and children a chance to share this exciting experience, which will allow children to grow up and adults to rediscover childhood; offers teachers and children exciting and innovative non-disciplinary experiences to be followed up in class; creates interest and positive attitudes in children and their caregivers towards cultural interaction, cooperation, respect for other people and the environment; brings children and adults closer to science and research by promoting culture, knowledge and new technologies;



• **ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA DEPARTMENT OF AGRICULTURAL AND FOOD SCIENCES:** provides leadership in research, teaching and extension in the subjects of horticulture, crop production, sustainable agricultural systems and environment and applied plant ecology. Its mission is to develop and deliver educational and research programmes enabling students to become highly skilled and creative graduates and fostering the adoption of profitable, environmentally sound and socially responsive agricultural systems. It has a world leading experience in the area of urban farming in Europe and in developing countries especially in the development of sustainable small scale horticultural cropping systems;



• **UNIVERSITÀ DEGLI STUDI DI PARMA DEPARTMENT OF HUMANITIES, SOCIAL SCIENCES AND CULTURAL INDUSTRIES:** is considered one of the main research areas of the University. Scholars working in the Department have considerable experience in social development, emotional competence, teaching and learning processes, discursive interactions. Their research is mainly conducted within a socio-constructionist theoretical framework based on multimethod approaches. The Department offers a Master

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Degree in Clinical and Applied Psychology, Bachelor and master in Education, and a Master of Applied Behavior Analysis (A.B.A.), of particular relevance for the training of teachers;

•STEPS SRL: works nationally and internationally to promote educational research, reflection and rethinking of traditional learning approach. Furthermore, STePS pioneers approaches to formal and non-formal learning to enable personal growth as well as inclusive and sustainable change in organizations and territories. Over the last years, STePS has become increasingly committed to initiatives designed to overcome the very strong national differences in the preparation of ECEC workers (curriculum design) and their educational practices (learning standards);



•ISTITUTO COMPRENSIVO CLAUDIO ABBADO: is involved with the pre-primary section Ermenegildo Pistelli, with a group of teachers, the school leader and a group of pupils aged 3-6;



•MUZEIKO FOUNDATION: the Children's Museum of Sofia is the biggest science centre in Eastern Europe specifically targeting children. It specializes in science communication for children and informal learning. MUZEIKO is working within a social context, which is specific with more than 30% of the population living under the poverty line and the particular geographic position of Bulgaria on major roads of migration;



•COSMOS KIDS 1 LTD: is an English language kindergarden based in Sofia with focus on development of multilingualism and social skills, physical development through sport activities, living in natural environment;



•SOUTH WEST COLLEGE STEM CENTRE: South West College is one of the largest vocational and technical Colleges in the United Kingdom employing over 900 staff, servicing some 22,000 full-time and part-time students, with an annual turnover of £42 million. The College is rurally located in the western region of Northern Ireland, and offers modern technical, vocational and social based curriculum to support the local and regional economy. The College has a strong reputation across the United Kingdom and beyond for excellence in service delivery, consistency of performance and a commitment to continuous improvement. It is involved with the STEM centre, the UKs first teaching facility focused exclusively on delivering educational and interactive activities in the areas of Science, Technology, Engineering and Maths;



•DUNGANNON PRIMARY SCHOOL: has served Dungannon town (Northern Ireland) and the surrounding areas for over forty years, and has become an integral part of the community. The school caters for almost 250 pupils, who are taught in nine mainstream classes and three Learning Support Classes. Integration with mainstream classes is seen as a major part of each pupil's overall educational experience, with every opportunity being taken to ensure this on a daily basis;



•FUNDACIÓN TIERRA INTEGRAL: is an NGO created in 2000 to implement and use ICT technologies, development of agro-ecology knowledge, research and development on environmental and energy processes that contribute to tackling climate change. It promotes, protects and develops cooperation of all kinds of intellectual, scientific and cultural activities in the rural areas;



ESCUELA DE EDUCACION INFANTIL N1 DE BULLAS: is a public childhood school (2nd cycle of childhood education with children aged 3-5), located in Bullas (Spain), with a population of approximately 12,200 inhabitants and an area of 82.2 km<sup>2</sup>. The origin of the pupils is from Bullas, in a high proportion, mainly influenced by the proximity.



A small number of pupils are immigrants from various places (Latin America, China, etc.); families have a very varied socioeconomic and cultural level, on average medium level.

### 1.3 OBJECTIVES AND METHODOLOGY

The aim of this report is to achieve the main output of GARDENStoGROW Intellectual Output 1 (IO1). The objective of IO1 is to build a comprehensive framework of inclusive practices and activities carried out in gardens by ECEC schools in 4 European countries (Italy, Spain, Bulgaria and the UK), and to identify skills and competences required by teachers and ECEC professionals to successfully deliver the inclusive practices and activities.

In total, 108 questionnaires were collected in the four countries, of which 62 were related to schools and 46 to organisations. The table below demonstrates the number of questionnaires collected in the four countries:

	Italy	Spain	Bulgaria	United Kingdom	Total
<b>Total Schools</b>	20	17	16	9	62
<b>Total Organisations</b>	19	14	6	7	46

Table 1: IO1 Questionnaires

This report is focused on one section of the questionnaire - “Your garden”. It highlights key aspects associated to technical information of gardens implemented by schools and organisations . The key questions submitted to the schools and organisations related to the section named “Your Garden” were:

Question 1: What year was your garden opened?

Question 2: Please indicate the garden surface in square metres;

Question 3: How does the organisation acquire the seeds?

Question 4: Which type of seeds does the organisation use?

Question 5: Which type of growing methods does the organisation use?

Question 6: Which type of fruits/vegetables does the organisation cultivate?

Question 7: Does the organisation grow plants for decorative purposes?

Question 8: Which kind of herbs and medicinal plants does the organisation cultivate?

Question 9: Does the organisation cultivate cereal crops?

Question 10: Which type of fruit trees does the organisation cultivate?

Question 11: Which kind of berries does the organisation cultivate?

Question 12: Which kind of root plants does the organisation cultivate?

Question 13: How does the organisation use its gardening products?

Question 14: Please describe both the advantages and disadvantages of having a garden.





# ANALYSIS OF RESULTS OF 'YOUR GARDEN'



## 2. ANALYSIS OF RESULTS OF 'YOUR GARDEN'

### 2.1 RESULTS

In this section, the results obtained by questionnaires collected in the four countries will be discussed.

#### 2.1.1 What year was your garden opened? (Question 1)

The opening date for gardens are highly variable both among schools and organizations. In general, most of the gardens for the four countries opened within the last ten years. The school that opened the garden earliest is Hart Memorial Primary School, Charles Street, Portadown, United Kingdom (1935) while the school that most recently opened their garden is Scuola dell'infanzia Don Minzoni, Via Mar Tirreno 180 - Modena, Italy (2018). Concerning the Organisation, the oldest one is the Officine Culturali - Orto Botanico piazza Dante, 32 Catania - Italy (1862) and the most recent one is TICE, Loc. Seguzzone, 3, 29010, Nibbiano (PC) - Italy (2017).

For further detail see Appendix 1.

#### 2.1.2 Please indicate the garden surface in square metres (Question 2)

The size of the gardens at school level is also highly variable. Among schools the size of garden varies from 10 m<sup>2</sup> (Scuola dell'Infanzia Zamboni, Bologna and IP Alfonso X El Sabio - Madrid) to 5690 m<sup>2</sup> (Hart Memorial Primary School, Charles Street, Portadown - UK). Among organisations, the size of gardens varies from 10 m<sup>2</sup> to 971'000 m<sup>2</sup> both at Corinne Richards, Sutton Courtenay Environmental Education Centre - UK.

#### 2.1.3 How does the organisation acquire seeds? (Question 3)

In Spanish and Italian gardens (for both schools and organisations), seeds are generally purchased. In Bulgaria, seeds are also donated or sponsored by organizations. In United Kingdom, seeds for school gardens are generally purchased or sponsored by organisations, while seeds for organisations gardens are sponsored by botanical gardens.

#### 2.1.4 Which type of seeds does the organisation use? (Question 4)

80% of schools acquired seeds from local market, including commercial hybrids (26%), organic seeds (32.5%), local seeds (3%) and ancient/traditional varieties (18.5%). A significant amount of schools (56%) are using seeds from own production; it is a good practice that should be encouraged.

The organisations are acquiring seeds mainly from local market (60%) but also a significant percentage (40%) are sponsored from botanic gardens. It is important highlighting that 55% of organisations are using 55% of organic seeds and 39% are producing their own seeds from their own harvested seeds and also local varieties are well represented and valorised (25%).

#### 2.1.5 Which type of growing methods does the organisation use? (Question 5)

95% of schools are growing vegetables on soil and 51% of schools are adopting soilless systems. The simplified soilless technique is an easily manageable system both regarding implementation and management. The design of soilless systems allows the beneficiaries to move the garden into

different locations (even inside the school) based on the teachers needs and season. It is important to highlight that 100% of UK schools carry out composting activities while in others schools such activities is limited (only 19% of schools) or not realized at all. A suitable and safe composting system should be implemented in all schools to sensitize students to waste recycling and converting bio-waste into food.

#### 2.1.6 Which plant species are grown in the gardens? (Questions 6-7-8-9-10-11-12)

Regarding vegetables productions, there is no significant differences on species cultivated in the four countries. The vegetables mainly cultivated at schools in all the countries are: tomato, lettuce, peppers and pea. It is also important to note the production of eggplants and zucchini. It is interesting to observe that all the main cultivated species are species adapted to be grown during spring and summer period.



In a few schools, some winter species (cabbage and pumpkin) are cultivated. This is probably due to the fact that the main gardening activities are carried out during the hottest period of the year. The organizations are growing and promoting both summer and winter species.

All schools and organizations are growing/promoting herbs species and medicinal plants, mainly represented by rosemary, parsley, garlic, thyme and basil. Decorative plants are cultivated by 73% of organizations and 80% of schools.

Also, roots, bulbs and tubers are largely cultivated by schools and organisations. The inclusion of such kinds of vegetables together with fruit (tomato, zucchini), Leguminosae's plants (pea, bean) and leafy vegetables (lettuce, spinach) allow to plan a proper crop rotation that could contribute to keep stable the soil fertility as well as to contribute to a better management of pest and diseases, reducing running costs and contributing to the gardens economic sustainability.

Fruit trees are also cultivated both at schools and organisation level. The species of fruit trees cultivated among the countries are similar, and the most common are: apple, plum, cherry, grape and apricot.

Cereals (mainly corn and wheat) are cultivated significantly only in the Bulgarian schools (90% of schools) and only 10% in Italy and Spain, while in UK it is not cultivated at all.

The cultivation of berries species is very important to improve the biodiversity of the environment surrounding the gardens. Most of the schools and organisations are growing berries and the most common are strawberries in all the countries.

#### 2.1.7 How does the organisations use its gardening products? (Question 13)

65% of schools are using the gardening production for teaching purposes, 32% both for teaching and consumption and only 3% of schools are using the production only for consumption.

Regarding the organisations, 82% are using the production for teaching purpose and only 18% for consumption.

2.1.8 Major advantages according to organisations and schools (question 14):

- Educational tool for children and for teachers (knowing how to grow food, what to grow)
- Social inclusion (team work, equality for everyone no matter the age, gender, race)
- Restoration and conservation of the nature in urban areas
- Physical exercise
- Creativity
- Therapeutic effect
- Getting closer to agriculture, to the soil, to the traditions of growing their own food
- Better taste when you know what you are growing in ecological way
- Consumption of the food you grow

2.1.9 Major disadvantages according to organisations and schools are (question 14):\*

- Maintenance of the garden
- Summer period & vacation period in which inconsistency occurs
- Time consuming
- A lot of work required
- A person in charge of the garden activities is required
- Lack of interest by teachers and parents
- Lack of appropriate training material

\* The majority of organisations and schools did not mention disadvantages, most only stated advantages.

## 2.2 CONCLUSIONS

It is evident that many schools and organisations are growing a large variety of species. This is a very important and positive aspect from an agro ecological point of view (in order to attract beneficial insects and to repel insects pests) and for helping the management of pest and diseases within the garden. The inclusion of the aromatic and decorative plants could be an important educational path for students. Moreover, the diversification of plants species in the gardens makes them more colourful (decorative plants) while the aromatic species makes it more odourise, contributing to the positive approach of the students to the gardens.

Appropriate composting activities should be introduced at school level to improve the students' knowledge regarding bio-waste and waste material management. It could be very effective to use recycled materials (such us pallets, PET bottles, etc...) both to establish simplified composting systems in schools' gardens, to valorise local and available material, and to make the garden cheaper and easier to manage and to maintain.

This report will allow schools and organisations to identify the more suitable material locally available for garden implementation, and inputs (seeds, fertilizer, etc..) required for garden management. At the beginning of garden implementation, it is suggested to use plants' and seedlings provided by the nearest commercial nursery. Subsequently, for the establishment of a school nursery it is recommended in order to keep down the cost of seeds and to acquire autonomy from a productive point of view. It is recommended to train teachers and students to utilize native seeds, open pollination seeds and to dedicate a part of garden for seeds production to valorise local, native and heirloom varieties.

To contribute to the sustainability, implementation and construction of school gardens there should be close collaboration with a selected group of teachers to involve them in all phases of implementation. This approach will improve the teacher's ownership, attitude and responsibility for the garden. Moreover, it will contribute to ensure the inclusion of gardening activities within the educational school's system.

The technical training of a limited group of teachers (3-4 members) on the management and maintenance of a garden is essential to guarantee the sustainability of the garden. Moreover, the delivery of monitoring tools and a technical manual on garden management and maintenance is also fundamental.



# INCLUSION IN GARDENING ACTIVITY

# **Inclusion focuses on the diversities and at the same time on the active participation of each individual inside a group whose members cooperate for a common objective.**

## **3. INCLUSION IN GARDENING ACTIVITY**

### 3.1 BACKGROUND

Inclusion, intended as a mutual and dynamic interactive process, in continuous evolution (Booth, Nes, & Stromstad, 2003; Dovigo, 2014) is characterised by its complexity and involves children and the educational figures present in the context. Children and teachers are at the same time co-constructors and beneficiaries of inclusion.

Inclusion focuses on the diversities and at the same time on the active participation of each individual inside a group whose members cooperate for a common objective. In the last few years, interdisciplinary didactical activities, such as gardening and horticulture, have spread; they are characterised by an important pedagogical, educational and inclusive significance in the various learning contexts. Several works present in literature underline the educational importance of horticulture (Ohly et al., 2016), since this practice appears to be a multidisciplinary tool that enables the child to get in touch with nature, learning skills and new abilities. Furthermore, this practice favours observation, exploration and manipulation techniques, which are important elements in the development of a growing baby (Blair, 2009). Therefore, the horticultural and gardening activities enable us to stimulate, motivate and gratify children, triggering and supporting scientific and pedagogical development targets. Carrying out educational and recreational activities in a natural environment allows children to create and keep in touch with the environment, favouring not only learning aspects, but also socialization and inclusion aspects. In this respect, in fact, the creation of vegetable gardens turns out to be an educational tool that favours interpersonal and social aspects, such as sharing and creating interpersonal relations among children, based on reciprocity and respect. To this day, horticultural and gardening activities are frequently proposed to children of pre-school and school age, through laboratories, projects and specific activities (Bowker & Tearle, 2007). Considering the variety of educational proposals offered, in virtue of the high pedagogical and inclusive value of horticulture, it is necessary to deepen and understand in detail the inclusive practices proposed and implemented in the kindergartens and in the organisations that propose gardening and horticultural activities. All this can have as ultimate objective to reinforce the skills of the teachers or educators engaged in these activities, creating more integrated, structured pathways concerning the horticultural practice intended as a tool for social inclusion and innovation. This practice can, over time, become a steady activity within curricular training schemes.

With this aim, as part of GARDENStoGROW project, questionnaires have been submitted to schools and other organisations with an aim to detect, besides the gardening practices that are actually implemented, also their educational meaning concerning inclusion.

With this objective, we propose a synthetic analysis of the main contents that have emerged regarding the educational aims of gardening and the subject of inclusion.

### 3.2 SCHOOLS

The number of schools that have joined the GARDENStoGROW project in each country is reported in the table 2

<b>Country</b>	<b>No. of Schools</b>
Italy	20
Spain	17
Bulgaria	16
UK	9

Table 2: No of schools per country

The schools taking part in this project involve a full class of children (about 20-25 children) in the gardening activities and sometimes the children are divided into small groups (about 4-8 children) to carry out the activities.

In terms of the process of inclusion, most schools (87%) highlight the importance of gardening practices in order to promote the idea of inclusion with children aged between 3 and 6.

Most schools (81%) report having children with special needs of various kinds, for example children with social and linguistic problems, psychomotor problems or certified disabilities.

Although inclusion in children with special educational needs is lower in schools in Bulgaria, Italy and Spain (< 10%) and higher in UK schools (>10%), there is a common vision in recognising an important and inclusive educational purpose in the horticultural and gardening activities. They are useful in promoting and favouring the co-operation and inclusion of children that present difficulties of various types (cognitive, behavioural).

Regarding schools in Italy, UK and Spain the presence of children coming from different cultural backgrounds is higher than in Bulgaria.

Overall, teachers do not report any particular difficulties in the inclusion of children with special educational needs and/or different cultural backgrounds. In this respect, it can be pointed out that the teachers have a more complex vision of inclusion and deem gardening as a more suitable activity for all the children. In fact, these activities have different degrees of difficulty and complexity and can fit nicely to every single child's abilities and skills, stimulating and highlighting the individual contribution of each child. Furthermore, the horticultural and gardening activities, thanks to their flexibility, enable an implementation of specific and structured activities for each single child, allowing him/her to express his/her potentials at best.

It is remarkable that, in most cases, the schools involved have not reported any significant problems coming from the inclusion of children with special educational needs of various types and/or coming from different cultural backgrounds in the gardening activities. This aspect enables to underline how these activities favour the participation of all the children and stimulate



cooperation among children that have resources and those with problems of different kinds.

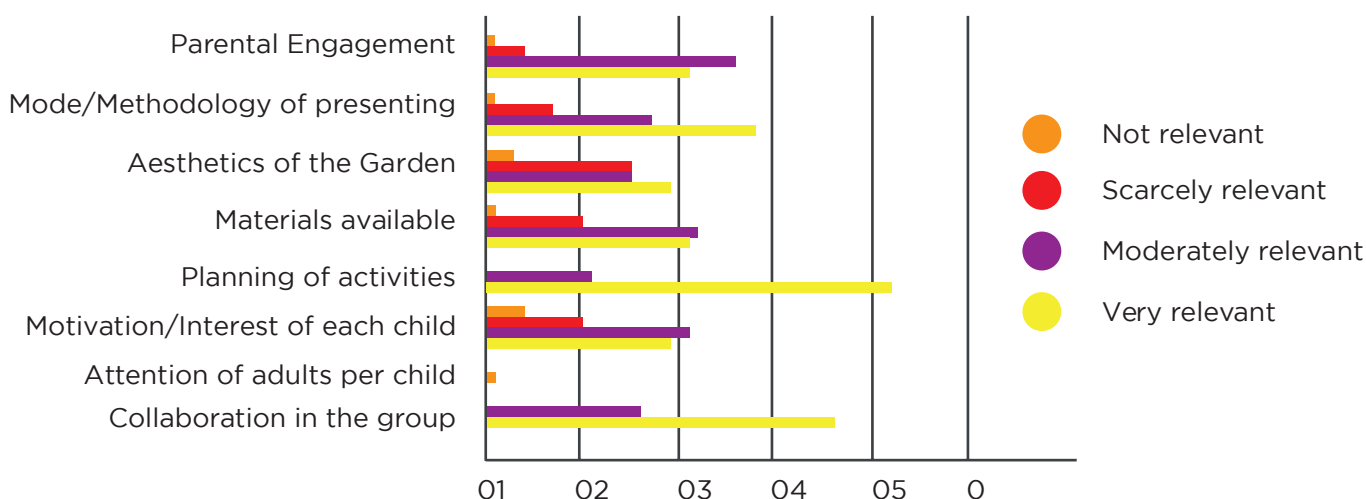


Table 3: Relevance about inclusion of different gardening practices

Most teachers (87%) consider gardening as a more inclusive activity compared to traditional curricular activities. In particular, the questionnaires have detected which aspects of the gardening practices are deemed important by the teachers in order to favour inclusion (see Table 2).

An important value is given to the following aspects: motivation/interest of the child and collaboration within the group. Less importance is attributed to the parental engagement, attention of adults per child, materials available, planning of activities, mode/methodology of presenting the proposal and aesthetics of the garden.

The evaluation of gardening activities in order to improve inclusion is carried out by schools mainly through regular meetings between teachers and coordinators, parental and children feedback, continuous monitoring of activities to introduce changes and environmental audits.

The documentation of gardening activities in order to improve inclusion is carried out by the majority of schools and concerns learning abilities of children, their social skills and the ability to work in groups. Only few schools (except in the UK and in Bulgaria) consider it important for the inclusion to document the individual activities of every child.

There are many advantages related to the gardening activities. For example, gardening promotes socialising activities and belonging, favours caring and respect for nature, increases children's responsibilities, values the waiting times, allows outdoor activities, stimulates good dietary practices and helps to strengthen cognitive skills and behavioural routines.

Many educational aims of gardening have been identified through this project. In particular, one of the main objectives of the educational garden is to help each child to observe and learn directly through the senses in a non-traditional context, thus developing knowledge, skills and experiences while nurturing their capacity to take care of each other. Moreover, it promotes exploration and discovery, contact with nature, searching for creative solutions as well as expanding their knowledge base on natural sciences. At the same time, gardening helps and stimulates every child's personal experience of the garden, their learning of where food comes from and how to work with the land to grow food. Such activity increases one's interest, curiosity, love of nature and develops physical, emotional and intellectual abilities. In particular, garden activities help develop both gross and fine motor skills.

Furthermore, another main objective is to help the entire class take part in activities that share common goals and so experience being protagonists in a process of growth as they try to complete tasks and carry out roles while learning to collaborate and cooperate. In this way, children learn how to coordinate their efforts while collaborating in the garden, as well as learning about respect and patience with other children and their opinions. Moreover, they learn to communicate with and correct each other, share impressions, experiences and resources. Consequently, the children learn that together they can achieve much more, have a better harvest and more joy in working in the garden.

## DISCUSSION

The data presented allows us to reflect on the importance of gardening as an educational activity to promote inclusion in early childhood. Gardening favours cooperation, stimulates small group work, easily involves children with special needs, and can be adapted to specific child's needs using materials that are adequate for all children. Overall, gardening promotes sharing and cooperation.

Although teachers are aware of the potential of gardening in fostering this process, in the future it may be helpful to increase teachers' awareness of the **importance of focusing more specifically on each individual child during activities**, including the use and documentation of multimedia materials (e.g. photos/videos), and planning interventions aimed at children with special educational needs. This could be favoured by the use of specific materials and by designing structured and highly inclusive gardening activities, as well as by designing spaces that are more accessible to all children. Furthermore, teachers could find ways to involve parents in the activities more in order to consolidate the children's social, emotional and behavioural skills acquired in the school context and also in their family environment.

Based on the results, it is important to outline the guidelines to be proposed to teachers, in order to systemize the gardening activities in curricular school programs, thus increasing their educational value.

### 3.3 ORGANISATIONS

The number of organisations that have joined the GARDENStoGROW project in each country is reported in the table 4.

<b>Country</b>	<b>No. of Schools</b>
Italy	19
Spain	14
Bulgaria	6
UK	7

Table 4: No of organisations per country

Most of the organisations involved in the project (based in Italy, Spain, Bulgaria and the UK) report that they do not specifically restrict the access to the facility in any way. In most cases,

these organisations are contacted directly by the schools. Every year these facilities welcome many children for gardening activities.

The gardening and horticultural activities are offered both to schools and families who decide to participate. The schools involved in these activities are both central and located in peripheral areas with respect to the organisation.

All the organisations involved offer gardening and horticultural activities to pre-school and schoolchildren (aged 3-6), and numerous groups of children participate in every gardening session, which are sometimes divided into smaller work groups. The number of children for each session varies. In most cases it is higher than 10 children, but in some cases (Bulgaria and UK) it can reach up to 150 children. In the space of a year, there are many children involved in gardening, and in one case (e.g. Spain) 15,000 children per year.

In the groups of children participating in the activities there are also those with special educational needs and/or from different cultural backgrounds.

Most questionnaires show a relatively low percentage of children with special needs (<10%). In two cases, however, the questionnaires declare a presence of 80-100% of children with special needs, one being the TICE Cooperative in Italy, and the other BOSQUE SUR, the local public body in Spain.

These children are divided in small groups, appropriate materials are prepared, and the explanations are adapted to their skill levels. Only in few cases is it found that gardening presents difficulties for children in terms of accessibility, or when handling fruits or very small garden produce and objects, as there is some risk that these can be ingested, thus posing potential danger. Moreover, to cope with the cognitive and behavioural difficulties that children with special educational needs can demonstrate, sometimes there are tutors and/or teachers who support them in their activities.

Overall, in most cases (89%) there are no particular difficulties in involving these children in gardening activities. In some cases, (e.g. Bulgaria) it is reported that schools usually inform the organisation's managers of there being any children with special educational needs. In these cases, organisations can take the necessary steps to allocate the required extra time for the activities, use gestures in explanations, provide clearer explanations, speak more loudly and simply or facilitate hearing aids with a designated staff member (for hearing-impaired children). It is worth pointing out that there are also organisations that specialise in catering for special needs children by preparing among already mentioned adaptations also skill-specific and level-specific materials (e.g. especially raised beds that are easily accessible for wheelchair users) and other sensory stimulating installations that provide easy access and a rich sensory environment. Moreover, in these situations, small group work is given greater priority as far as children are concerned and they are very comfortable working quietly, with adequate time and space.

Some teams also have specifically trained people to work and assist such children in gardening activities (e.g. Bulgaria and Italy), providing individual psychological and educational support. Overall, the activities proposed by the organisations are well suited to the needs of each child, so as to encourage participation and involvement of all. It is a shared goal to create conditions favourable to the active participation of each child, respecting the needs of each. Most of the organisations (85%) involved believe that gardening, compared to other activities, is a practice that favours inclusion. In particular, the questionnaires have identified which aspects of the gardening practices are deemed important by the teachers in order to favour inclusion (see Table 5).

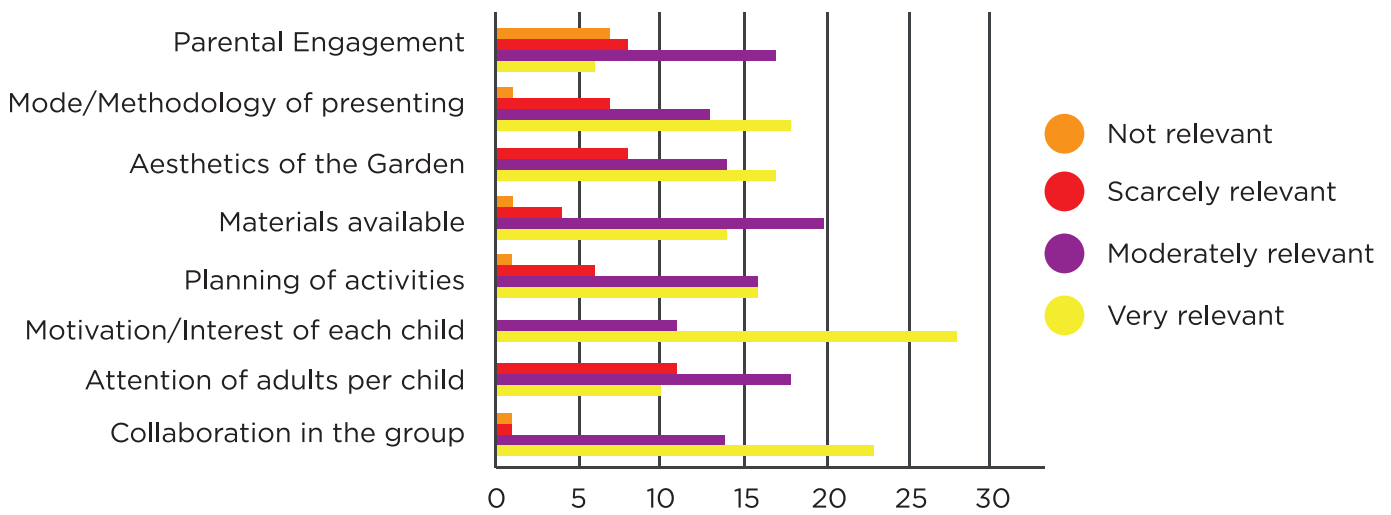


Table 5: Relevance about inclusion of different gardening practices

An important value is given to the following aspects: motivation/interest of the child and collaboration within the group. Less importance is attributed to the parental engagement, attention of adults per child, materials available, planning of activities, mode/methodology of presenting the proposal and aesthetics of the garden.

The evaluation of gardening activities in order to improve inclusion is less practiced by organisations than schools. It is carried out mainly through discussions in teams, books for feedback, regular meetings between the team and teachers of the schools, questionnaires proposed to the schools, selection of smiles and boxes or baskets in which to insert sheets.

Even the documentation of gardening activities in order to improve inclusion is not very common in the organisations. When it is present (not more than 5 organisations in every country), the documentation concerns the use of material, the activities carried out and children’s ability to work in groups.

Gardening activities allow participants to acquire and reinforce environmentally and socially respectful habits and practices. In particular, people involved in the surveys identified many educational aims of gardening. Some of which are, contact with and respect for nature, knowledge of natural cycles beyond the actual curricular needs and objectives. These activities stimulate a child’s natural curiosity, interest, exploration and sense of responsibility.

It is a shared opinion that gardening activities not only stimulate one’s interest and love for nature, but also teach us where food comes from, while increasing the use of naturally produced vegetables, stimulating good dietary habits. They also develop the senses and promote the development of both fine and gross motor skills and positive behavioural patterns.

More specifically, children learn about the different parts of plants, how to recognize edible plants and their edible parts, develop the senses and practical skills for working with the land.

Gardening enables children to get closer to the natural environment, getting out of the traditional educational activities and learning with the senses; it improves children’s dexterity and develops their senses. In fact, children get to know the soil by touching, sniffing, manipulating and looking at it, simultaneously replanting, tilling, sowing and harvesting their produce, depending on the type of workshop required or proposed. Gardening teaches children to grow conscious and to

respect their environment, learning to take care of it. Moreover, these activities teach them to overcome their own limits (e.g. handle the soil, pick up an insect, be able to hold seeds and sow them instead of wasting them) and carry out small tasks (e.g. sowing, transplanting, watering, collecting).

The questionnaire shows that the main objectives of educational garden are to help the entire class to improve their knowledge of the school subjects such as natural sciences, mathematics, botany etc. links the theory behind them with practice. In addition, the work on the garden increases children's awareness of sustainability and biodiversity, explains where the food originates from, the reasons for climate change and also raises their awareness of their own carbon footprint by reflecting on and understanding the chain of consumption. Children can develop the skills of observation and dialogue, asking questions and linking information to create a clear picture of how the garden functions and supports the wider ecosystem. Moreover, they can make new discoveries, be comfortable with getting dirty, and understand natural cycles. Gardening activities can help children enrich their lives through exploring plants and the natural world around them and acquiring and reinforcing positive habits towards the environment and people.

## DISCUSSION

Compared to traditional educational activities, gardening has a higher level of inclusion, because it stimulates group collaboration and cooperation through sharing and carrying out the work together, enhancing each person's contribution, the feeling of belonging to a group and including children with special educational needs. Moreover, it is important because gardening increases awareness of how an inclusive group-work, that integrates different types of expertise, can produce unique and important results.

Children learn to organise around common tasks and have common goals, play and work in a team and communicate with each other. In particular, children learn to respect each other's space and share what they have done together which improves their relationships and their social skills and strengthens shared experiences.

In future terms it would be useful to increase the knowledge of the importance of adult attention to each child and its specific needs. This would allow for further adaptation of spaces, materials, activities and times, in order to enable each child to feel at ease while gardening with other children. This would foster collaboration and cooperation, emphasising at the same time the resources of each child and the importance of their contribution in the broader group work.

Finally, in future, it might be useful to further increase the documentation and evaluation material of the activities in order to make the activities even more inclusive.

## 3.4 INCLUSIVE PRACTICES AND EDUCATIONAL AIMS FROM VIDEOS AND PICTURES

Despite the photos and especially the videos were not very numerous, from their analysis some interesting aspects emerged regarding inclusion and educational aims of gardening.

**Experimentation of different life forms:** in some pictures, we can see children with both plants, flowers, fruits and small animals.

**Experimentation of the sense of touch using hands:** the hands are often in the foreground in the photos.

**Attention:** children, both in small and large groups, always are very interested and focused on

their work and that of others.

**Using materials** and locations suitable for children with special needs.

We observed different ways to socially participate in the gardening activity:



### 1. Children

1.1 in a small group

1.2 in a large group

1.3 on their own, alone in the presence of others

1.4 cooperation.

**2. Turn taking.** Pictures and videos show that children are able to wait for their turn, when the gardening activity requires working one at a time. This is very inclusive.

### Teachers

The teachers can have a different role: Very active, for example they illustrate the activity to be carried out or defiled, and remain on the sidelines and let the children work independently. We think that an inclusive good practice for the teachers is to distinguish when to be in the foreground and when to stand on the sidelines.

We observed an important difference between the gardening activities in schools and organisations.

### **Gardening activity in the school is well organised.**

From some photos and videos, it emerges that in schools the gardening activity is well structured. The different phases of work are planned and there is clear documentation of the activity. For example, the children explain the phases of the work, then they draw the produce and can consult books. Children can become aware of the work done.

### **Gardening activity in the organisations appears more flexible.**

From videos and pictures we can see both laboratory activities conducted by educators and free activities managed autonomously by families. The impression that after the work of gardening there is no further elaboration work with the children. However, we observed only few videos and photos. In any case, we suggest that a more structured gardening activity could be a good practice for organisations that carry out educational garden activities.

This difference is consistent with findings that emerged from the questionnaires. In the organisations the documentation is less realised than in the schools and it concerns particularly materials and activities. The schools are more focused on the children learning processes.

### 3.5 CONCLUSION

In conclusion, findings emerged from the questionnaires, photos and videos suggest some reflections to propose to teachers and teams of organisations.

In particular, it is important that teachers consider inclusion also to pay attention to every single child and his/her individual activities, even if this child does not have special educational needs.

Furthermore, the involvement of families can also create a broader context in which everyone feels valued.

Finally, the evaluation and the documentation of children's individual skills and activities, in addition to group ones, can be considered an inclusive practice.

In this way, it is possible to help teachers to develop a broader concept of inclusion, in which to value relationships, the group, the inclusion of children with special needs, but also the contribution of everyone. These ideas emerge from the questionnaires, especially with respect to the educational goals of gardening, but they are poorly highlighted when teachers and organisations reflect about inclusion.

On the other hand, it is interesting to notice that from the videos and photos, which show the actions and activities carried out and not the teachers' representations, many innovative and inclusive practices of gardening emerge. In particular, we can observe attention for their own and others' work, respect for turn taking, shift from an active to a passive role, depending on the activity carried out.





# SCHOOL GARDEN CASE STUDIES





## 4. SCHOOL GARDEN CASE STUDIES

### 4.1 ANALYSIS CASE STUDIES (SCHOOL GARDENS)

This short report compares and analyses 5 case studies regarding school gardens in Italy, Spain, Bulgaria and UK (Northern Ireland). The partners designed a template to explore the origin of the school garden and its use by teachers and as well as its integration links to pre-primary and primary school's curricula.

GtoG project partners will use the data of this very circumscribed qualitative research to set-up the "Gardens to Grow Methodology Guidelines". The school gardens were analysed from three perspectives to determine their origins and features, their educational purposes and the maintenance aspects:

#### **(a) Description of the garden - (b) Pedagogical Activities - (c) Organisational aspects**

##### **DESCRIPTION OF THE GARDEN**

The origin of some school gardens goes back to the eighties of the last century (Italy) others have come into existence in the last twenty years (Bulgaria). It is noteworthy that the initiators are sometimes very dedicated school directors. The size of the school gardens varies from smaller gardens starting from 30 m<sup>2</sup> up to very big sized one (400 m<sup>2</sup>). Mostly annual vegetables and a small bit of fruit are grown in the garden or combination flower/vegetable. Some follow principles of biodynamic agriculture.

##### **PEDAGOGICAL ACTIVITIES - EDUCATIONAL AIMS AND OBJECTIVES**

From a pedagogical perspective, all school gardens are associated with experiential education, environmental education and social competence development.

The main educational aim is to positively affect students' understanding of nature. Generally, teachers hope to promote positive environmental attitudes in children. All case studies show that school gardens are used to give students a chance to interact with the environment and nature by interacting with natural elements (soil, water, plants). Gardening is meant to broaden children's experience of ecosystem complexity and makes them understand "how a plant goes from seed to plate". In other case studies (especially in Bulgaria and Spain) there is a strong interdisciplinary approach since school gardens are excellent places for explorative learning and provide for manifold sources for interdisciplinary teaching. In these cases gardens are tied to the curriculum as a vehicle to teach other subjects such as math and science and even reading. In some cases the consumption purpose is a learning priority and is celebrated sometimes even in special events (harvest). In this case we can find a complete food cycle: children grow food that they then can prepare, eat and share.

In some cases, teachers largely use the gardens to develop social competences like co-operation, commitment, responsibility (Spain).

Inclusion is predominantly focused on students with special needs. Only very few gardening programme target students with more severe mental disabilities. Students are organised both in heterogeneous groups (Italy<sup>1</sup> and Bulgaria) as well as in homogenous ones (Pre-primary Italy).

## ORGANISATIONAL ASPECTS - HOW ARE SCHOOL GARDENS ORGANISED ON A PRACTICAL LEVEL?

There is no clear pattern of garden organisation, in fact organisation is the most heterogeneous of all variables investigated by GtoG and undermines the maintenance and even existence of some gardens.

In the case study outdoor maintenance of school gardens is tackled with different ploys. A single “garden leader” or “garden manager” does not exist. Some schools managed to distribute the responsibility of maintenance among a group of people including parents with set tasks and responsibilities decided on a common platform like a committee (Northern Ireland), other rely on the aid of very committed teachers (Spain) who volunteer sometime together with parents the rest somehow “muddle through” with the help of volunteers (Italy1).

Some report supportive head teachers (as already mentioned some of them even initiated the school garden).

In one case the school even started to cooperate with Associations that aid and facilitate the school garden practice (Italy2). In no case financial inputs are stable. Funding the school garden represents in all case studies one of the main challenges to overcome from year to year.

### Conclusion

The information gathered in the case studies tells us that variation in examined school garden programmes do exist and are very high. There is no clear distinction or grouping between the cases analysed.



## 4.2 CASE STUDY 1:



### **ALICE GARDEN**

Country	Italy
Town and address	Parma, Viale Rustici Giovanni 44/A, 43123
Name of the school	ALICE
School sector	Pre-Primary
Website address	<a href="http://www.comune.parma.it/servizieducativi/it-IT/Alice.aspx">http://www.comune.parma.it/servizieducativi/it-IT/Alice.aspx</a>
Contact	<a href="mailto:a.mantovani@comune.parma.it">a.mantovani@comune.parma.it</a>

#### **Description of the Garden**

The garden opened in 1985-86 and its surface area is 15 meters X 2 meters.

The school purchases the seeds and they are also donated by various organizations. In particular, self-produced and harvested seeds, commercial hybrids and ancient variety seeds are used.

The school uses the following types of growing methods: soil and soilless.

The following plants are cultivated:

- vegetables: tomato, cucumber, lettuce, zucchini, spinach, peas, beans and celery;
- decorative plants: buddleia and, marigolds;
- herbs and medicinal plants: basil, rosemary, thyme, sage, lavender, lovage, balsam herb and, savory;
- fruit: pear, pomegranate and, wild medlar;
- berries: strawberry;
- root plants: potato, carrot and radish;

All products from the garden are used only for educational purposes only.

#### **Pedagogical activities**

The school offers practical and theoretical gardening activities.

The children are involved in activities like sowing, replanting and harvesting. In addition, activities such as watering, cleaning, and installing plant supports are carried out. The educational material used for horticultural activities is characterised by plant nursery materials, videos and books.

The gardening activities are linked to the official school curriculum. More specifically, this link consists of the analogy between personal growth and care (area of identity), a sense of well-being that derives from certain activities, the willingness to take care of something that is alive, respect for the natural cycles and rhythms, dealing with situations and feelings when the processes do not go according to plan.

They said analogies also relate to colours, dimensions, size and topological and Euclidean concepts (geometric shapes, lengths, median points).

In all gardening activities, collaboration between children is always promoted.

All children, coming from different classes and aged 3 and 5, are divided into small groups and encouraged to participate in all activities. Groups are led by one or more teachers and for some activities are self-organized.

With regard to age, the group of children is heterogeneous.

With regard to inclusion, 5% of children in the class have different cultural backgrounds and 2% of children have Special Educational Needs.

In order to best deal with these potentially challenging situations an educational project is structured according to individual and specific developmental needs, and if necessary, links with relevant local bodies such as social services, neuropsychiatry, paediatricians are maintained throughout the duration of the project. Having said that, to date no particular difficulties involving Special Educational Needs pupils in the gardening activities have been recorded.

Compared to traditional school activities, gardening activities have a higher level of inclusion, because they stimulate and favour group collaboration, adults' attention to children, each child's motivation for and interest in the assigned tasks.

The school evaluates the gardening activities to ensure an inclusive environment for all children, it carries out an assessment of the educational and emotional impact of the teaching objectives and methodology.

Usually, the gardening activities are documented with photographs, drawings and panels.

### **Educational aims and objectives**

The main educational objectives of gardening are:

- for the child to become aware of life in all its forms;
- for the whole group to learn to take part in activities that share common goals and so experience being protagonists in a process of growth, trying to complete tasks and carry out roles while learning to collaborate and cooperate with others.

**Organisational aspects**

The creation of the garden was promoted by the teachers.

The garden is managed on voluntary basis. The school also receives external funding from parents or Non-Profit Organisation. All school teachers (about 12) are involved in the gardening activities. Every year, the school involves about 8-10 children's parents in horticultural activities (dig and hoe).

#### 4.3 CASE STUDY 2:



### I MONELLI GARDEN

Country	Italy
Town and address	via G.Casalinuovo, 32 Roma
Name of the school	I monelli
School sector	Pre-Primary
Website address	institutional website of the municipality of Rome
Contact	antonia.rutilo@comune.roma.it

#### Description of the Garden

I monelli is a municipal kindergarten where teachers and pupils have access to a garden which is 40 square meters in size. The garden was created in 2006 thanks to the initiative of the head teacher and the project has been extended which is also thanks to the support of the project *Orto in condotta*, which means: lead with Slow Food, an international, non-profit association, which is socially active on giving value back to food and local traditions.

<http://www.slowfoodroma.it/orti/>

The main cultivation system of the school garden is both soil and soilless and the types of seeds used for crops are native and organic. They are purchase or sponsored by organisations.

The main vegetables grown are: tomato, cucumber, lettuce, pepper, aubergine, zucchini, cabbage, fennel, spinach, peas, beans, kale, celery, chicory, artichoke and turnips.

Decorative plants grown are: seasonable blooms, myrtle, laurel.

Herbs and medical plants grown are: basil, rosemary, thyme, parsley, sage, garlic, chives, different types of mint and marjoram.

The fruits grown are: apple, grape, cherry, apricot, peach, plum, olive, pear, European medlar, fig, sorb, almond, pomegranate, strawberry, myrtle, arbutus and tubers like potato, onion, carrot and radish.

The school uses the garden for teaching and consumption purposes.

Teachers build multidisciplinary learning paths based on experience and sensoriality, it educates them on how to grow food correctly taking into consideration the principles of seasonality and biodiversity. The main problems of the educational projects connected to the garden is represented by a lack of funds dedicated to the maintenance of the space.

### **Pedagogical activities**

Gardening activities have a direct link to the Environmental education activities and curricular present in the 2012 Guidelines and the Educational Model of the city of Rome. The school deliver both practical and theoretical gardening activities: sowing, replanting, harvesting, food preparation and tastings at school together with the student's families.

The garden offers the opportunity to work in an interdisciplinary manner, addressing issues such as verbal and written language, mathematics, science (through exploration, observation, research and the study of natural phenomena). It also offers the opportunity to tackle topics such as emotions, music, sound and cultural integration.

During the gardening activities, teachers promote collaboration between children.

To integrate and support the activities, the school use educational materials for its gardening, like nursery materials e.g. seedlings grown inside, educational cards/worksheets, educational games, videos, drawings and sensory exploration.

### **Educational aims and objectives**

The average group/class during gardening activities is between 5 and 10 and they work in homogenous age groups:

Group of 3 years old: 14 male and 11 female

Group of 4 years old: 11 male and 12 female

Group of 5 years old: 9 male and 12 female

10% is the average presence of special needs students during activities.

Gardening activities have a high inclusive involvement thanks to the group collaboration, the dedication of each child to the assigned tasks, the attention of adults for each child, the accurate planning of activities, the parental engagement and the aesthetic impact of the gardens. Gardening is successful due to the materials and resources available and also because of the methodology at the beginning of the proposal.

The school evaluates its gardening activities in order to improve an inclusive environment through documentation, reflection and participation. During the documentations (video and pictures) teachers take into consideration group/class skills, cognitive/learning skills, social skills and also consider specific activities/materials and individual activities.

The main objective of the educational garden is to help an individual child to respect the environment, take care of him/herself and nature and also to enjoy learning new things.

The main objective of the educational garden is to help the group/class of children to build friendly relationships, unity and solidarity.

### **Organisational aspects**

The initial idea to launch the garden came from the school principal and was then extended to the teachers and supported by the project *Orto in condotta*. The garden is managed on a voluntary basis of 11 graduated teachers (degree or diploma) and parents are involved in maintenance and cleaning.

About the budget: the school initially spend 50,000 Euro to install its garden and the annual budget for the garden consist in 30,000 Euro. Until 2010 the Municipality provided funding to support the Educational Project.



#### 4.4 CASE STUDY 3:



### CEIP DEITANIA GARDEN

Country	Spain
Town and address	Totana, C/ Vasco de Gama 3
Name of the school	Deitania
School sector	Pre-Primary / Primary
Website address	<a href="http://www.murciaeduca.es">www.murciaeduca.es</a>
Contact	<a href="mailto:30008704@murciaeduca.es">30008704@murciaeduca.es</a>

#### Description of the Garden

Deitania's garden was created in the school year 2014/2015. It is a 400 square metres garden where the seeds used are mainly purchased and some of them are donations from organisations. These seeds are self-produced and harvested and we can classify them in 3 main categories: organic, ancient and variety.

Cultivation systems used are soil, soilless and trellis.

Within this garden a great variety of vegetables are grown, such as tomatoes, lettuces, cucumbers, aubergines, zucchini, peas, pumpkin, faba beans and chick peas from Sierra Espuña. Besides, it has aromatic and medicinal plants: basil, rosemary, thyme, parsley, sage, garlic, mint, lavender and peppermint.

The school does not use plants with decorative purposes and has no flowers, fruit trees nor either cereals.

Among berries and tubercles they have strawberries and different types of potatoes and onions. These products are mainly used with for teaching and consumption purposes.

### **Pedagogical activities**

The garden is a didactic resource of great importance for the school, where the contents from the educational curriculum are taught in an interactive way with children, from a theoretical and practical approach by means of activities such as sowing, replanting, harvesting and food preparation. For these activities a great variety of materials are used, such as nursery material, e.g. seedlings grown inside, educational cards, worksheet, games, videos, drawing and sensory exploration.

### **Educational aims and objectives**

Subjects such as Mathematics, Spanish, English and Science are used in an interrelated way, which allows children to integrate their learning in a global way. Moreover, children learn to respect the environment and learn other important lessons contents useful for their daily lives.

In order to cater for the diversity of the students, the teachers put the activities in difficulty levels, and give a extra visual support for the students who need it. Otherwise this is done to ensure inclusion of all levels, teachers cater for student learning strengths when planning adjustments in order to adapt their teaching to the necessities of their children. Children are highly motivated when learning the curricular contents by means in the garden (interactive way).

The main aim of the school's garden is to help children to become aware of the importance many factors related of the environment in ensuring a healthy lifestyle habits. Among these factors they highlight:

- the importance of care and respect for the environment;
- having a healthy and balanced diet;
- knowing the origin of their food;
- learning the tasks within the garden;
- collaborating with their peers.

Each school year the garden is devoted to a specific item. This year, the garden's topic is about aromatic plants and their traditional use. In this way, the last school year was about food and recycling, and the year before that about sustainable economy through the garden.

The idea of creating this garden came from the educational community, where a teacher concerned with environmental issues and agriculture proposed the idea of a school garden, which could allow them to work the curricular aspects from a practical perspective. This teacher has a previous training on ecological and sustainable agriculture. Besides, he or she took part in different meetings, conferences and creative sessions.

### **Organisational aspects**

Deitania garden is not supported by public external agents nor either foundations. The families are not involved in a direct way. Mainly, three teachers devote their time to care and design activities related to the school's garden. However, all the educational community participate in the activities with their students.

This school garden won a price as a finalist in a national competition for school gardens, organised by the organisation named Vida Sana and the foundation Triodos. Moreover, they won the second prize of school garden in the Region of Murcia for the school year 2015/2016.

## 4.5 CASE STUDY 4:



### **ODZ 59 ELHITSA GARDEN**

Country	Bulgaria
Town and address	“Mladost-3” near bl.329, 1712 Sofia, Municipality Stolichna
Name of the school	ODZ59 “Elhitsa”
School sector	Primary
Website address	<a href="http://odz59.com/">http://odz59.com/</a> <a href="http://gradinka.zaedno.net/taxonomy/term/22">http://gradinka.zaedno.net/taxonomy/term/22</a>
Contact	Phone: + 359 02 875 90 29
E-mail:	<a href="mailto:odz59@abv.bg">odz59@abv.bg</a>

#### **Description of the Garden**

The garden of Learning was established in 2012 and is located on an area of 100 square meters. The plants are situated in the raised beds made of wood, there are vertical wooden structures for the creeping plants. The entire territory of the garden is separated by a decorative wooden fence and a circular boundary fence with an arch at the opening. Close to the garden there is an educational Area, which consists of tables and benches for seating made of logs and cut trees. It allows observation and to work in a group near the Garden. The shape and design of the garden were made by the Director and the teachers during a training for permaculture and design for urban agriculture event. The shape of the garden corresponds to the natural pattern of the sun. The Garden is built according to the principles of Permaculture Design and the plantations are cultivated according to the principles of biodynamic agriculture.

The seeds that are used are native, self-produced, usually harvested by the garden or donated by parents or members of the local community, and purchased from the local farmer’s market. Plants are planted in partner-plant guilds, providing abundant crops and sustainability across the entire ecosystem.

Annual plant rotation is applied every season in the beds in order to provide to preserve and

enhance soil fertility. In order to always have blooming plants in the beds, a crop overlay method is applied in which new plants are planted in the bed as soon as a harvest is completed. A composter is available and used mainly for teaching purposes.

Soil mulching is used to conserve water and preserve soil fertility and reduce the need for weeding.

There are annual and perennial plants grown in the garden – edible vegetables (different varieties of tomatoes, cucumber, lettuce, pepper, zucchini, spinach, peace, beans, celery, carrots, onion and garlic), edible fruits (strawberries), kitchen and medicine herbs (basil, rosemary, thyme, parsley, sage, lemon balm, roses), flowers for plants protection and attracting pollinators (marigold, petunia, cinia, taghetis, borage), fruit trees (apple). The Garden produce is used for teaching purposes.

### **Pedagogical activities**

The Kindergarten delivers both practical and theoretical gardening activities - this allows students to getting acquainted with all the factors and elements of the garden (seasons, soil, water, sun, seeds, plants, tracks, composter, working tools), soil preparation, planning, study and exploration of the garden inhabitants e.g. grass worm, ladybirds, snails, birds, etc. the study of local cultural traditions and rituals e.g. songs, dances, beliefs related to labour. They learn about the land and fertility, garden mathematics, reading and writing signs for the garden, colour studies, tastes and aromas, harvesting, studying of plant forms, the weight and the surface of the various vegetables, the harvest celebration, art and songs and dancing within the Garden theme.

The Gardening activities are related to the official school curriculum and our special Cultural programs, but also provides much more holistic information and experience for children. Most importantly, through gardening, children learn more intensively and they receive an integral and interdisciplinary knowledge that is acquired through personal experience and experience in the garden, this then enriches them physically, intellectually and emotionally.

During the activities, we work with Homogenous groups of kids, and we frequently stimulate teamwork and cooperation in all levels. But for younger children it is very important to provide the opportunity for self-centred learning also. Because of the large groups of children, we work with 25, we often divide them into smaller groups who can alternate there work in the garden and look closely at the work of others.

There are total of 268 children in the Kindergarten, but the Garden is used for teaching purposes mainly for the children who are 5-6 (total of 128, proportionally distributed by gender).

There are children with different level of divisibility integrated in the classes, but we also have a special class of 26 children with harder mental disabilities. They have 100% access to all garden installations as it is planned and accessible to their needs as well. They also have regular Garden sessions, but mainly with a therapeutic purpose, for stimulation and development of their senses and motor skills.

### **Educational aims and objectives**

The main objective of the educational garden is to help an individual child to get a personal experience in the garden, to develop new skills and attitudes, to learn where their food comes from and how all the elements of the nature are interrelated and work together.

The main objective of the educational garden is to help the group/class of children to learn how

to collaborate while working together in the garden.

### **Organisational aspects**

The Edible Garden of Learning is initiated by the Director, who won a funding project provided by a local civil organization. In 2012 the Kindergarten received an external funding of 3,500 BGN (1,750 Euro) for the technical building of the Garden, and a special teacher training with one-year assistance in four fundamental areas: Permaculture Garden design, Urban Agriculture techniques, Mobilizing Local Community Resources and Nature Based Learning methods based on Montessori method.

As a result, the garden was entirely planned, created and maintained by teachers, children, and the parents in the community. Parents also took part in volunteer actions for technical gardening. Every year the Parents Community donate seeds and seedlings and they provide funding for supplies, tools, maintenance and the improvement of the garden infrastructure.

The maintenance of the garden amounts to 100-150 BGN (50-75 Euro) per year, which is covered by the Parent's Board. This is a completely affordable expense that we make with joy.

The Garden is also open for visits and gardening for children and parents after the official classes have ended, as a non-formal community activity.

Parents and the entire local community gather together in the autumn at the great Harvest Festival, where together they participate in art sessions, culinary workshops, traditional songs and dancing to share the harvesting of delicious vegetables and learn new skills and life skills.

## **JONES MEMORIAL PRIMARY SCHOOL GARDEN**

Country	Northern Ireland
Town and address	2 Cappog Road, Mullylogan, Enniskillen , County Fermanagh BT74 5H, UK
Name of the school	Jones Memorial Primary School
School sector	Primary
Website address	<a href="http://www.jonesmemorial.co.uk">www.jonesmemorial.co.uk</a>
Contact	<a href="mailto:info@jonesmemorial.enniskillen.ni.sch.uk">info@jonesmemorial.enniskillen.ni.sch.uk</a>

### **Description of the Garden**

The garden at Jones Memorial Primary School was created in 2009 with the help of the South West College Enniskillen Campus. It covers an area of roughly 35 square metres. It wraps around the outside of the school. The garden has different areas including a butterfly garden, raised beds for growing fruit and vegetables, mini beast trail and they are also establishing a poly tunnel for growing fruit and vegetables from other countries. The school also has a pond area where aquatic plants are maintained. They grow a range of fruit and vegetables including fennel, broad beans, onions, cabbage, beetroot, strawberries, lettuce, brussel sprouts and peas. They also cultivated a range of herbs including coriander, basil, chives, thyme, mint and sage.

### **Pedagogical activities**

Each class within the school incorporates gardening activities into their World Around Us curriculum. All pupils have the opportunity to work in the garden. Activities include sowing, planting, harvesting and food preparation. Each year the school sells the produce from the garden and the money raised is used to buy new seeds or plants. They also have the opportunity to cook and sample some of the fruit and vegetables they have grown.

Jones Memorial has 2 Learning Support Centres for children with Special Needs. The children in these classes really benefit from the hands on experience the garden provides and they work alongside the children from the mainstream classes.

The aim of the garden is to help an individual child and/or a class to participate in and understand the natural world in the context of their local surroundings.

### **Educational aims and objectives**

The garden was established to allow the children to participate in and understand the natural world in the context of their local surroundings. They wanted to create a space that was inclusive and accessible to all pupils.

When the garden was first created they asked the pupils what they would like to have in the garden and this was incorporated into the plans. This gave the pupils ownership and a desire to look after and maintain the garden.

As part of the Northern Ireland Curriculum pupils are given the opportunity to develop many different skills which they will be able to use as they grow up.

## Organisational aspects

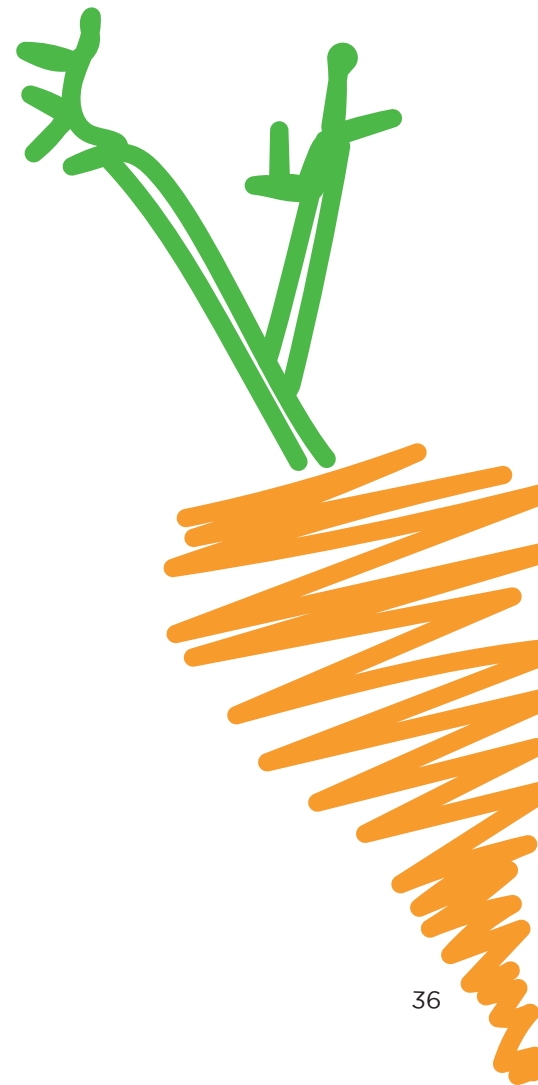
The school has appointed a World Around Us Co-ordinator who ensures that the gardening activities are incorporated in to the teachers' planners. They also ensure progression throughout the school.

The School has an 'Eco Committee' involving pupils, parents, Governors and staff. This is overseen by a Classroom Assistant within the school.

In order to get the garden up and running the school worked closely with the local Further Education College and students from the College made some of the garden furniture that the pupils designed.

They have received sponsorship from local companies which has allowed them to put in pathways, build a pond area and increase the variety of fruit and vegetables they plant and grow.

Parents from the school have also been involved, especially during the initial creation, with many helping out by making wooden structures, carrying out fund raising activities and also each year the school holds a Harvest sale which raises the money to replant each year.





**ORGANISATION GARDENS  
CASE STUDIES (IO1A2)**



## 5. ORGANISATION GARDENS CASE STUDIES (IO1A2)

### 5.1 ANALYSIS CASE STUDIES A2 (COOPERATION/SOCIETY)

This short report compares and analyses 6 case studies regarding external commercial players teaching practical horticulture to children of different age groups in Italy, Spain, Bulgaria and UK (Northern Ireland). The template is the same as for school gardens.

The key descriptor remained the same as for school gardens:

#### **(a) Description of the garden - (b) Pedagogical Activities - (c) Organisational aspects**

##### **DESCRIPTION OF THE GARDEN**

Gardens are managed by universities, public institutions and associations whose purpose is research, education and conservation of biodiversity and private businesses that go from Horticulture Societies to Eco farms and that follow an entirely commercial purpose. Some are in the hands of long established big and prestigious players like the Royal Horticulture Society in the UK or the Orto Botanico Giardino dei Semplici founded on 1st December 1545 by Cosimo I de' Medici, other are small family run farms, that try to produce new income by offering educational services. However, in many cases the approach is purely commercial and the activities are service products one has to pay for. The garden surface goes from 5,000 m<sup>2</sup> to 10.

##### **PEDAGOGICAL ACTIVITIES - EDUCATIONAL AIMS AND OBJECTIVES**

The educational programmes are mostly seasonal and can last for 2, 4 and 8 hours. Individual activities generally stay under 1 hour.

The activities offered can be simple study visits to “develop interest and love for nature” or a wide range of workshops with thematic activities structured for different age groups. Some offer specialized activities for children with disabilities, tailored to their mental and cognitive abilities (Bulgaria). Generally speaking, the aim is to make children accompanied by parents or teachers learn about gardening and botany via garden based content. Learning is both practical and theoretical, as it encompasses learning through play and personal discovery.

Also the group size varies a lot from 5 -10-12.

Groups are much more homogenous as in school gardens, some include children with an immigration background. Compared to school gardens, there are two main differences to point out: the activities are much more organised in homogenous groups and in all case studies activities are designed and managed by highly qualified staff, some are highly motivated volunteers (Italy). All educators have gone through specific training also on university level.

##### **ORGANISATIONAL ASPECTS**

The maintenance of the gardens is part of the business model and is not in the hands of volunteers but assigned personnel. Although all cases are commercial gardens with different business models most rely on private donations as well.

## 5.2 CASE STUDY 1:



### TICE GARDEN

Country	Italy
Town and address	Loc. Seguzzone, 3, 29010, Nibbiano (PC)
Name of the organisation	TICE
Organisation sector	Private associations
Website address	<a href="http://www.centrotice.it">www.centrotice.it</a>
Contact	<a href="mailto:cavallini_francesca@libero.it">cavallini_francesca@libero.it</a>

#### Description of the Garden

The garden opened in 2017 and has a surface area of 10 square meters. The seeds are purchased directly from TICE.

Only self-produced and harvested seeds are used in soil and trellis based beds.

The following plants are cultivated: main vegetables: tomato, salad, pepper, pumpkin and cabbage; root plants: potato and onion.

All products grown in the garden are used for educational purposes.

#### Pedagogical activities

The children are involved in practical activities such as sowing, replanting and harvesting.

The educational material used for horticultural activities are worksheets, videos and task analysis.

The educational workshops consist of horticultural labs for children with autism aimed at

establishing behavioural routines and promoting appropriate social interactions between children. Therefore, in all gardening activities, collaboration between children is always encouraged.

The organization's workshop leaders are all trained in running horticultural educational workshops and have all undergone training at Assiort. TICE takes professional training very seriously and a lot of time is spent on ensuring that staff skills are kept up to date and constantly developed, as well as designing educational workshops. The project development is always based on the needs of the children who attend our courses.

All children who take part are pre-schoolers.

Each horticultural teaching session involves about 4 children aged 4 to 5. As much as possible, the group age of children is homogeneous.

On average, there are 10 participants involved in horticultural activities per year, 80% of which have behavioural and learning difficulties. To meet their individual needs TICE also provides individual psychological and educational support.

With regard to the difficulties encountered in involving disadvantaged children in horticultural activities, among the main ones is the need to reduce the risk of choking (i.e. via cherry tomatoes due to their shape). This is managed by using vegetables that cannot be swallowed easily.

Compared to other activities, horticultural activities favor inclusion as they stimulate and increase group collaboration, adults' attention towards each child, children's motivation and interest towards the assigned tasks and planning of activities, etc. These are aimed at collaboration between children with typical development and children with autism or other educational special needs.

### **Educational aims and objectives**

With regard to the main educational objectives of the garden, it is important to underline how the horticultural activities help individual children to take care of the environment.

In the context of group work, these activities allow children to work together towards a common goal and are designed with the aim of including each and every child, irrespective of his or her individual learning level of difficulty, etc.

### **Organisational aspects**

The creation of the garden was promoted by the TICE staff. Initial garden set up cost 8,000 Euro, and further 2,000 Euro are spent every year on garden maintenance. Private sponsors provide funds for gardening activities. Overall, it is an affordable activity for TICE.

Tice is currently making significant investments on the promotion of training for educators and it will activate a PhD program with the University of Parma, in order to continue the work in the gardening sector.

## 5.3 CASE STUDY 2:

### MUSEO DI STORIA NATURALE UNIVERSITÀ DEGLI STUDI DI FIRENZE GARDEN



#### ORTO BOTANICO GIARDINO DEI SEMPLICI

Country	Italy
Town and address	Via P.A. Micheli, 3 – 50121 Firenze
Name of the organisation	Orto Botanico Giardino dei Semplici
Organisation sector	University
Website address	<a href="https://www.msn.unifi.it/vp-181-orto-botanico.html">https://www.msn.unifi.it/vp-181-orto-botanico.html</a>
Contact	Servizi Didattico Divulgativi - Sistema Museale d'Ateneo tel +39 055 2756444 edumsn@unifi.it

#### Description of the Garden

The Orto Botanico Giardino dei Semplici is part of The Botanical Gardens, known as the “Giardino dei Semplici” (Garden of simples, where “simples” are plants with medicinal properties). It is the oldest part of the Museum of Natural History, founded on 1 December 1545 by Cosimo I de’ Medici and the third-oldest botanical garden in the world. Research on the role played by the botanical gardens within scientific and social discourse has identified seven key areas: increase botanical awareness, improving the relevance to the general public, conducting research that has a local and global impact, contributing to the public debate on the environment, on biodiversity and on global warming and to encourage a sustainable way of life by changing attitudes and behaviours.

Biodiversity reflects the number, variety and variability of living organisms and how these change from one location to another. The concept implies all biological variability: of genes, species, habitats and ecosystems. The topic of biodiversity is now familiar to the general public and is a crucial issue for all countries. In fact, the United Nations declared 2010 to be the International Year of Biodiversity, while the decade 2011-2020 has been declared the Decade of Biodiversity.

The collections of Florence's Botanical Garden include very ancient plants like cycads (which were present when dinosaurs roamed the Earth), centuries-old trees such as Micheli's yew (ca. 300 years old), large trees classified as "monumental" by the Tuscany Region, as well as the most recently "discovered" tree in the world - *Wollemia nobilis* - only found in 1994 in Australia. Also present are examples typical of the Mediterranean flora and of tropical areas, teaching collections of carnivorous plants and a historical collection of medicinal and poisonous plants. A collection of edible plants, with an example of a synergistic garden, is very topical.

Since 2016 a small portion of the garden (15 square meters) is dedicated to teaching activities and workshops.

The main cultivation system is soilless and the soil is cultivated with the bioactive system with self - produced and harvested seeds. Combined with the vegetable garden there is a lumber-composting plant whose products are used also for other crops, [www.ortobioattivo.com](http://www.ortobioattivo.com).

In the garden the seeds used are either self - produced or from other world regions and commercial hybrids. Moreover ancient varieties of seeds are offered by other botanical gardens, purchased or sponsored by organisations.

The main vegetables grown are: tomato, lettuce, pepper, aubergine, zucchini, cabbage, fennel, beans, kale, celery, faba beans, chili peppers, beets.

The decorative plants grown are: marigold, nigella or black cumin, dahlias, nasturtium and seasonal flowering.

The herbs and medical plants grown are: basil and garlic.

The only fruit grown is strawberries.

The tubers grown are onion and radish.

### **Pedagogical activities**

The Museum organises educational activities with schools and families, where children can learn about botany through practical and theoretical activities like sowing, planting, harvesting or food preparation, it also offers continuous education courses for teachers.

Agronomist Andrea Battiata created the bioactive system, the vegetable garden and its workshops. In particular, the actual educational gardening workshops are related to sowing, the garden construction, transplantation, food preservation, worm composting, use of biostimulants, fermented and microorganisms, consociations and elements of biodynamics.

The average time dedicated to different activities:

Educational workshops 35 %

Staff training 20 %

Cleaning and maintenance 40 %

Purchasing 5 %

## **Educational aims and objectives**

The *Children gardeners* is a specific project that involves the kindergarten and primary school of the Pious Florentine Schools, the nearest school to the Botanical Garden, and this allows children to walk to the garden.

The meetings with the school take place in the afternoon and last about 3 hours.

The project involves about 90 pupils and during the gardening activities the facilitator frequently promotes collaboration between children.

The average number of pupils involved in the gardening activities per annum is 140.

During gardening activities, the group of children are composed on average by 18 pupils, and they work in heterogeneous groups:

Group of 3 years old: 8 male and 10 female

Group of 4 years old: 12 male 14 female

Group of 5 years old: 16 male 11 female

Group of 6 years old: 10 male 9 female

About the 11% of the pupils are from different cultures.

The percentage of special needs during the activities is about 6% and this is not presenting any particular difficulties during the developing of the activity. In order to support special education needs, a simplified explanation of activities is presented in advance with more targeted objectives that focus on the use of the senses.

Gardening activities have a high inclusive involvement thanks to the collaboration in the group and the motivation of each child to the assigned tasks, these activities have also a high inclusive involvement thanks to: the planning of the activity, the attention of adults per child, and the aesthetic impact of the gardens which promote sensory learning and the use of the materials and resources available.

Activities are often documented through videos and pictures, taking in consideration the aspect of specific activities and /or materials, the class skills and cognitive/learning skills.

The main objective of the educational garden is to help an individual child to work in a group, understand the seasons, observe the cycles of plants and doing manual activities while thinking about the diversity of the garden.

The main objective of the educational garden is to help the group and/or the class of children to connect theory and practical tasks, to deepen their knowledge in scientific topics: especially botany, and to also think about sustainability and biodiversity.

## **Organisational aspects**

The garden represents an affordable organizational activity as it is managed on a voluntary basis. The Ortobioattivo garden was created as a gift and the Children gardeners garden did not have any living costs, but only the cost of personnel during the preparation stages.

The sustainability of the activities provided in the garden is secure as they are supported by families and private companies.

## 5.4 CASE STUDY 3:



### VIVEN HORTIS GARDEN

Country	Spain
Town and address	Road RM-605, km 5 La Guía 30391 Cartagena
Name of the organisation	Viven Hortis (Space for art and agroecology)
Organisation sector	Agroecology
Website address	<a href="https://www.facebook.com/Vivenshortis/">https://www.facebook.com/Vivenshortis/</a> <a href="http://www.vivenhortis.com">www.vivenhortis.com</a>
Contact	Lorena: +34 685 98 00 81 <a href="mailto:vivenhortis@gmail.com">vivenhortis@gmail.com</a>

#### Description of the Garden

Viven Hortis is a private organization set on an old estate, the orchard was created in 2015, and is 200 square meters in size.

The seeds they use are mostly financed by organizations, especially the agro ecology network of the Murcia region, and all the seeds have been recovered from ancient and autochthonous varieties. They also keep the seeds year after year, so they are largely harvested and self-produced, and they are also organic. They also have seed varieties from other parts of the world.

They use soil as one method of cultivation, and also compost.

They have a great variety of vegetables and fruits, such as: tomato, cucumber, lettuce, pepper, eggplant, melon, water melon, zucchini, cabbage, fennel, spinach, peas, squash, collard greens, beans and all other vegetables of the region.

The aromatic or medicinal herbs they have in the garden are: basil, rosemary, thyme, parsley, sage, garlic, aloe vera, lemon verbena, santolina, calendula, lavender, oregano.

They don't grow plants for decorative purposes nor do they grow any type of cereal.

They have several fruit trees planted including, apple trees, plum trees and pear trees.

The tubers they grow in the garden are potatoes, onions, carrots and radishes.

The products of their gardens are used for teaching and consumption purposes.

The fundamental advantages of the work in the garden is:

1. they do not depend exclusively on the current agrifood system;
2. they have healthier food due to the growing techniques;
3. gardening is an activity that helps you feel better physically and mentally. It brings many indirect benefits;
4. it has helped people to learn the value and effort of the farmer's work;
5. learn about the organic nature of the garden without using chemicals to preventing pests;
6. know the complete cycle of vegetables growth;
7. learn the complete circle from composting and organic matter. (especially if there are animals involved in this circle);
8. work as a team.

#### **Disadvantages of the garden:**

1. organic farming does not always guarantee a specific harvest, there are variations and unforeseen circumstances;
2. the time constraints;
3. there can be issues with seasonality of products for consumption (as they only have specific amounts at different times of the harvest).

#### **Pedagogical activities**

The activities offered by the organization are both theoretical and practical, and are: sowing, planting, harvesting, composting and conservation of seeds.

Viven Hortis organizes different types of activities, such as courses aimed at children throughout the year (regularly every week) they learn all the processes in the garden, and do activities ranging from the conservation of seeds, to planting and harvesting. The groups are usually made up of about 7 students of similar ages, so they are quite homogeneous.

They also organize monthly workshops on nature and art and train teachers and children in schools.

In the activities carried out in the workshops with children, they use educational materials, such as nursery materials, educational games and sensory exploration.

The children's workshops last one and a half hours a week during the whole course, which happen during the two seasons of cultivation, they include theoretical and practical parts.

Related classes are organized, in which children can associate the activity with a direct or indirect benefit for the garden and the environment; they know the associated fauna, the auxiliary flora; they do classes where they work on a sensory level with aromatic plants, other classes where they use their own tools in the garden including: a hoe, picks, crops in seedbeds, etc.



In all the workshops, both in the garden of the organization and in the schools, collaboration is always promoted among the children.

They have given training in schools with classes who have special needs, such as autism or motorical problems, in these classes great progress was found where they worked together and built as a group. It has been observed that they unite their efforts and learn to work as a team, forgetting there differences by doing something together.

Regarding training, we can say that the person in charge of managing the space is fully qualified in education studies. She has done coaching courses, effective and non-verbal language courses, is a monitoring officer of forestry pedagogical activities and has previous work experience in craft workshops with children.

The time dedicated to the activities related to the internal staff and operation of the centre are: Training 20%, Cleaning and maintenance 40%, Purchases 10%, Educational workshops 30%.

### **Educational aims and objectives**

The main objective at the educational level of the garden is to help the individual child to know the origin of their food and to know the value of hard work, and the direct and indirect benefits it brings.

The main objective of the educational garden is to help the group respect each other's space and share what they have done together.

### **Organisational aspects**

The farm where the garden is located was a family space dedicated to field work but now is under management of this educational organization, therefore, being a private company has not received any kind of public financing, they have only received financial assistance from some of the families.

Lorena, in charge of Viven Hortis, points out that it is an economic activity.

## 5.5 CASE STUDY 4:



### BOSQUE SUR GARDEN

Country	Spain
Town and address	Avenida de las comarcas, S/N, Fuenlabrada, Madrid
Name of the organisation	Bosque sur
Organisation sector	Local public bodies
Website address	<a href="https://redhuertosurbanosmadrid.wordpress.com/bosque-sur">https://redhuertosurbanosmadrid.wordpress.com/bosque-sur</a>
Contact	redhuertosdemadrid@gmail.com

#### Description of the Garden

The Bosque sur's garden was opened in 1998 and is 120m<sup>2</sup> in size. The organization acquires seeds by purchasing, but sometimes produce their own seeds or get the seeds from their neighbours. The type of seeds they use are self-produced, harvested seeds, species from other world regions and those brought by the neighbors from their gardens. The growing systems they use are soil, soilless and compost. The main types of fruit and vegetables they cultivate are tomato, cucumber, lettuce, pepper, aubergine, melon, watermelon, zucchini, cabbage, spinach, peas, beans, pumpkin, kale, faba beans, red cabbage, swiss chard, beet. The organization doesn't grow plants for decorative purposes. There are several medicinal plants that the Bosque sur cultivates such as basil, rosemary, thyme, parsley, sage, garlic, lavender, nasturtium, antolin, peppermint and melissa. Cereal crops they cultivate are wheat, barley and rye. Fig, almond, cherry and quince are the main type of fruit trees cultivated within the organization. The berries they grow are strawberry and raspberry. The roots plants they cultivate are potato, onion, carrot and radish. Mainly all these garden products are used for the teaching purposes.

#### Pedagogical activities

The garden activities the organization carries out are both theoretical and practical work, such as sowing, planting and harvesting. Bosque sur uses educational materials for their gardening activities which include nursery materials e.g seedlings grown inside, educational cards/worksheets, educational games, drawings and sensory exploration. Its all about families working

together in the garden, according to the time of the year. Their educational gardening workshops last for 2 hours and they include families, they firstly introduce them to the garden and then continue with the games related to the certain task there going to do. The collaboration between children is always promoted. No time is dedicated to the training of the staff, while 5% of time is dedicated to the purchase and 30% to the educational workshops. The time spent for cleaning depends on the season, in winter about 4 hours a week, while during the summer its every day.

The organization has groups with children with special education needs and they haven't encountered any specific difficulties when involving them.

### **Educational aims and objectives**

The main objective of educational gardens is to relate to the nature, discover the origin of the food they eat and to help the group / class of children to collaborate with each other and to stay in direct contact with the world of horticulture.

### **Organizational aspects**

Internal staff had the initial idea of launching a garden and the annual budget for the garden is around 750 euros. Bosque sur considers that having a garden is an affordable activity and also they have external funding from the Community of Madrid. Their gardens are not managed on a voluntary basis.

## 5.6 CASE STUDY 5:

### ROYAL HORTICULTURAL SOCIETY GARDEN

Country	United Kingdom
Town and address	Wisley Ln, Wisley, Woking, GU236QB, UK
Name of the organisation	RHS Garden Wisley
Organisation sector	Charity
Website address	<a href="http://www.rhs.org.uk">www.rhs.org.uk</a>
Contact	<a href="mailto:wisley@rhs.org.uk">wisley@rhs.org.uk</a>

#### Description of the Garden

The Royal Horticultural Society are the UK's leading gardening charity. The garden opened in 1903 and covers an area of 971,000 square meters giving visitors a wide variety of exciting environments to explore. The RHS vision is to enrich everyone's life through plants, and make the UK a greener and more beautiful place.

The organisation uses a variety of cultivation techniques in their garden including soil, soilless, compost, trellis and aquaponics. The seeds used for these are self-produced and harvested seeds, native seeds, species from other world regions and commercial hybrids. These seeds are either purchased by RHS or collected from the garden itself.

The main vegetables cultivated are: tomatoes, cabbage, fennel, spinach, peas, beans, pumpkin, kale.

There are a range of decorative plants from around the world grown on site.

The herbs and medicinal plants the organisation cultivate are: basil, rosemary, thyme, parsley, sage, garlic.

Fruit trees that the organisation grow are apple, grape, cherry and plum.

The range of berries include strawberry, mulberry, raspberry, blueberry and gooseberry.

Root plants grown are potato, onion, carrot and radish.

The garden is used for both teaching and consumption purposes. The garden exists as a tourist attraction, charity and centre of science and education, all based on plants in the garden.

#### Pedagogical activities

An RHS Garden school visit gives children opportunities to learn about practical horticulture, art and science along with their teachers. The workshops that are delivered are both practical and theoretical.

During the gardening activities, education officers promote collaboration between children. To enhance the activities, educational materials are used such as, nursery materials e.g. seedlings grown inside, educational cards/worksheets, educational games, drawings and sensory exploration.

There are a large range of workshops delivered up to 18,000 children a year. The workshops last around 90 minutes each and cover a large range of topics including weather, plants, biomes, adaptations, soils, animals, art etc. Wisley offers school groups a wide variety of exciting environments to explore including the Glasshouse, Model Vegetable Garden and the Pinetum and welcome all students including those with special educational needs.

As well as guided visits, with workshops for primary and secondary schools, there are a range of resources for self-guided visits covering many areas of the school curriculum including art, numeracy and the natural world. Teachers can download lesson plans for before, during and after their visit.

### **Educational aims and objectives**

During the year the average number of pupils involved in gardening is around 15,000. During gardening activities, the RHS can facilitate four classes of 30 pupils meaning there are 120 per session taking part. The groups that take part are heterogenous and cover a range of age groups.

Group of 3 years old: 500

Group of 4 years old: 1000

Group of 5 years old: 1500

Group of 6 years old: 1500

The garden and staff cater for children with special education needs and extra staff is often used to support these groups.

The site also has an area called 'Clore Learning Centre.' The Clore Learning Centre offers schools an exciting purpose-built facility for use during guided school visits. The centre contains a practical growing laboratory, classroom (the Discovery Room), cloakrooms and toilets. The teaching garden provides an outdoor classroom, as a curriculum resource for teachers and children.

The RHS main core objectives throughout all their activities within the gardens are to Inspire, Involve, Inform and Improve.

The main objective of the education garden is to help an individual child to enrich their live through exploring plants and the natural world around them.

### **Organisational aspects**

The Royal Horticultural Society was founded in 1804 and has continued to develop ideas and initiatives over the years, one of these being the launch of the garden. The organisation would not be an affordable activity ordinarily and so relies on funding support from a variety of sources, for example being open to public, private companies and non-profit organisations.

## 5.7 CASE STUDY 6:



### FAMILY FARM BIOTIFUL GARDEN

Country	Bulgaria
Town and address	Burgas, Atia village
Name of the organisation	Family Farm Biotiful
Organisation sector	Business, Eco Farming
Website address	<a href="http://biotifulfarm.bg/">http://biotifulfarm.bg/</a>
Contact	+359 888 44 88 25 biotifulfarm@gmail.com

#### Description of the Garden

Biotiful” is a family permaculture farm which was set up in 2014, covering an area of 5,000 square meters. The farm grows seasonal vegetables that they sell at the farmer’s market. It also organizes educational visits and camps for children who come with organized transport from the big city, which is 20 km away. Educational activities with children (3-6 years) take place in the farm environment. Farm installations are specially adapted and secured for their safety.

The methods of permaculture and organic farming are used, with special care for the soil and the overall ecosystem, these are applied to the crops. Seasonal vegetables are grown indirectly into the soil. Strawberry plants are grown in a greenhouse and in a soil mixture with coconut fiber. The seeds are mainly native self-produced and harvested, some old varieties are collected from local people from the villages, and organic seeds are purchased from abroad.

Large quantities of seasonal vegetables are grown on the farm and are sold at the local farmer’s market: strawberries, tomatoes, cucumbers, lettuce, pepper, aubergine, melon, watermelon, zucchini, cabbage, fennel, spinach, peas, beans, pumpkin, kale celery, garlic, onions, carrots, corn, etc. There are also ornamental shrubs as functional elements of the permaculture design of the garden. A large variety of culinary and medicinale herbs and pest control flowers are also grown – basil, rosemary, thyme, parsley, sage, mint, etc.

## **Pedagogical activities**

Educational activities with children are seasonal (from March to October). Half-day or full-day camps with groups of 5 to 25 children are conducted.

Annually the farm is visited by about 600 children aged 3-6 years. The average duration of a visit is half a day and the individual activities are between 30 and 40 minutes. Groups are homogeneous, the students work in small groups of 10-12 children. The groups arrive in advance. Special thematic activities are prepared depending on the age of the children, the season and whether it is a one-time workshop or a standard visit.

The educational activities with children basically practical and the theory is delivered in small quantities and serves a specific purpose - plant and seed recognition, soil type recognition, planting techniques, plant care, watering, weeding, mulching, composting, harvesting, garden research - measuring distances, weights, shapes, colors and tastes. Learning is both practical and theoretical, as it encompasses learning through play and personal discovery.

Very often children come to the farm for a few hours. They have a tour of the farm, and a seasonal practice (planting, watering, mulching or harvesting). There are still rarely groups that come at least once a month, and systematized children can be trained.

Two highly motivated trainers with a professional qualification in forestry and non-formal education prepare and conduct the educational workshops for children. They produce appropriate educational and visual materials as well as games and group activities for each group of children they work with. The Biotiful team shares on the Internet their educational resources for working with children in the garden, which enrich and support the work of many teachers from state-run kindergartens with educational edible gardens.

They carry out specialized activities for children with disabilities, tailored to their mental and cognitive abilities. Mostly they work with children who have mental, not physical, disabilities. They have full access to all areas of the garden, but they apply a special approach and activities are tailored to their needs.

## **Educational aims and objectives**

The main objective of the Biotiful Farm Educational Garden is to help an individual child to develop interest and love for nature, to learn where their food comes from, to learn the skills needed to grow edible plants, to develop fully the senses, to develop their fine and the gross motor skills of the body and, to gain experience and awareness of healthy eating.

The main objective of the educational garden is to help the group/class of children to enjoy learning together, to learn to live and to play and work in a team.

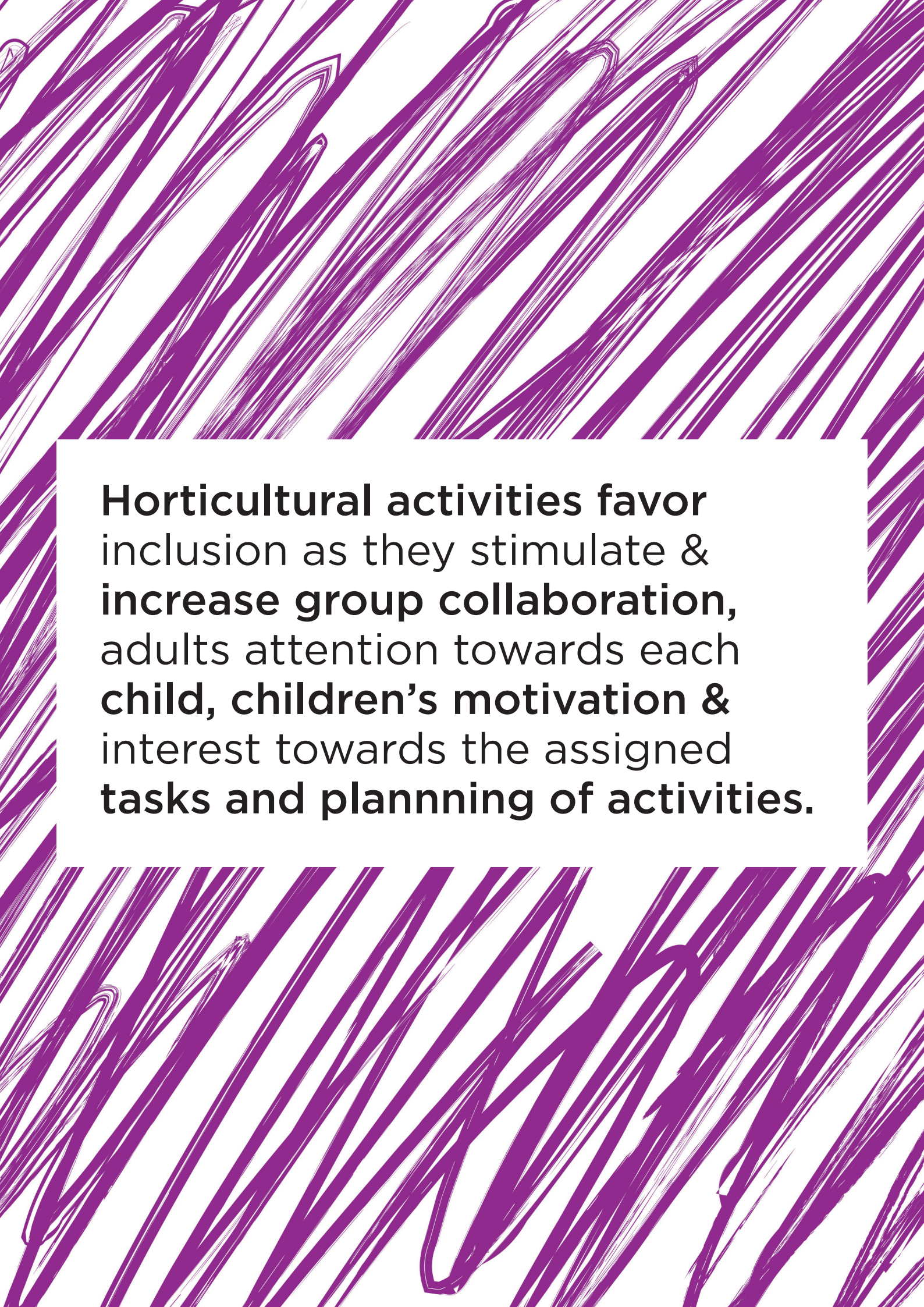
## **Organisational aspects**

The farm operates entirely on a business model. It employs 5 people from the local community on a paycheck and the 2 owners. The initial investment was 50,000 BGN (25,000 Euro). The annual budget for maintenance and salaries of the staff is 25,000 BGN (12,500 Euro).

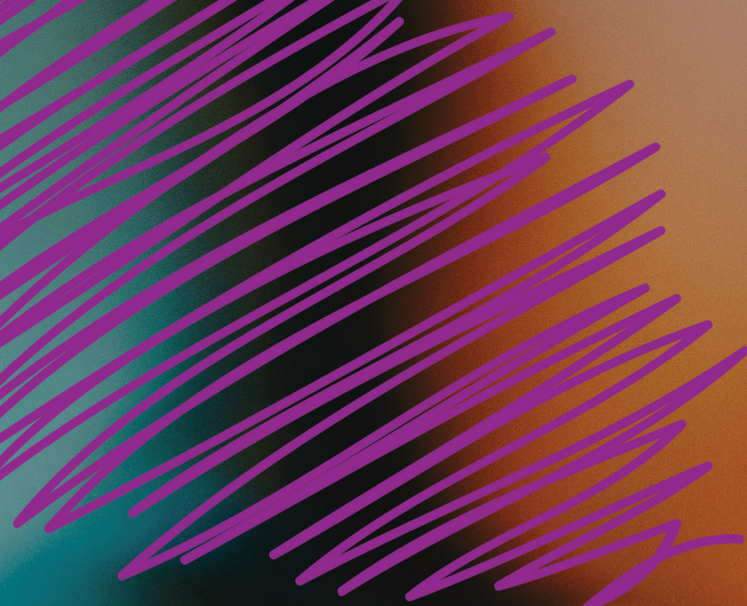
The Gardens educational workshops for children are charged but the price is very affordable for the families. So far, the business model of the farm is sustainable. In recent years, they have been generating successful revenue. They are planning an expansion, and building up training for the team in early childhood development and learning in the wild.

The farm staff not only performs fun and enjoyable activities with children, but develops and shares with a the broader audience, on the principle of Open source, it is a useful and high quality resource for learning through the experience of nature.



The background of the entire page is a dense, abstract pattern of purple brushstrokes. These strokes are of varying thickness and length, creating a sense of movement and energy. They are primarily oriented diagonally, running from the top-left towards the bottom-right, though some cross at different angles. The overall effect is a vibrant, textured backdrop.

**Horticultural activities favor inclusion as they stimulate & increase group collaboration, adults attention towards each child, children's motivation & interest towards the assigned tasks and planning of activities.**



# APPENDICES

## 6. APPENDICES

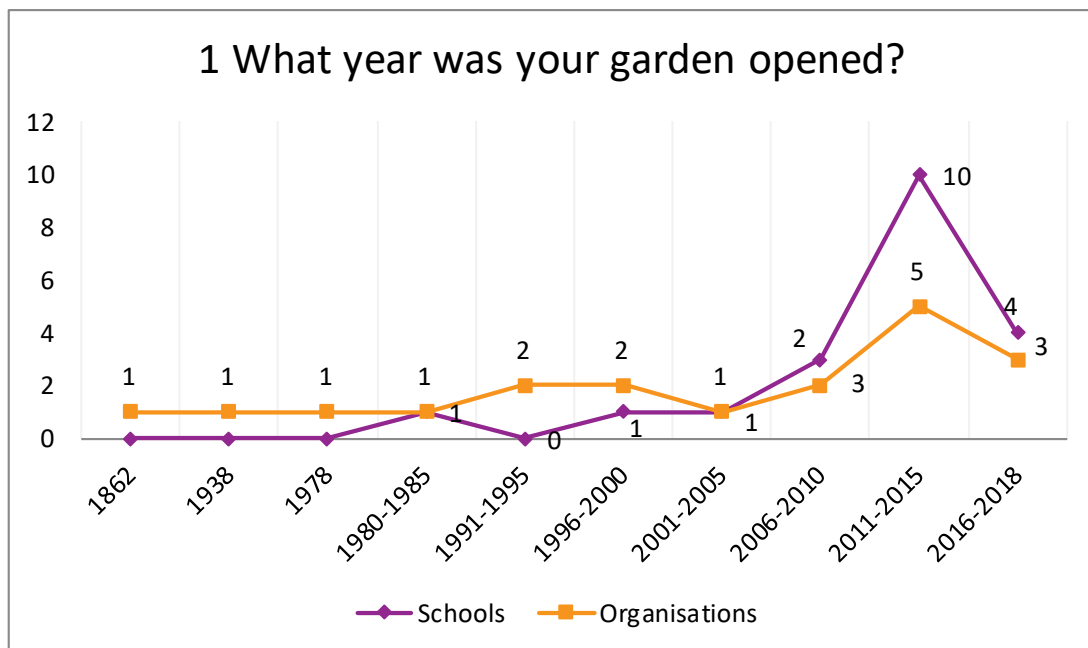
### APPENDIX 1: GARDEN OPENING DATES FOR SCHOOLS AND ORGANISATIONS

<b>ORGANISATIONS</b>					
<b>Older Organisations</b>		Italy	Spain	Bulgaria	United Kingdom
	Year	1862	1987	1892	1903
	Name	Officine Culturali - Orto Botanico piazza Dante, 32 Catania	CEA Caserio de Henares (Camino de la Vega s/n, 28830 San Fernando de Henares	University Botanical Garden, 49 Moskovska Str, PO Box 157, 1000 Sofia, Bulgaria	RHS Garden Wisley, Wisley Ln, Wisley
<b>Younger Organisations</b>	Year	2017	2016	2014	2016
	Name	TICE, Loc. Seguzzone, 3, 29010, Nibbiano (PC)	Huerto Pío-Fundación Sierra Minera, Road F-40, Cartagena, Murcia,	Community biogarden "Vitosha", kv.Vitosha, bl.18, Sofia,	Speedwell Trust Parkanaur Forest, Dungannon, County Tyrone

**APPENDIX 2: MINIMUM AND MAXIMUM SIZE OF GARDEN BOTH AT SCHOOLS AND ORGANISATIONS**

		Italy	Spain	Bulgaria	United Kingdom
Schools	Smaller Garden (m2)	10	10	2.5	20
	Name	Scuola dell'Infanzia Zamboni, Via Zamboni, 15 Bologna	IP ALFONSO X EL SABIO. C/FUENTE DE SAN PEDRO 6 MADRID	Private English Kindergarten Cosmos Kids	Augher Central Primary School, Co Tyrone, Northern Ireland,
	Bigger Garden (m2)	250	400	400	5'690
	Name	Istituto Comprensivo Claudio Abbado, via monte ZEBio, 35, Roma	CEIP DEITANIA, TOTANA, MURCIA	Kindergarden "Detski sviat"	Hart Memorial Primary, Charles Street, Portadown
Organisations	Smaller Garden (m2)	15	30	200	10
	Name	CENTRO SOCIALE RICREATIVO CULTURALE E ORTI "ROSA MARCHI", Bologna	La cabaña del retiro, paseo Fernán Nuñez, 10, Parque del Retiro, Madrid,	ZAEDNO	Corinne Richards, BBOWT, Sutton Courtenay Environmental Education Centre,
	Bigger Garden (m2)	130	2'000	97'000	971'000
	Name	Quattro Stagioni, Via San Foca 31, San Quirino,	HuertAula Comunitaria de Agroecología a Cantarranas, Universidad Complutense de Madrid	Agriculture University Plovdiv	RHS Garden Wisley, Wisley Ln, Wisley, Woking, GU236QB, United Kingdom

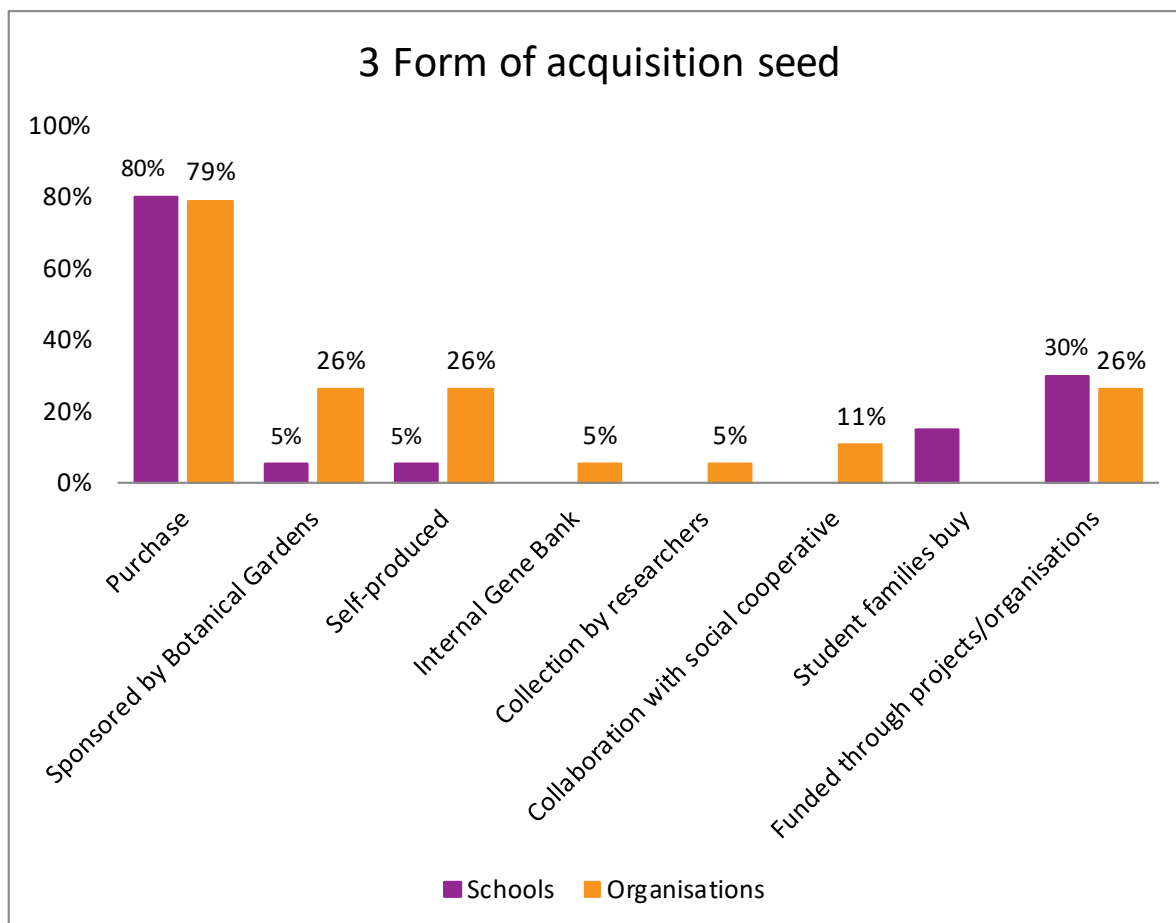
**Question 1:** What year was your garden opened?



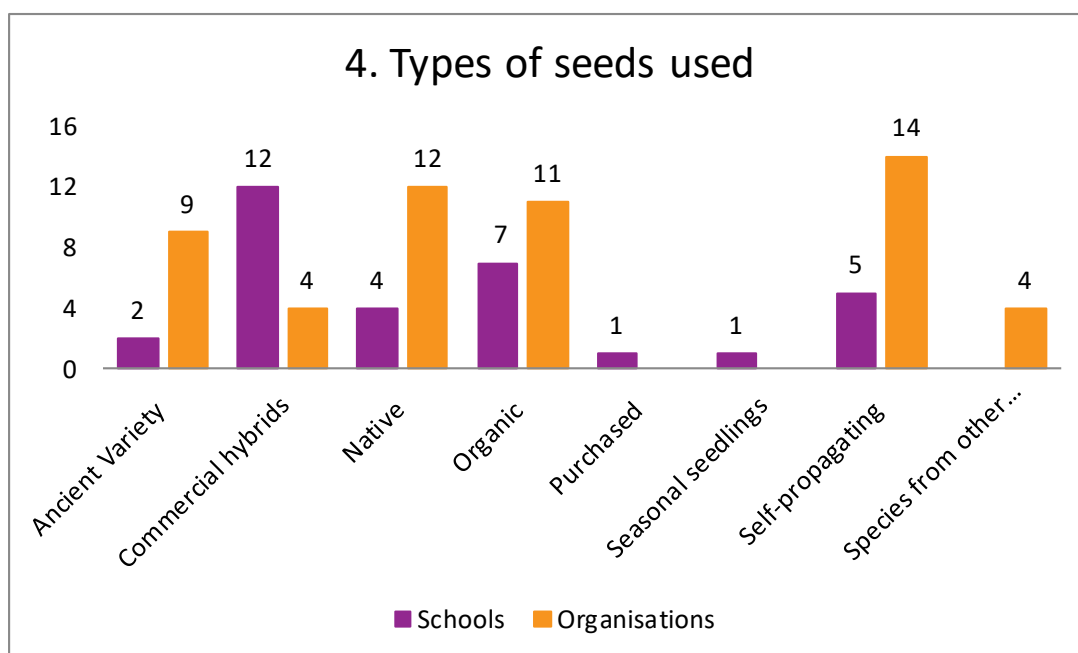
**Question 2:** Please indicate the garden surface in square metres:

- GARDEN SURFACE m2 – Schools: 5 to 250 m2 (average 55 m2)
- GARDEN SURFACE m2 – Organizations: from 10 m2 to 150.000 m2 (Donatella Mongardi, Az Agr. Novarbora - Sasso Marconi (Bologna) Italy);

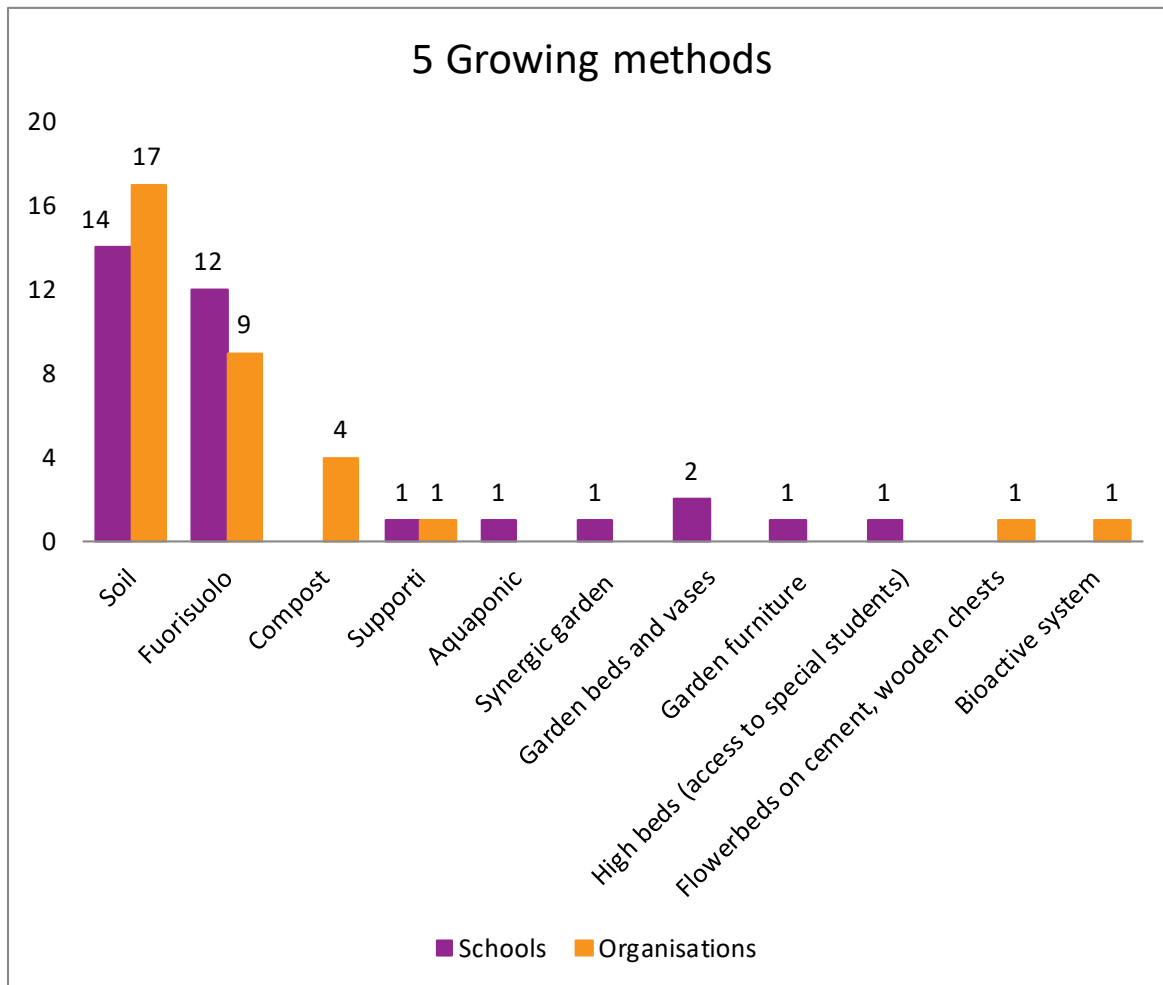
**Question 3:** How does the organisation acquire the seeds?



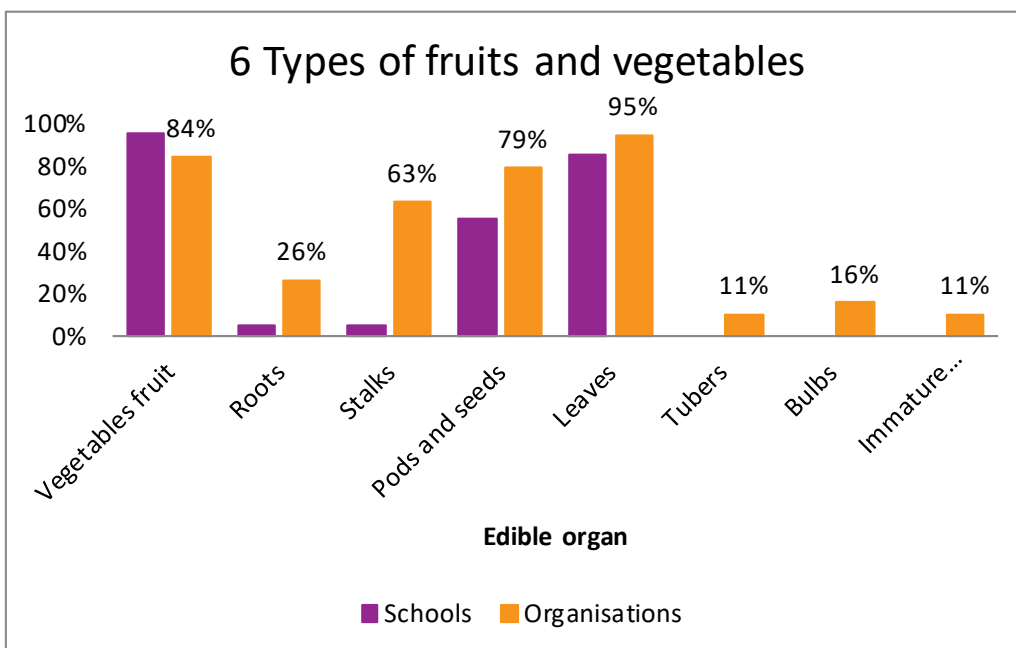
**Question 4:** Which type of seeds does the organisation use?



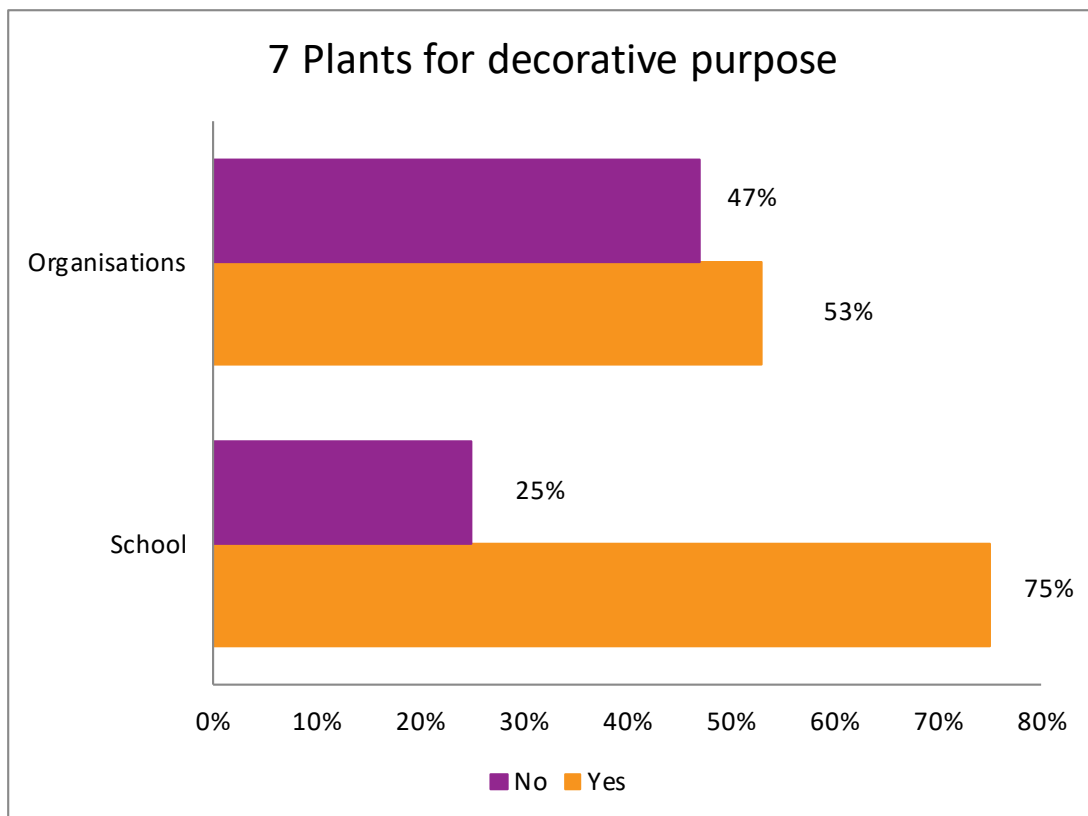
**Question 5:** Which type of growing methods does the organisation use?



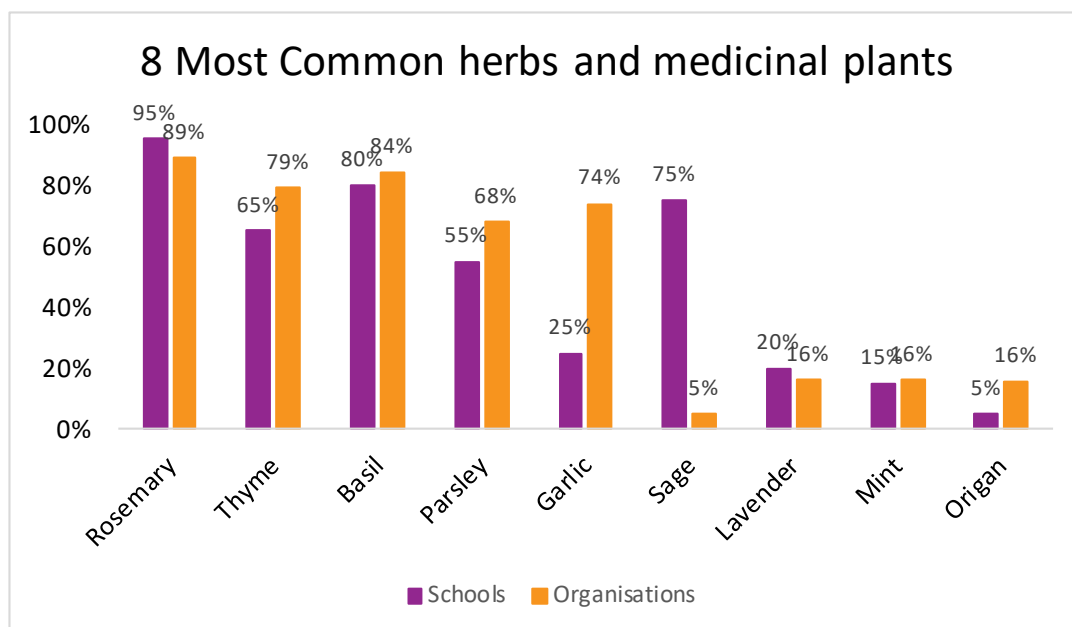
**Question 6:** Which type of fruits/vegetables does the organisation cultivate?



**Question 7:** Does the organisation grow plants for decorative purposes?

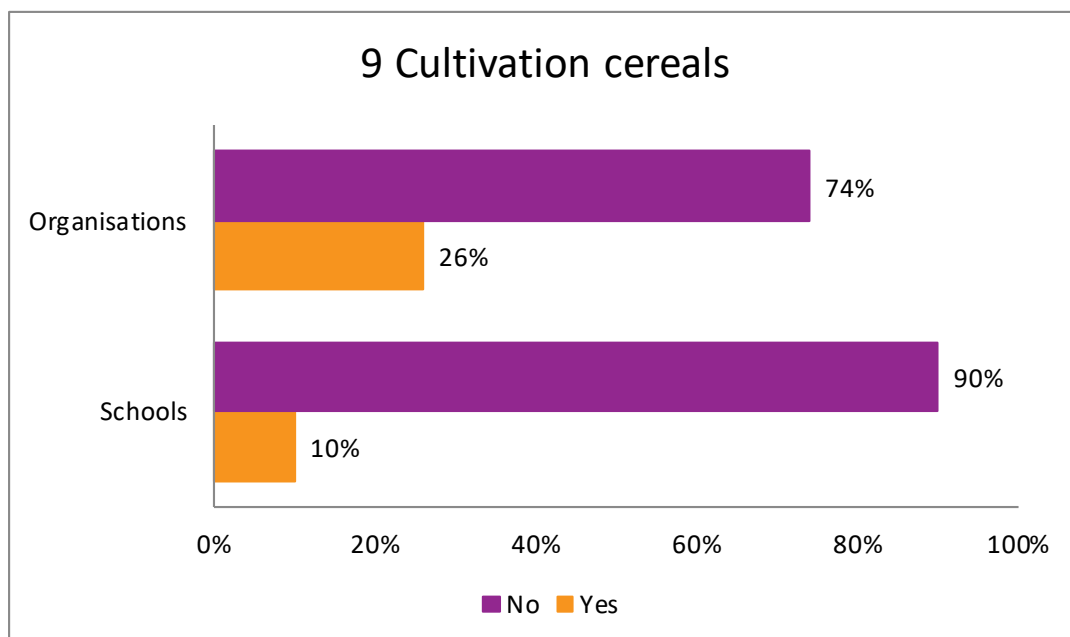


**Question 8:** Which kind of herbs and medicinal plants does the organisation cultivate?



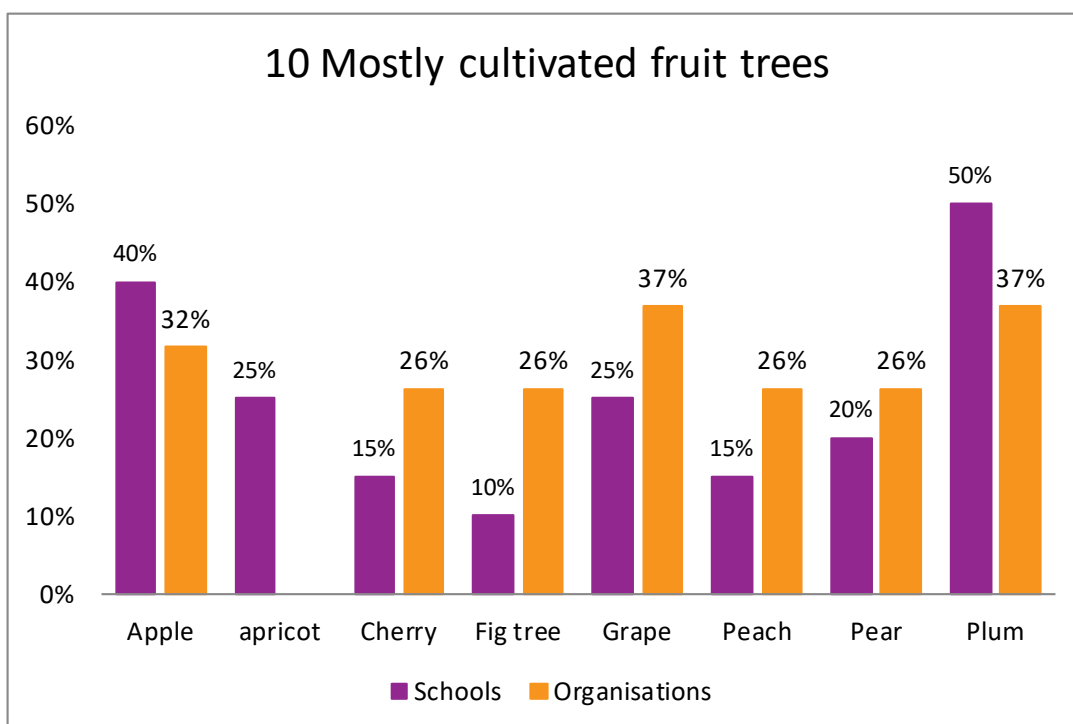


**Question 9:** Does the organisation cultivate cereal crops?

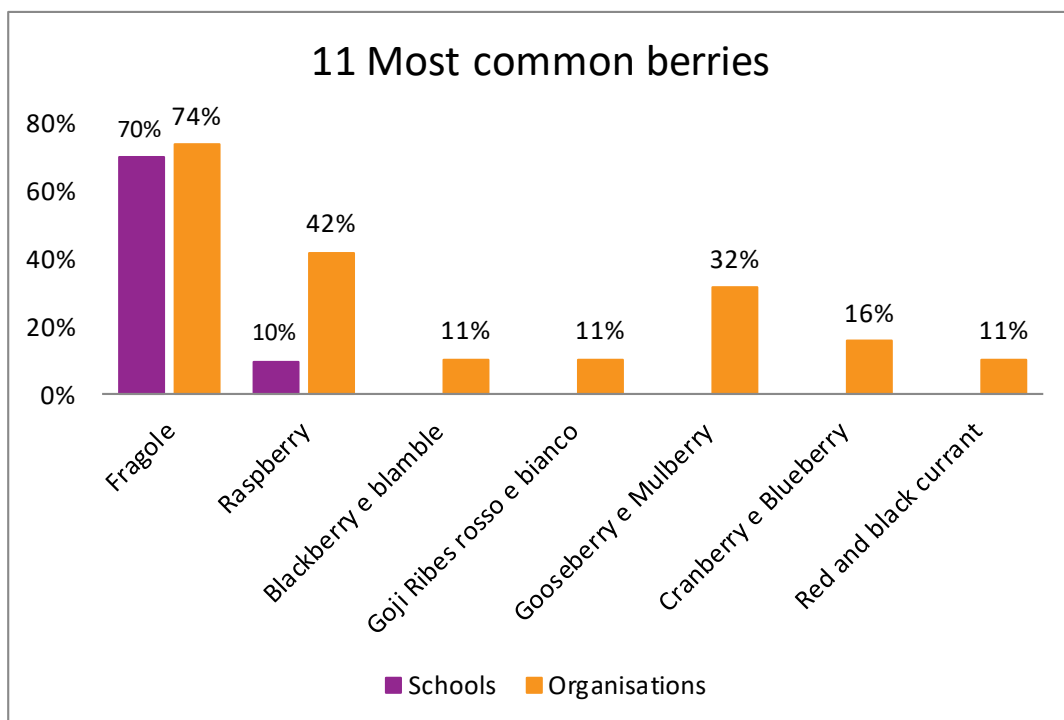


**Most Common cereals:** Wheat

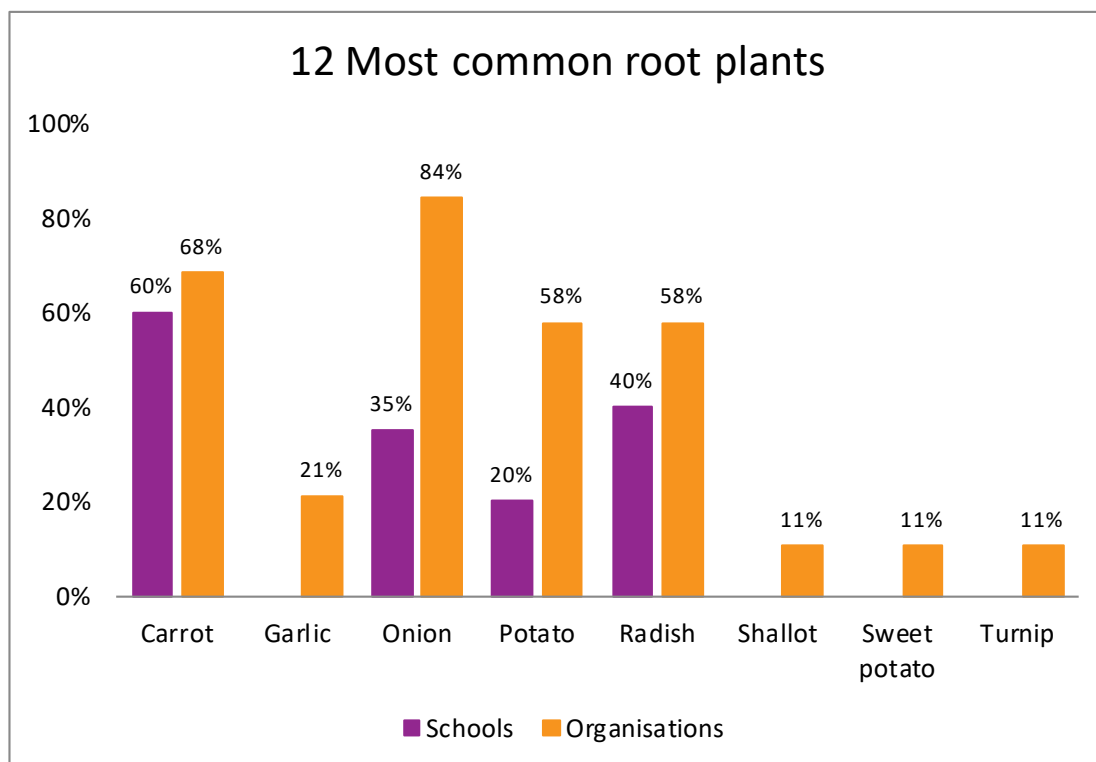
**Question 10:** Which type of fruit trees does the organisation cultivate?



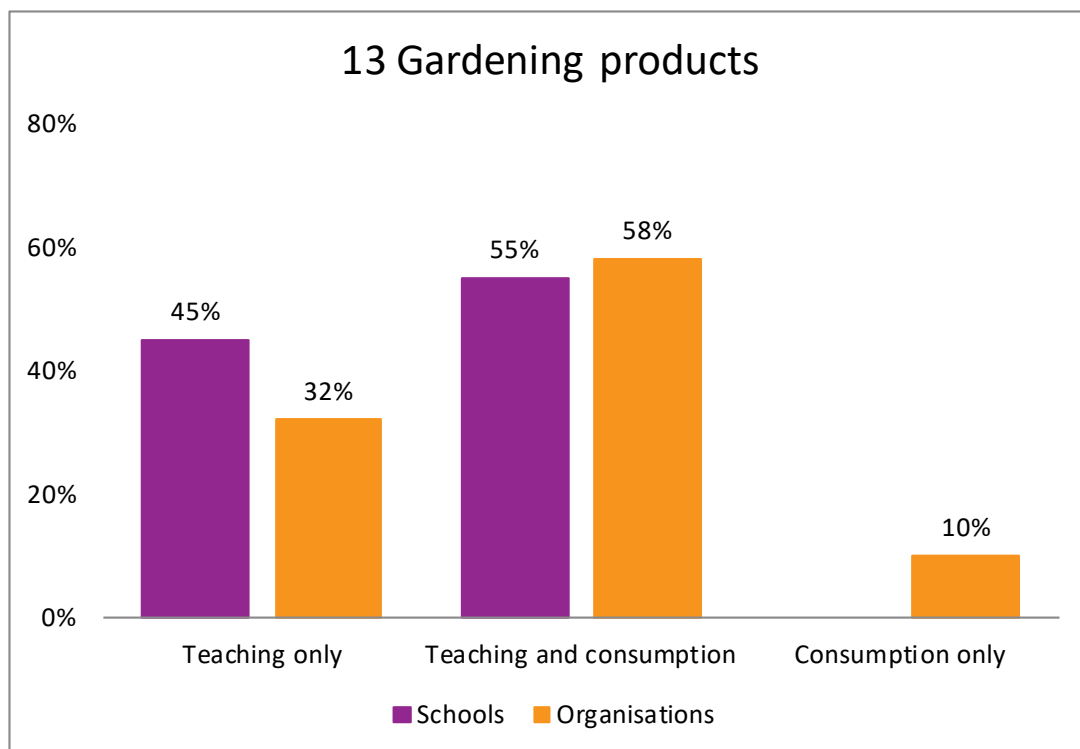
**Question 11:** Which kind of berries does the organisation cultivate?



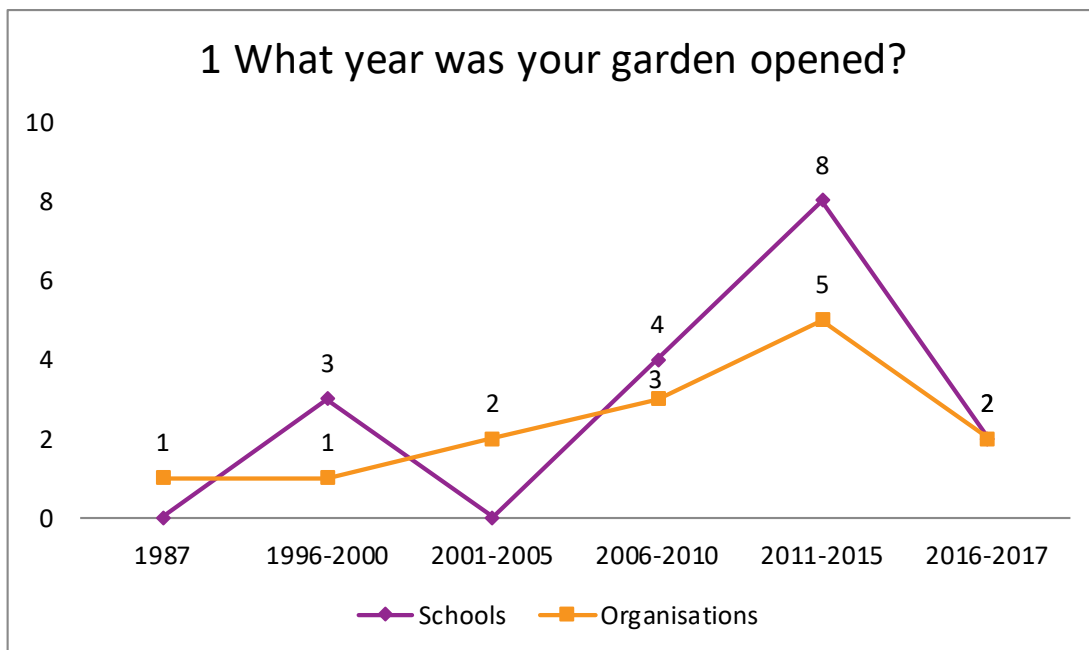
**Question 12:** Which kind of root plants does the organisation cultivate?



**Question 13:** How does the organisation use its gardening products?



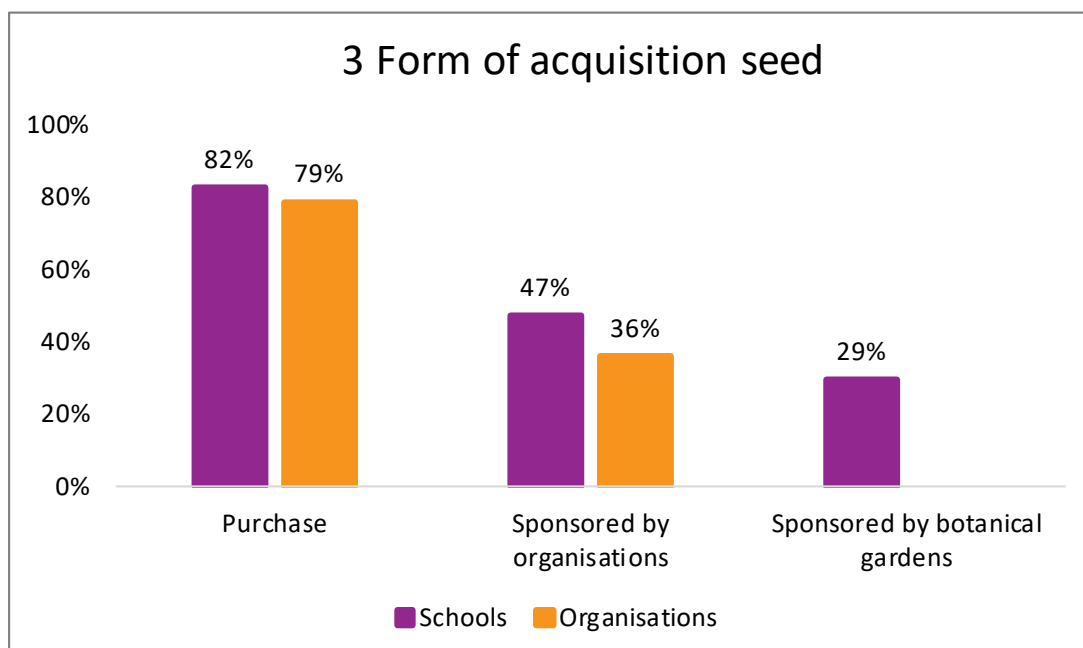
**Question 1:** What year was your garden opened?



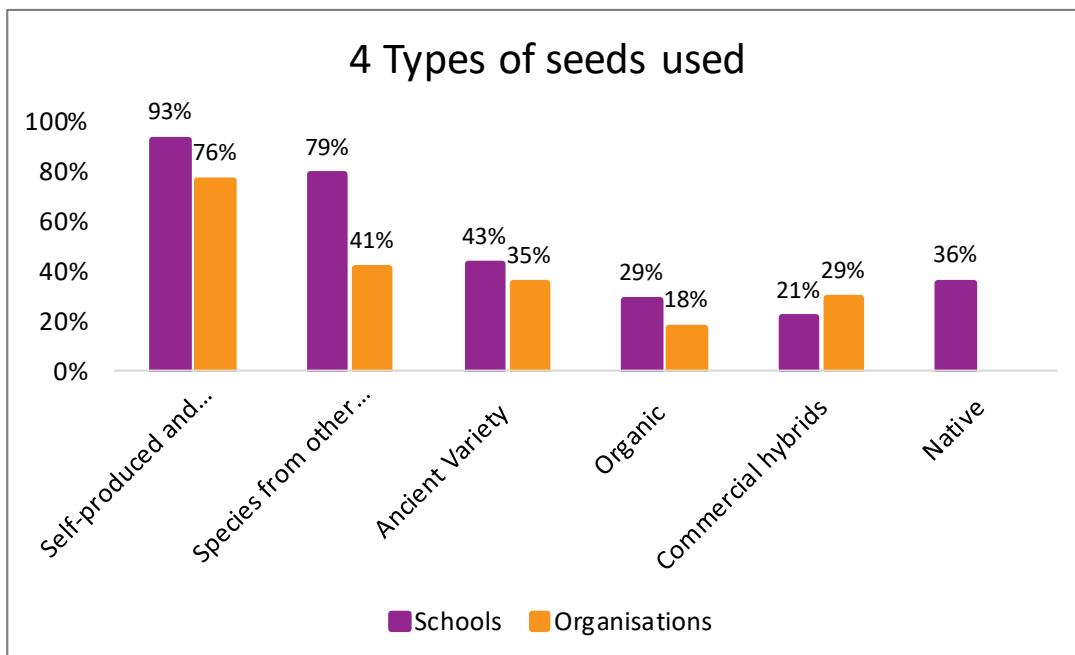
**Question 2:** Please indicate the garden surface in square metres;

- GARDEN SURFACE m2 – Schools: 5 to 250 m2 (average 55 m2)
- GARDEN SURFACE m2 – Organizations: from 10 m2 to 2.000 m2

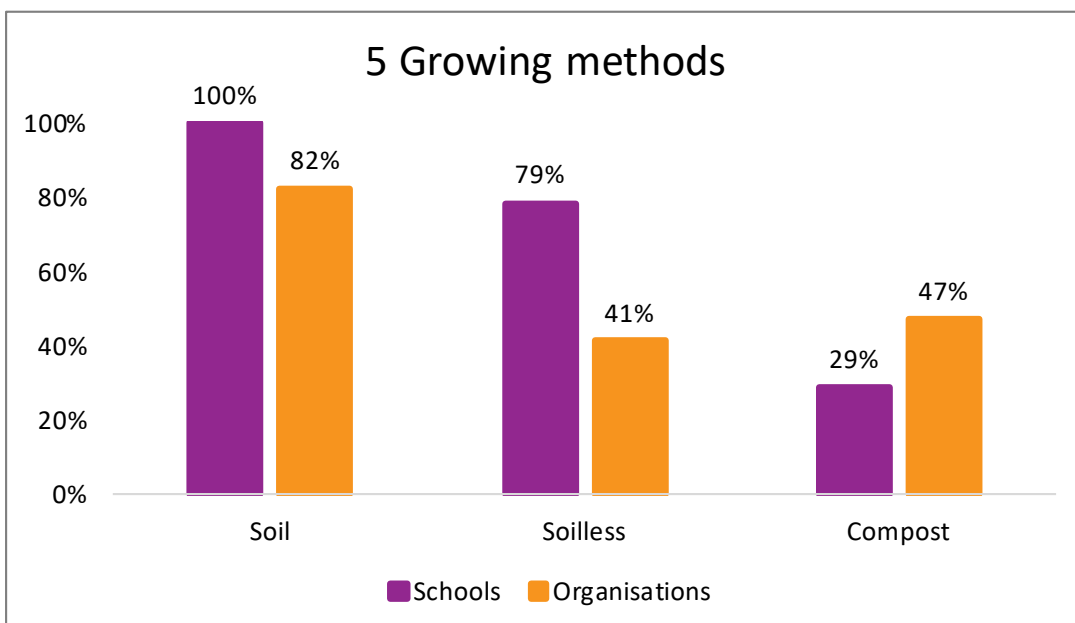
**Question 3:** How does the organisation acquire the seeds?



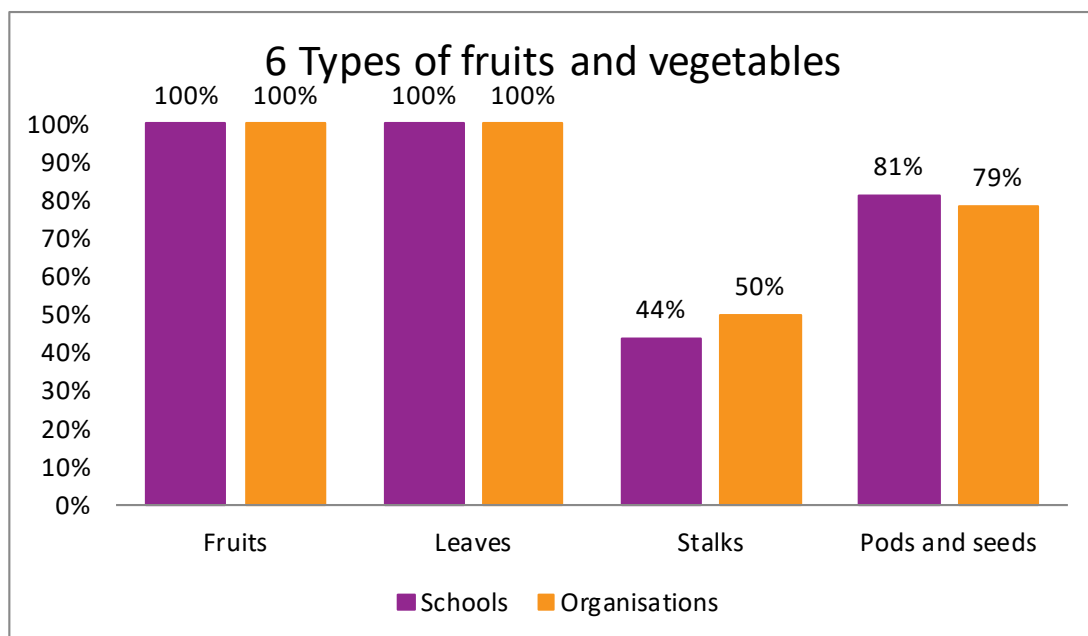
**Question 4:** Which type of seeds does the organisation use?



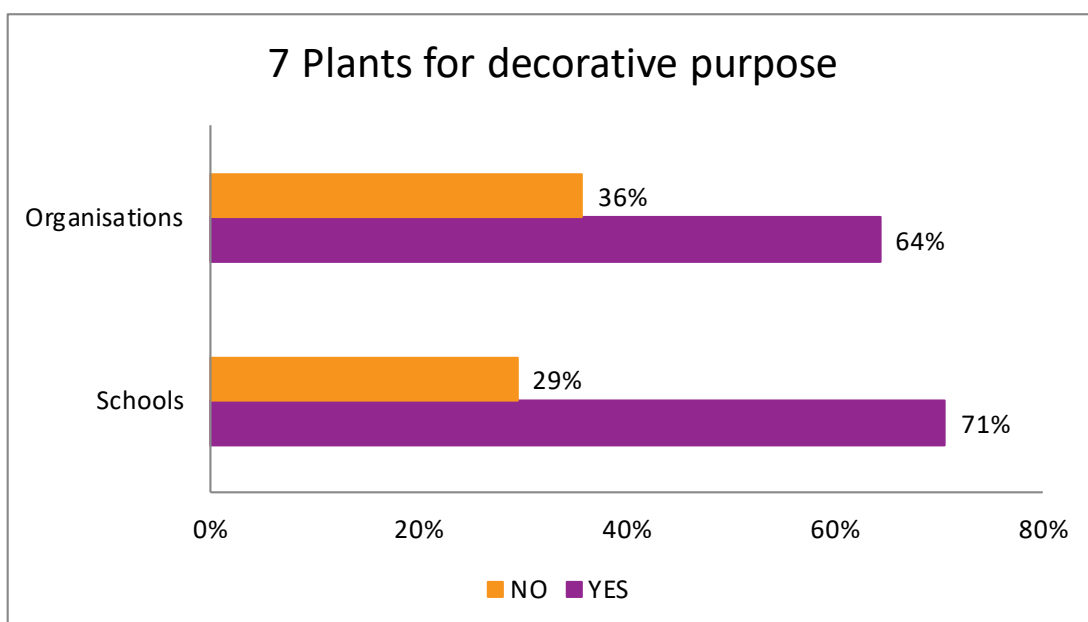
**Question 5:** Which type of growing methods does the organisation use?



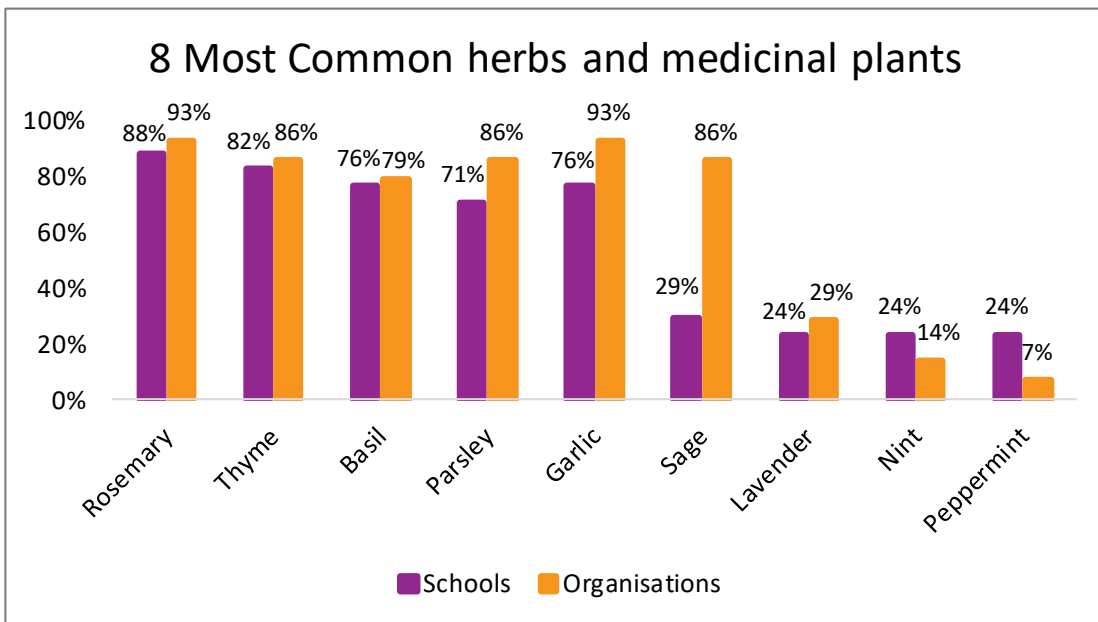
**Question 6:** Which type of fruits/vegetables does the organisation cultivate?



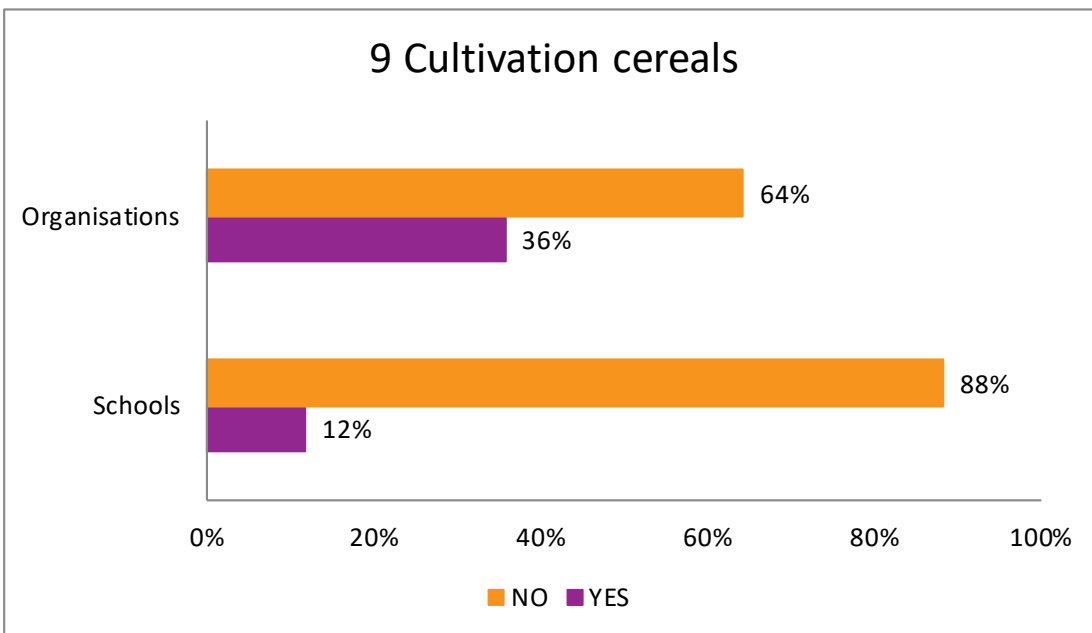
**Question 7:** Does the organisation grow plants for decorative purposes?



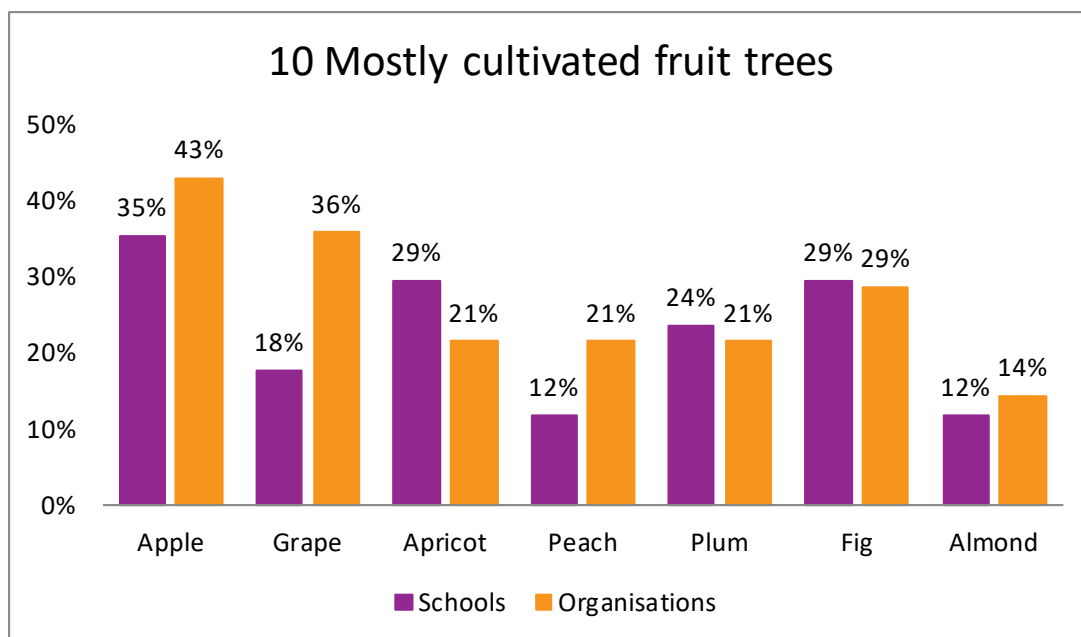
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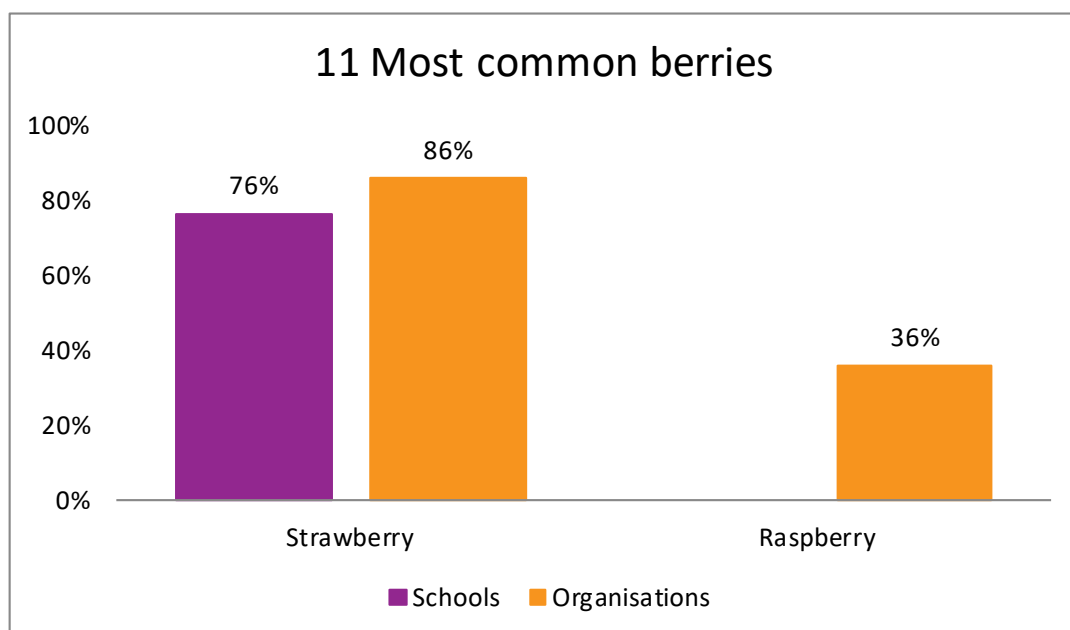
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**Question 10:** Which type of fruit trees does the organisation cultivate?

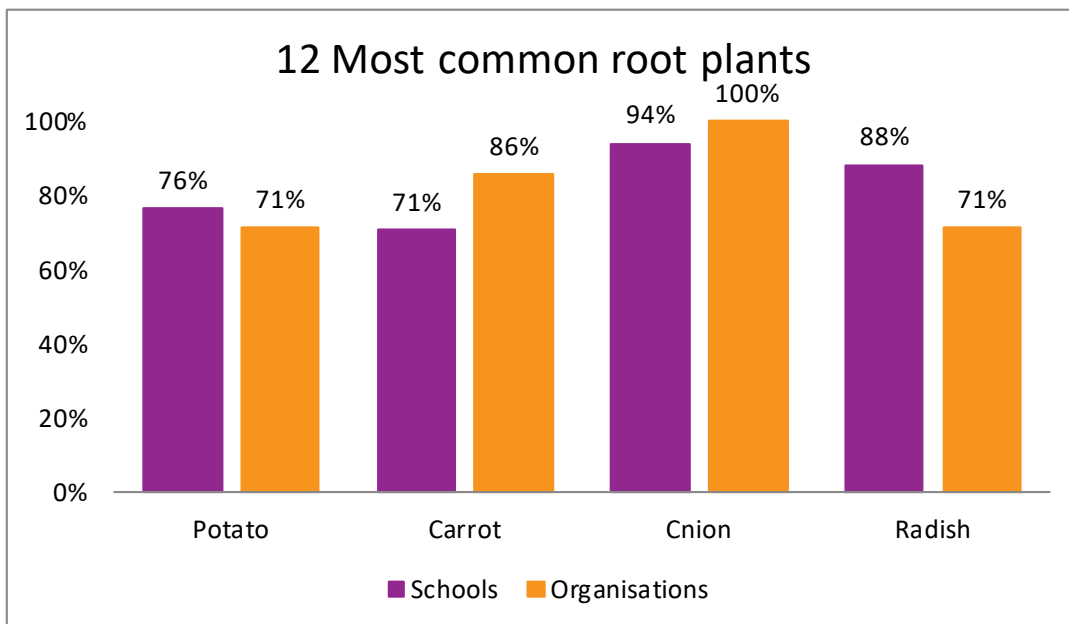


**Question 11:** Which kind of berries does the organisation cultivate?

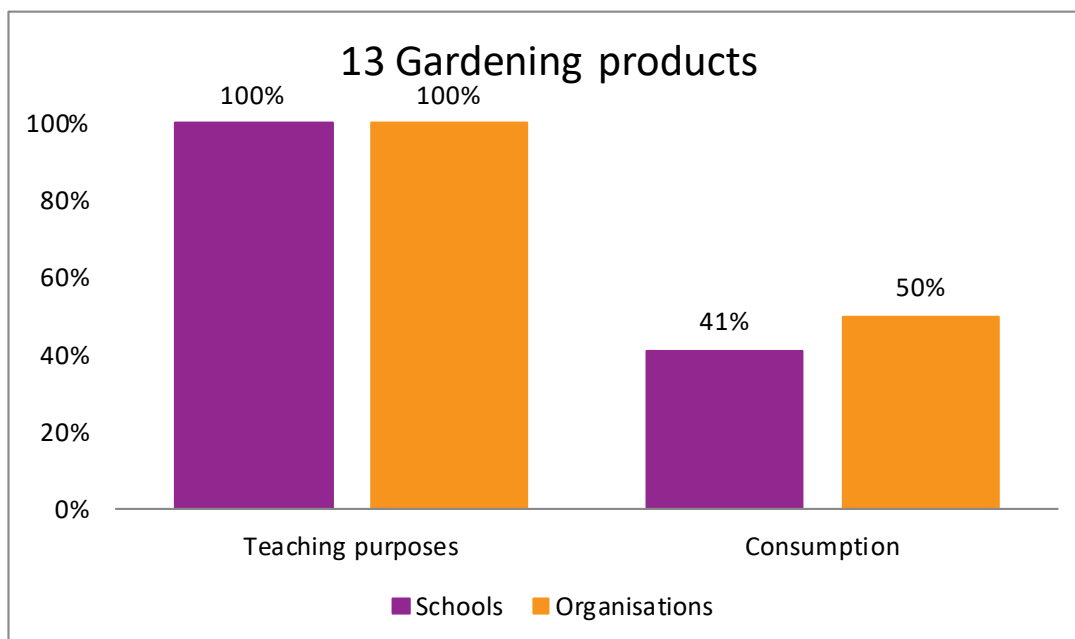




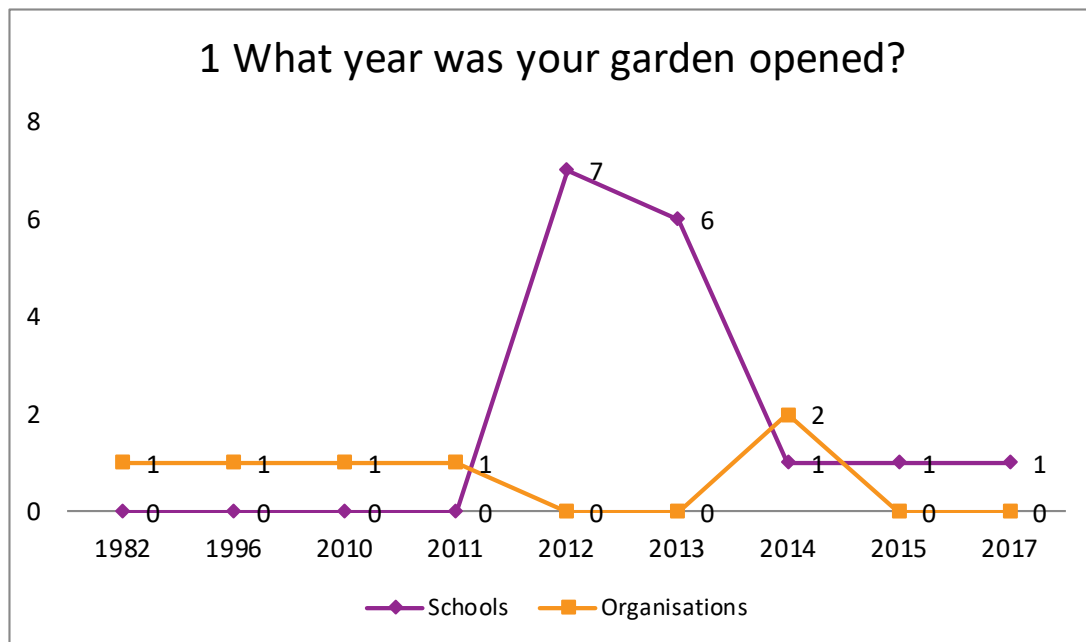
**Question 12:** Which kind of root plants does the organisation cultivate?



**Question 13:** How does the organisation use its gardening products?



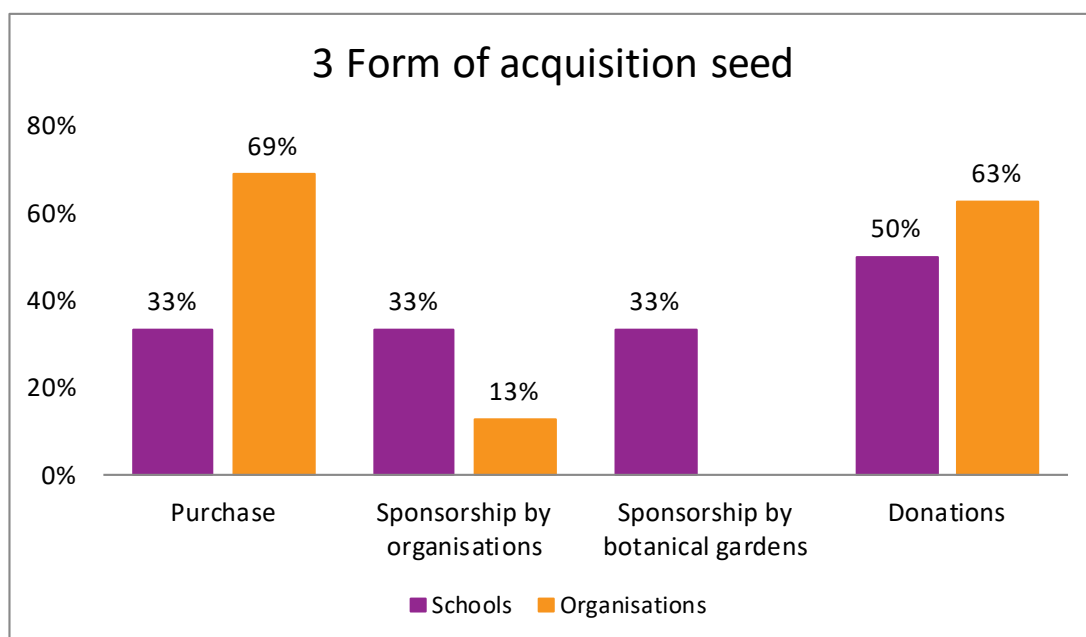
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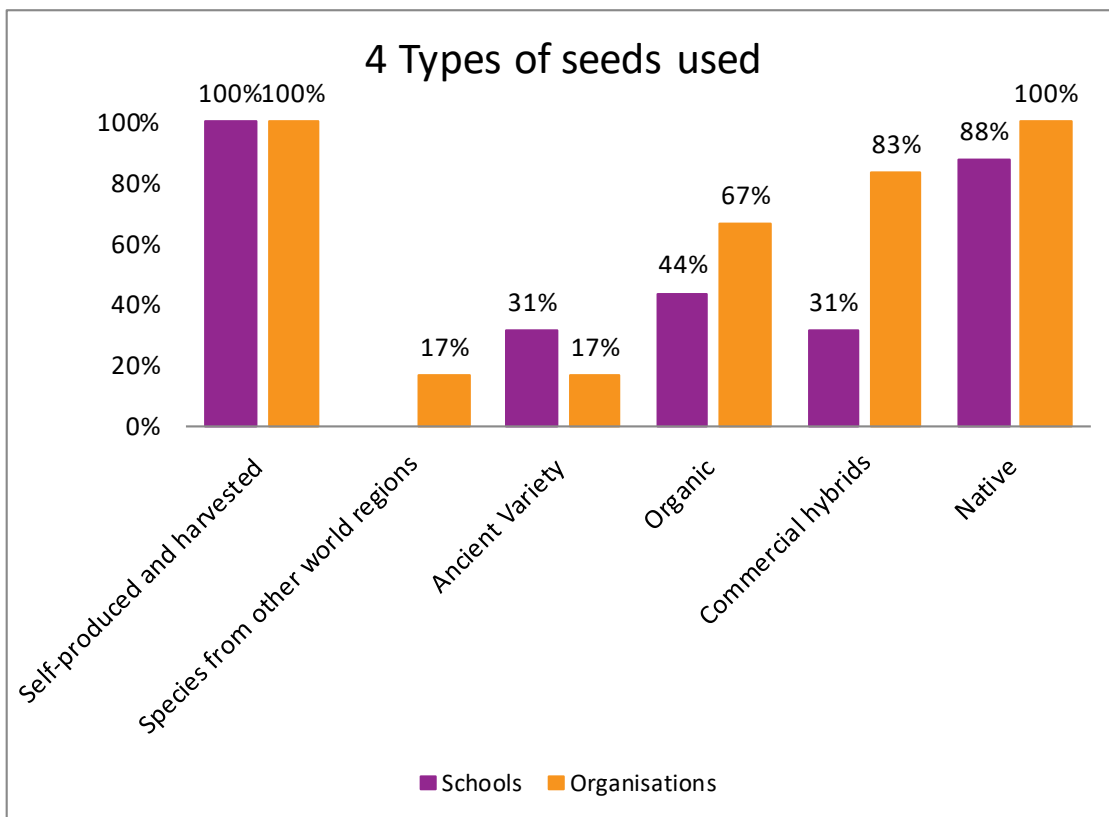
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- GARDEN SURFACE m2 - Schools: 25 to 400 m2
- GARDEN SURFACE m2 - Organizations: from 200 m2 to 97.000 m2

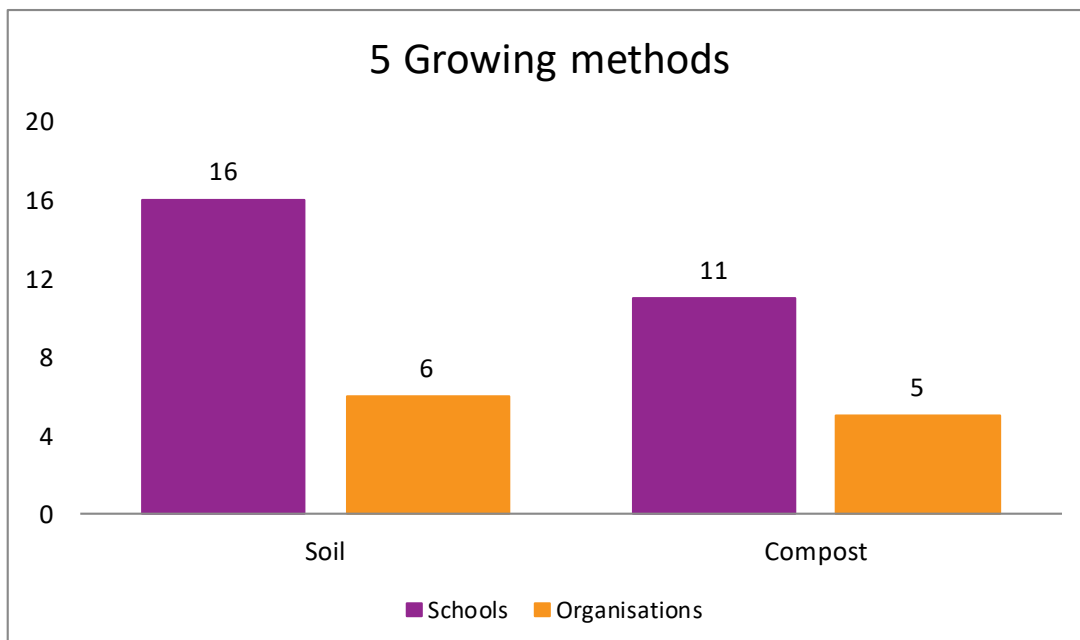
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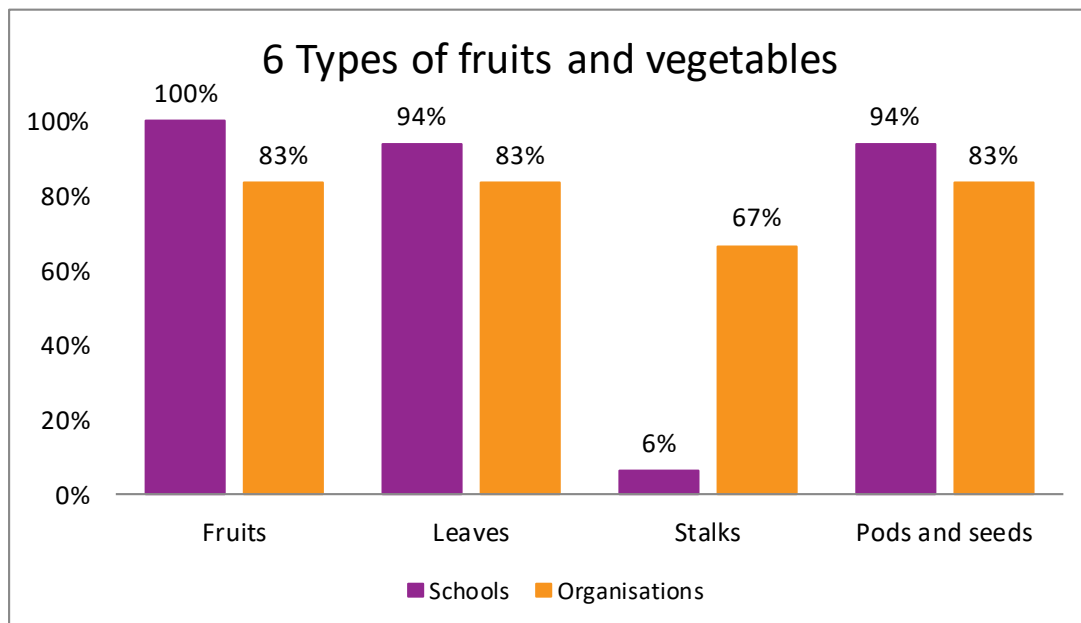
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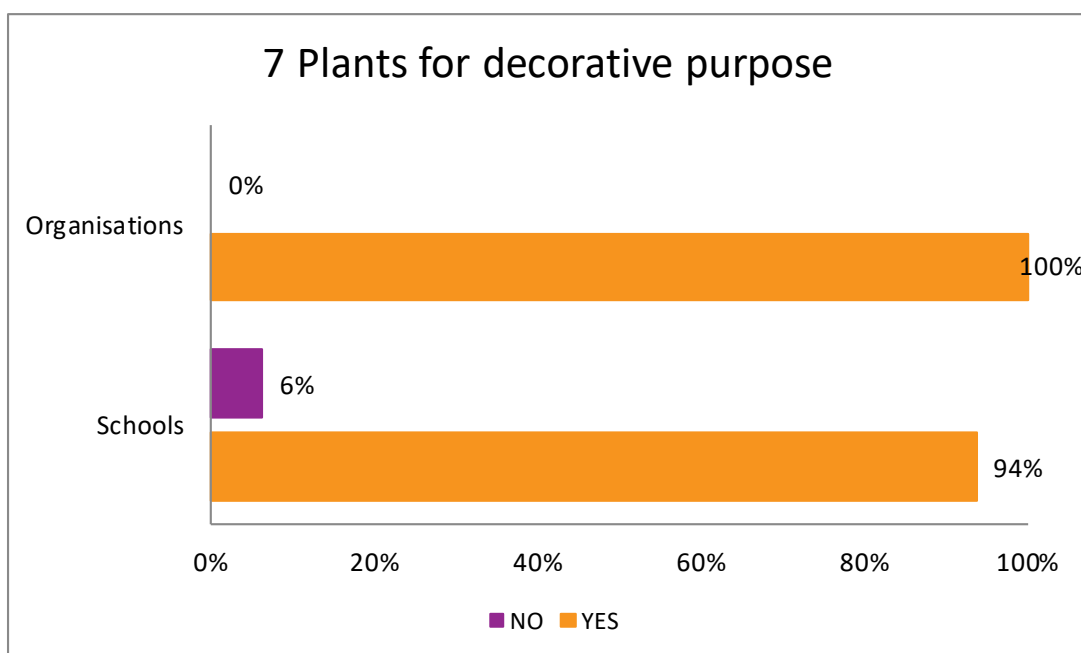
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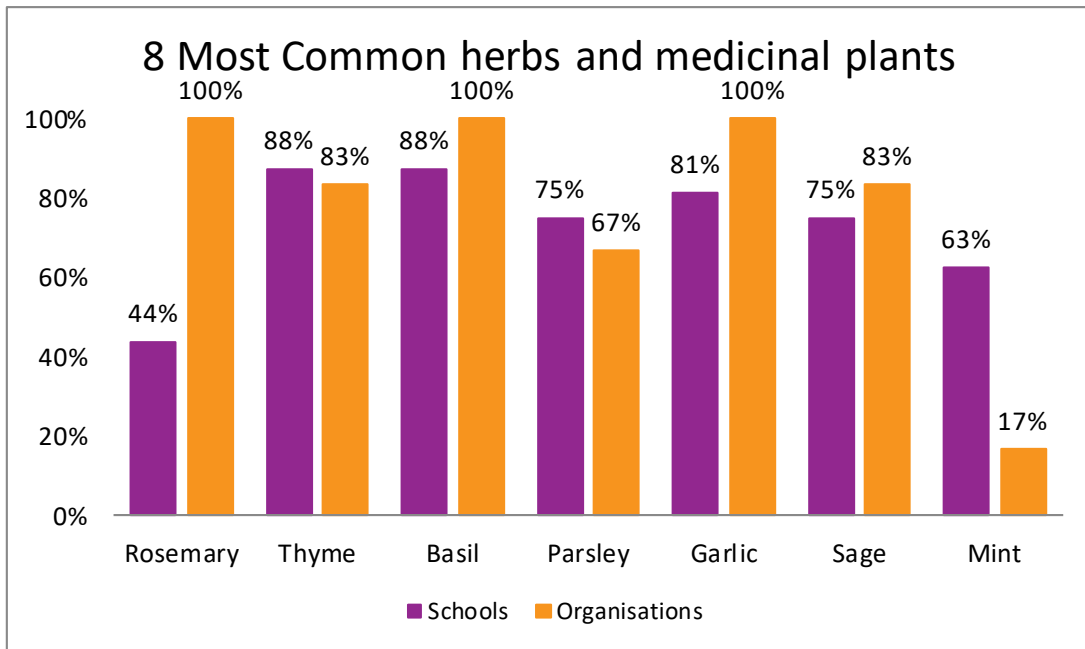
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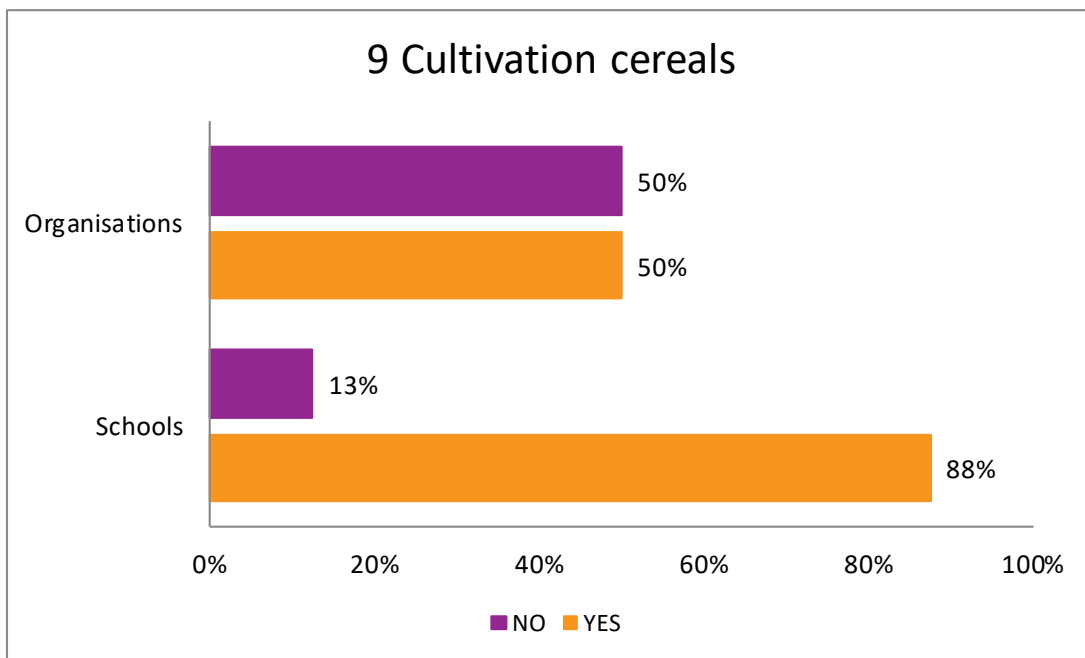
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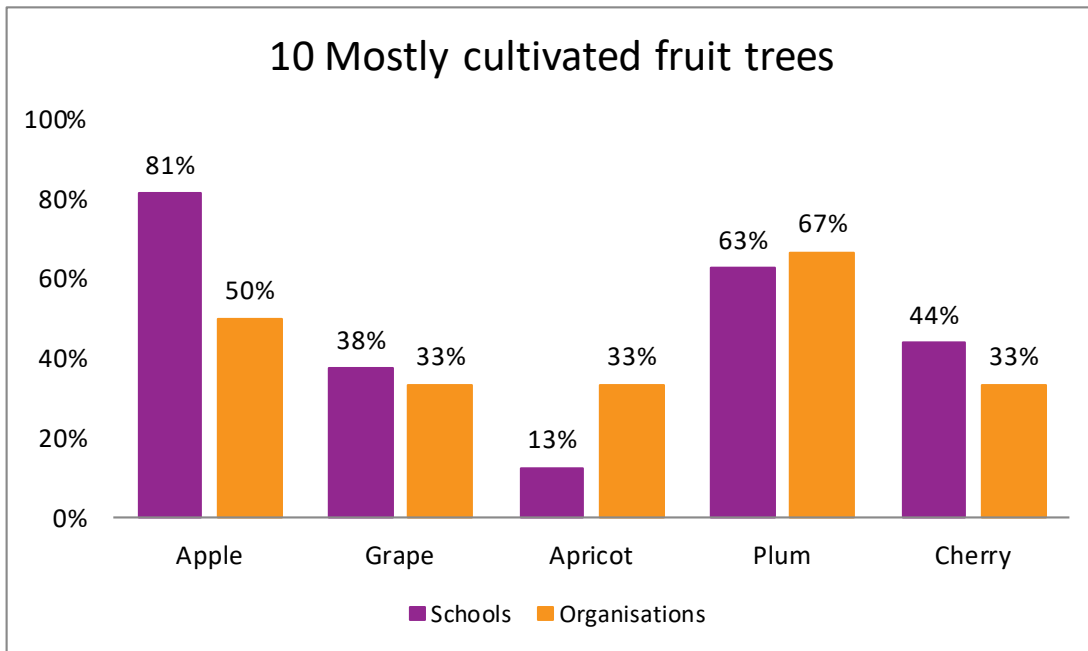
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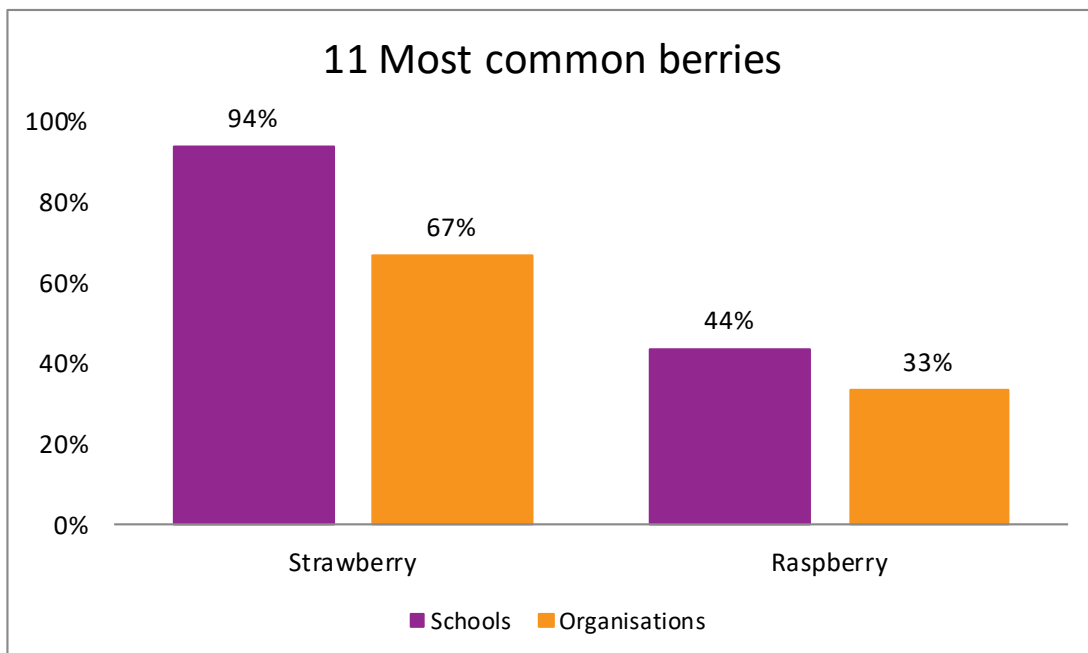
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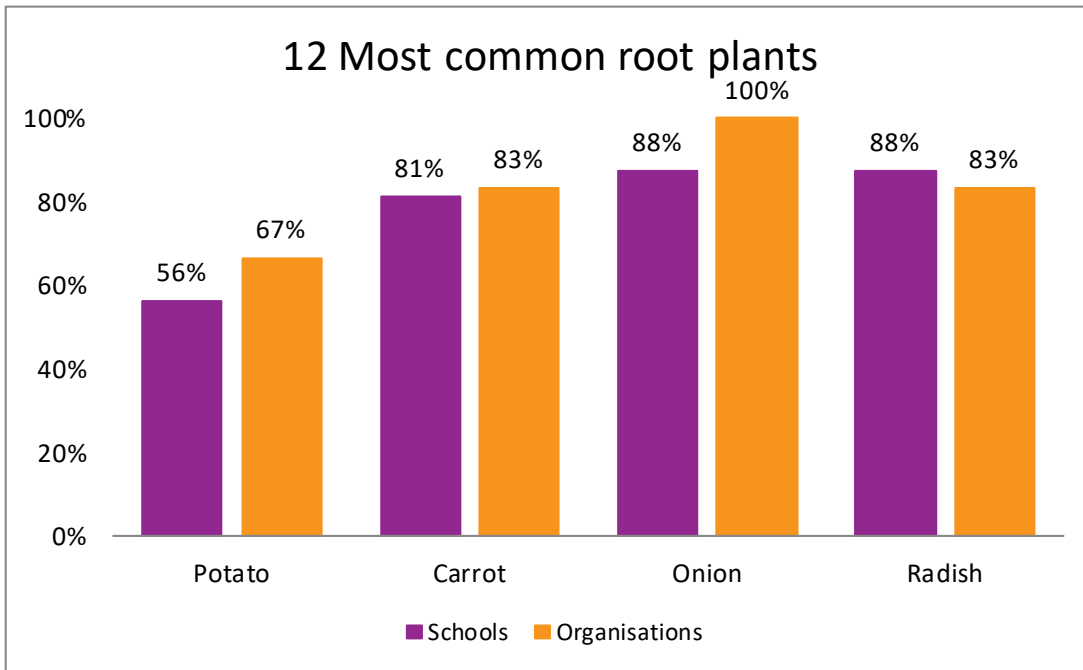
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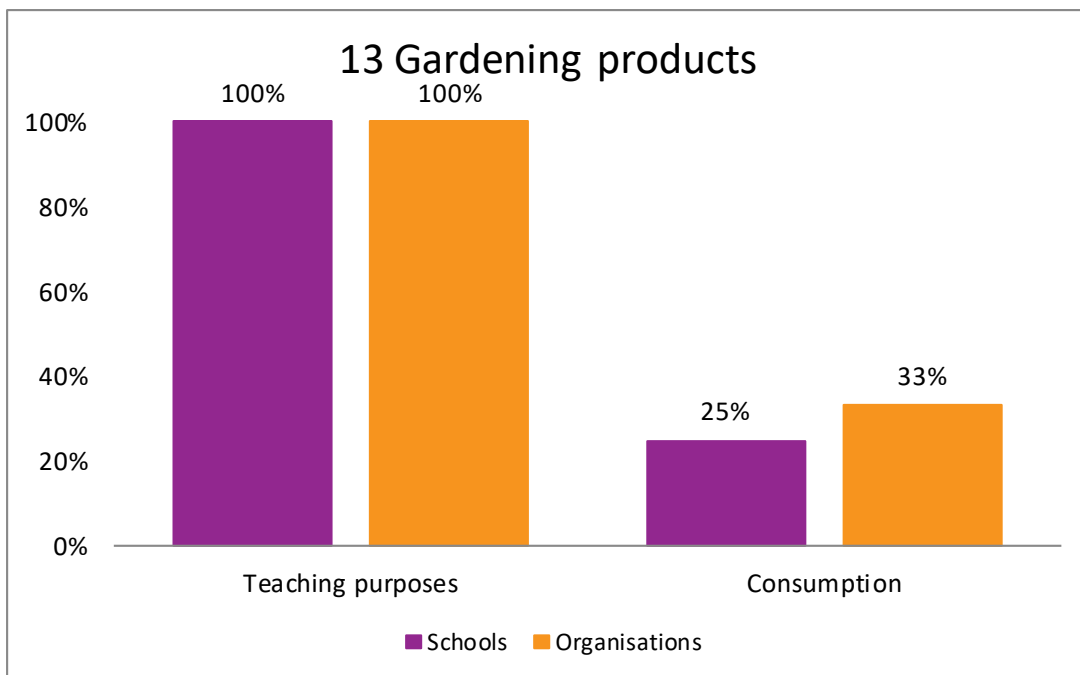
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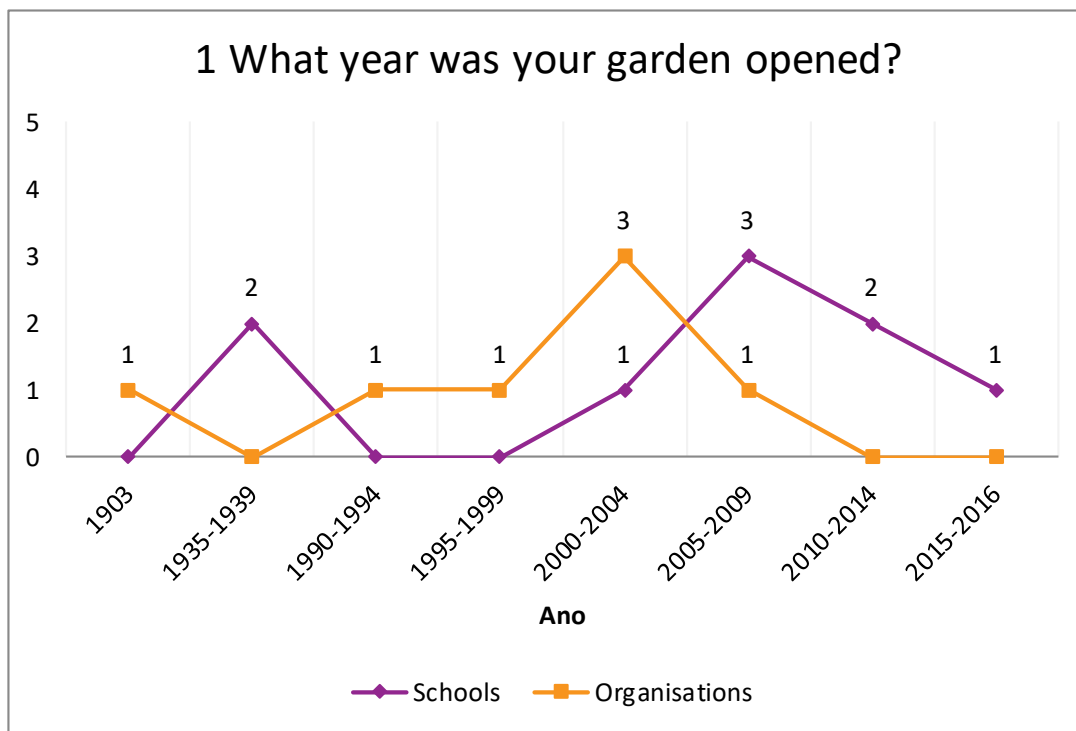
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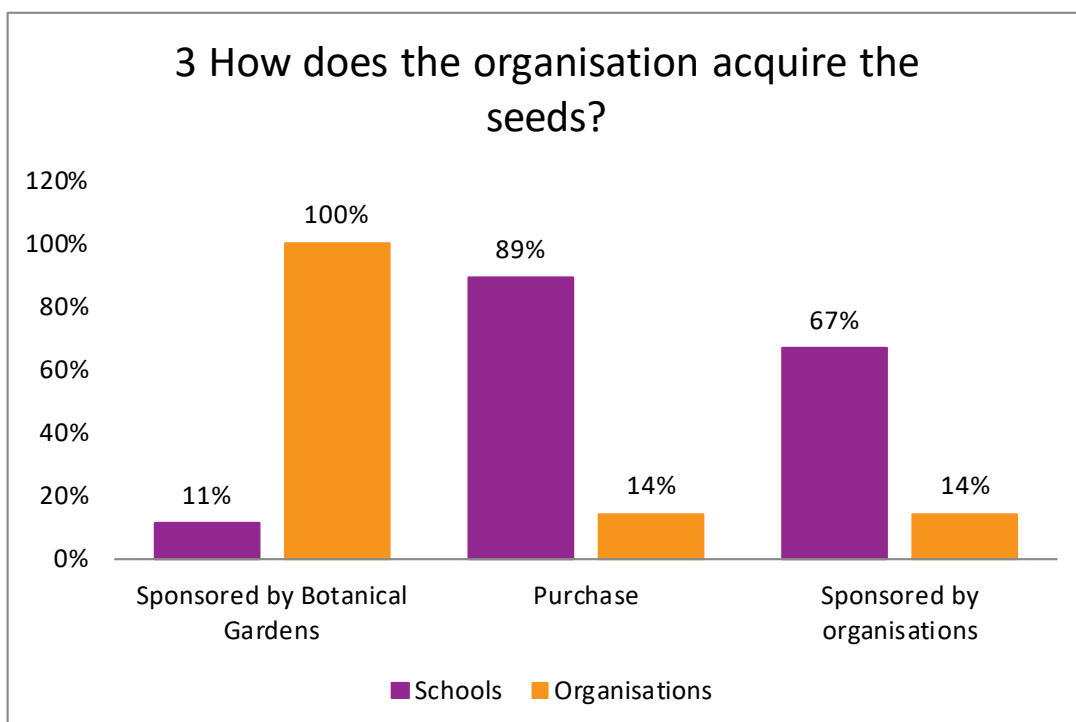
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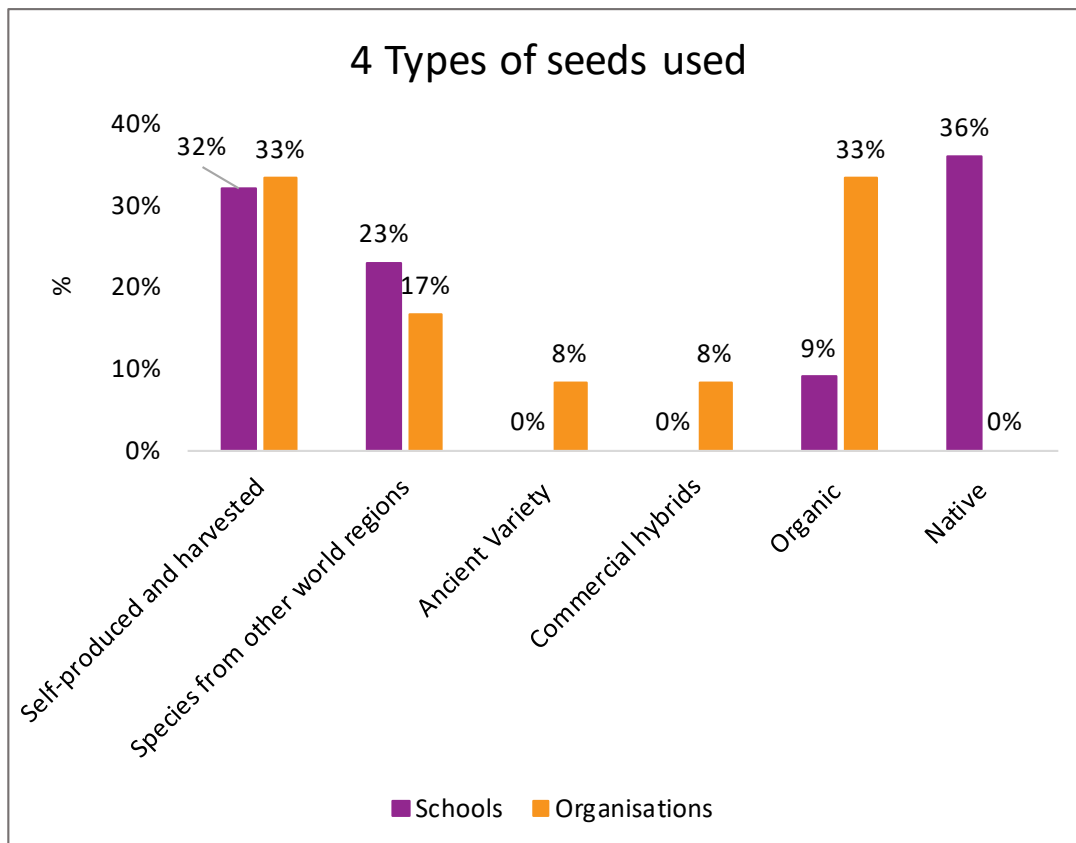
- GARDEN SURFACE m2 – Schools: 20 to 5690 m2 (average 131 m2)
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**Question 3:** How does the organisation acquire the seeds?

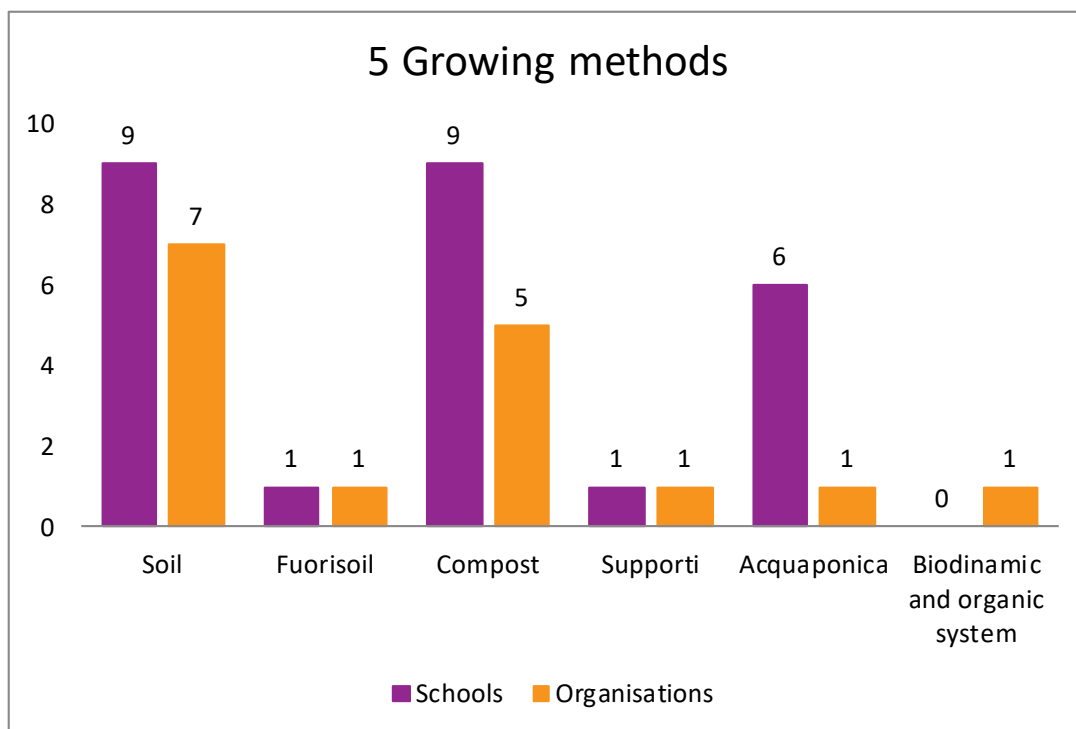




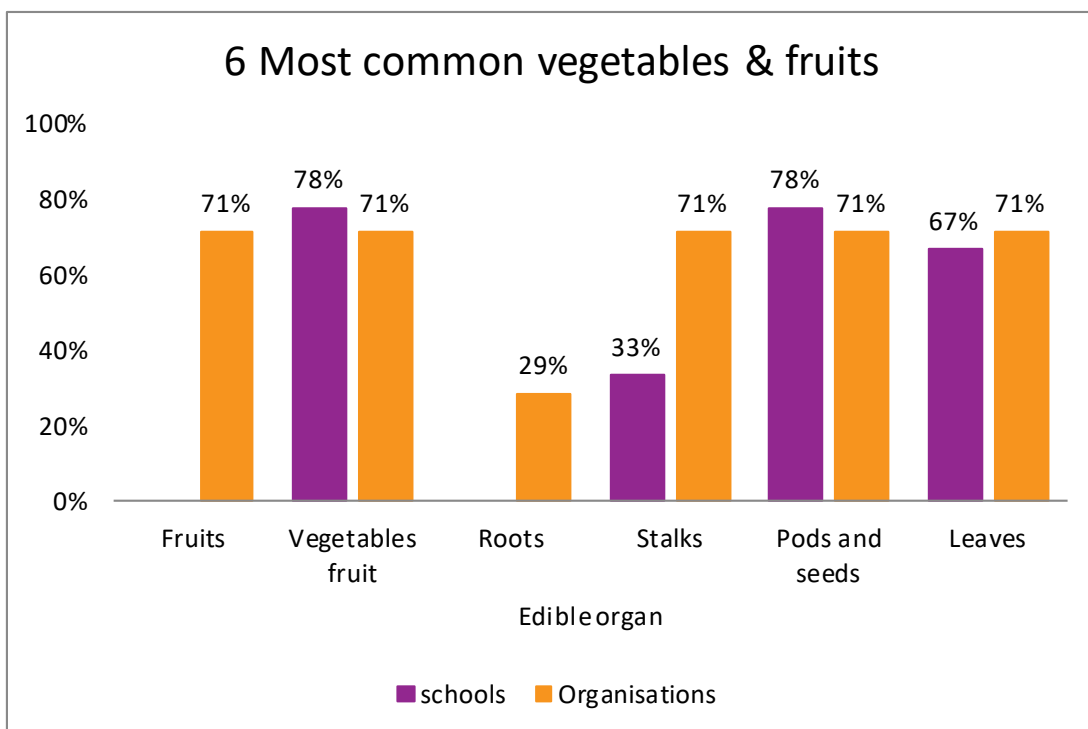
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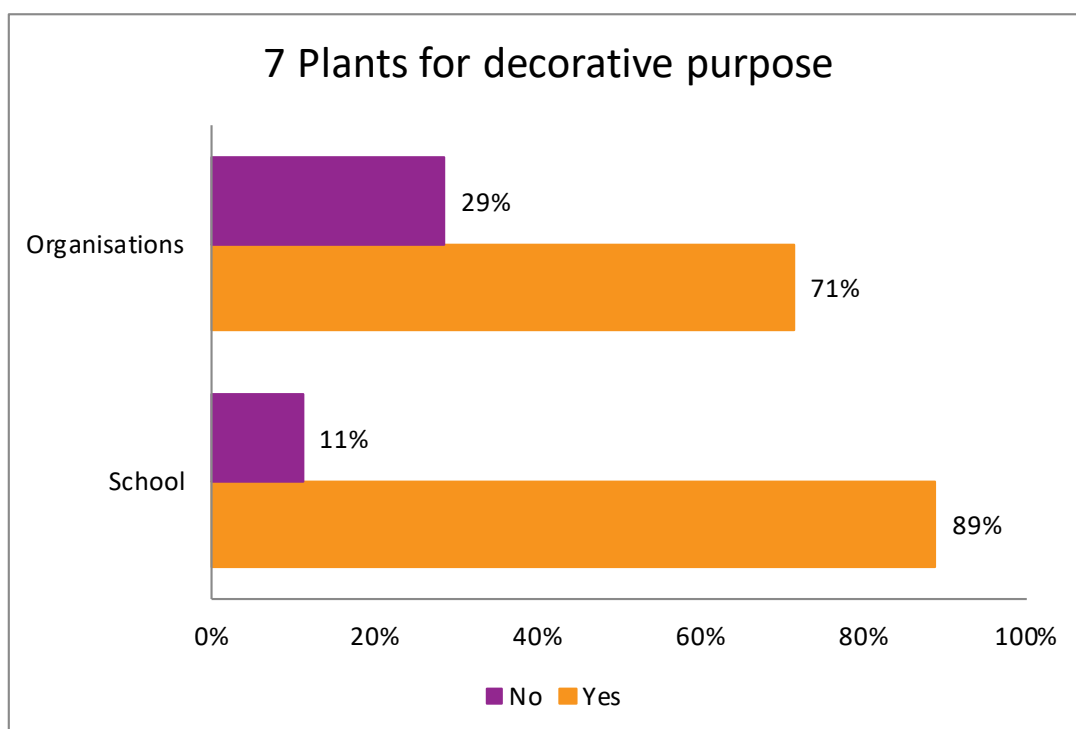
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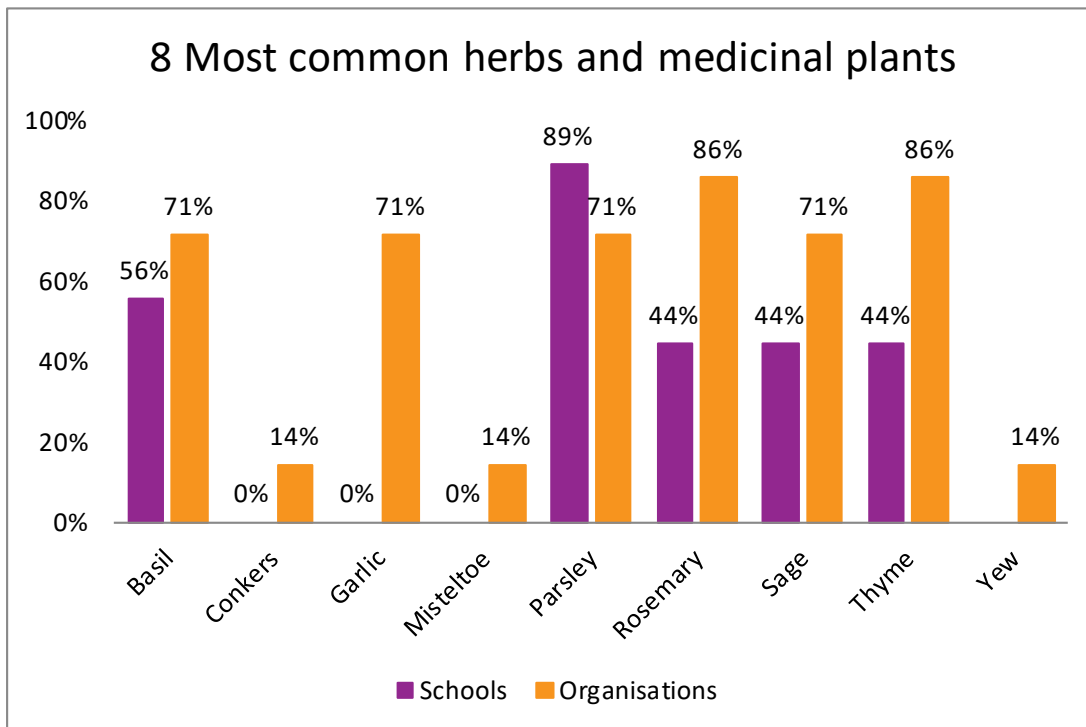
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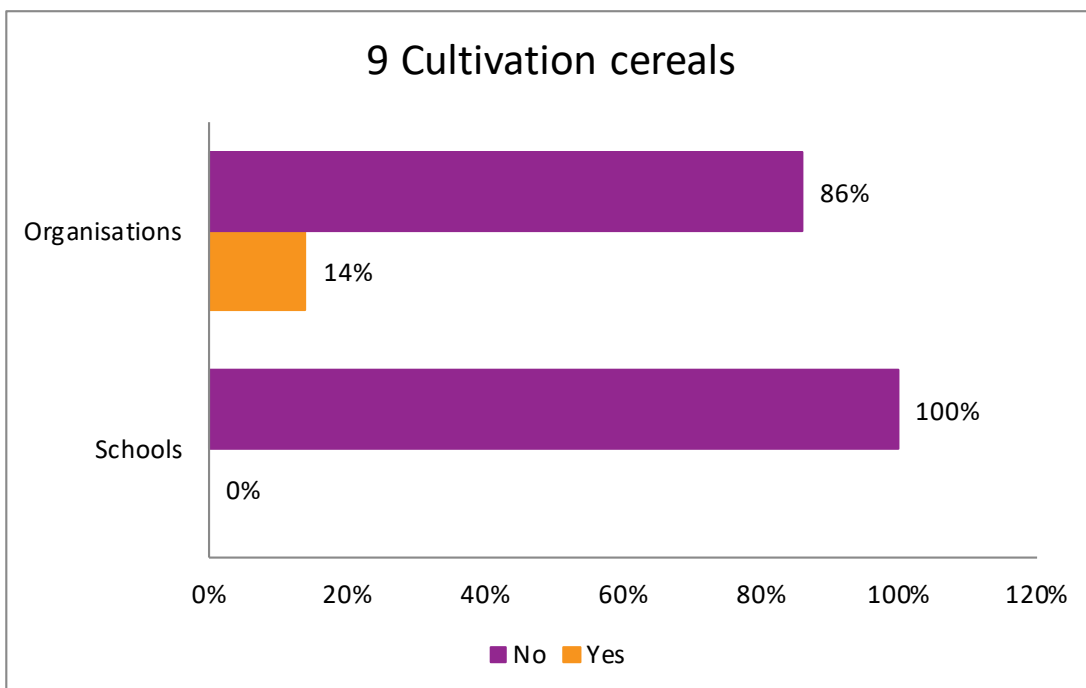
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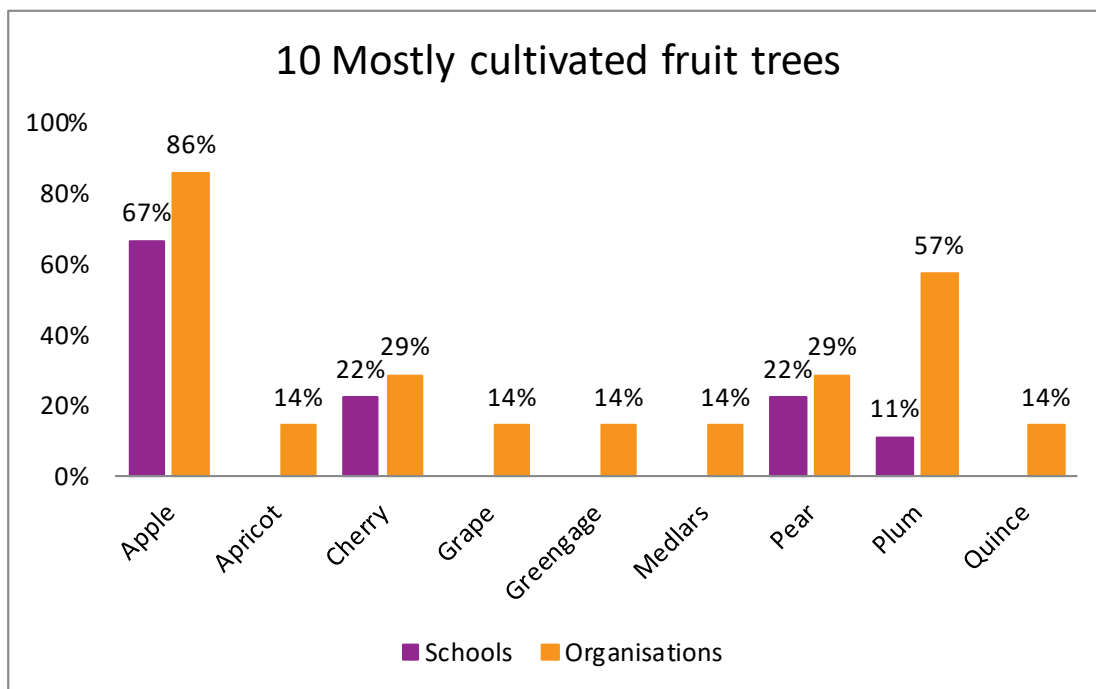
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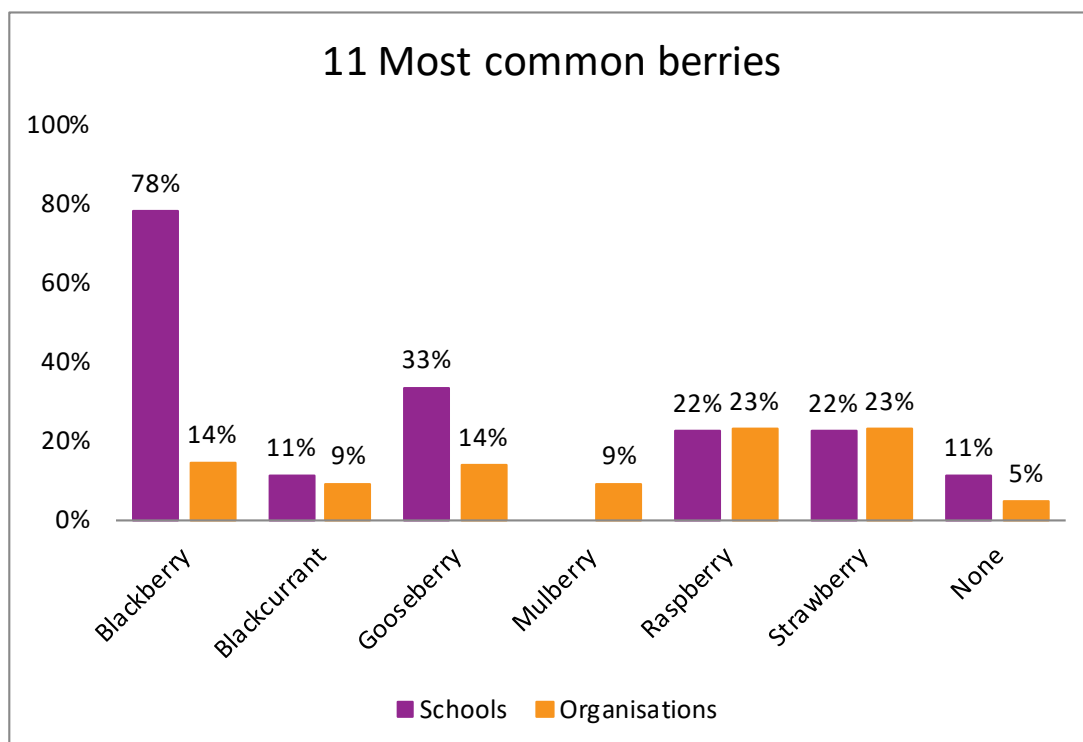
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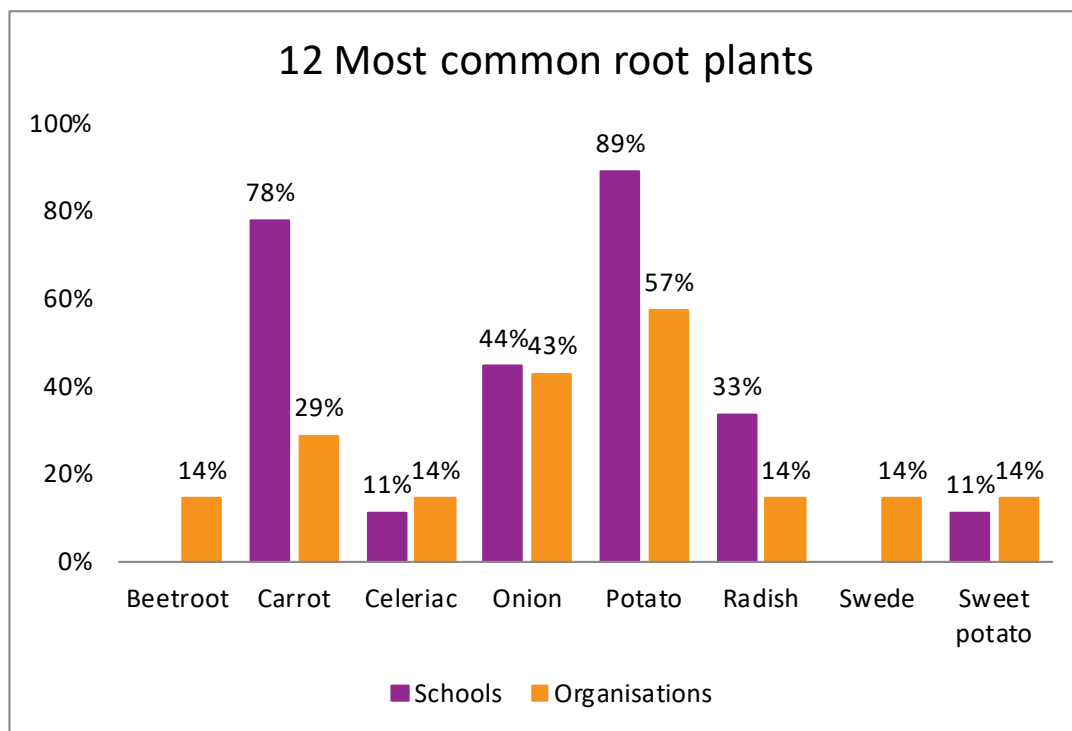
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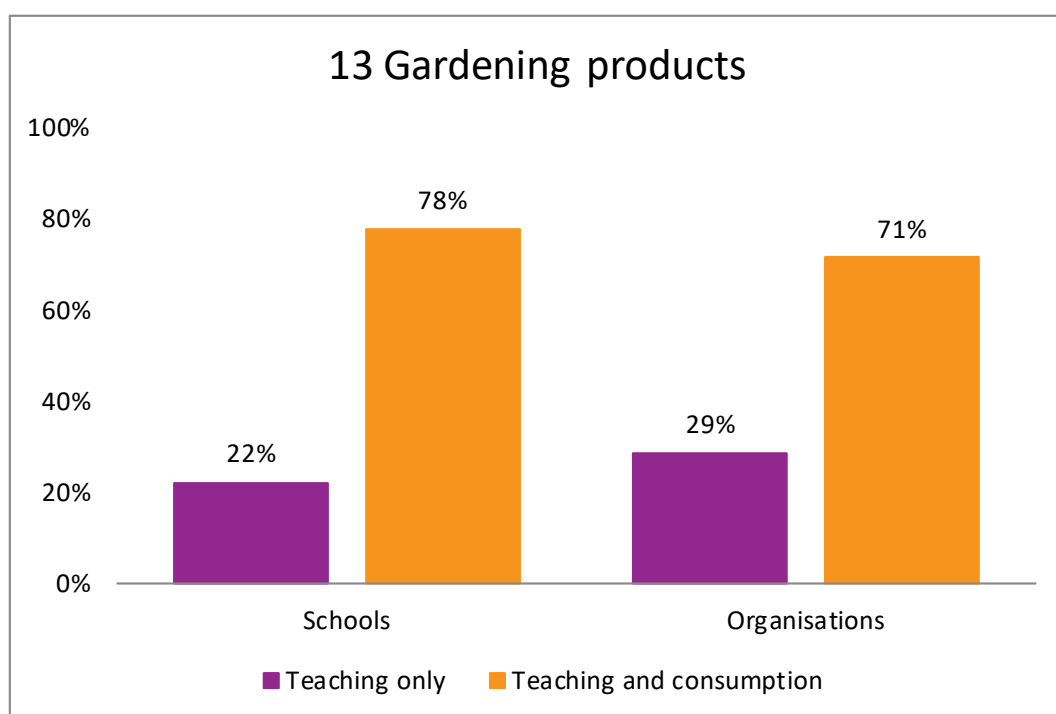
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**Question 13:** How does the organisation use its gardening products?



The authors thank all the schools and other organisations for their active participation on the GARDENStoGROW Inventory.

Abracadabra  
Agricultural University Plovdiv  
Alice  
Asociación Sociocultural La Tribu  
Associazione Zona Ortiva di Via Salgari  
Augher Central Primary School  
Aula Retiro  
Aurelia D'Este  
Azienda Agricola La G.Raffa  
Azienda Agricola Novarbora di Donatella Mongardi  
Biosegura  
Bosque Sur, avenida de las comarcas  
Cabildo De Gran Canaria  
Casanuova Società Semplice Agricola  
CDG Tania Savicheva  
CEA Caserio de Henares  
CEEP Ascruz  
CEIP Alfonso X El Sabio  
CEIP Bolivia  
CEIP Deitania  
CEIP Infanta Cristina  
CEIP Javier De Miguel  
CEIP La Rioja  
CEIP Luis Feito  
CEIP Meseta De Orcasita  
CEIP Obispos García Rodenas  
CEIP Pinar de San José  
CEIP Santo Domingo-San Miguel  
Centro de educación Ambiental El Águila  
Centro de educación Ambiental El Campillo  
Centro Sociale Ricreativo Culturale e Orti Rosa Marchi  
Choreaia  
Colegio De Infantil Y Primaria Villa Alegría  
COpAPS Agriturismo Il Monte  
Corinne Richards, BBOWT, Sutton Courtenay Environmental Education Centre Brigit's Garden  
Dungannon primary school  
Escuela Gredos de San Diego  
Family Permaculture Farm Biotiful  
Five mile town primary school  
Fondazione Campagna Amica  
Fondazione Villa Ghigi  
Friends of Karin Dom Association  
Giacomo Leopardi  
Giardino Delle Erbe  
Giardino Magico  
Harberton Special School  
Hart Memorial Primary  
HuertAula Comunitaria de Agroecologia  
Huerto Pío-Fundación Sierra Minera  
I.C. via P.A. Micheli - Villaggio Olimpico  
Il Trenino  
Istituto Comprensivo Claudio Abbado

Istituto Comprensivo Don Bosco  
Istituto Comprensivo Foligno 4 Gentile Da Foligno  
Istituto Comprensivo Statale Vittorio Alfieri  
Jaso Ikastola  
Jones memorial primary school  
Killyleagh Integrated PS  
Kindergarten 15 Nezabravka  
Kindergarten Detski sviat  
Kindergarten Prikazka  
L'aquilone  
La cabaña del retiro  
La Paloma  
LabGov - Laboratory for the Governance of the Commons  
Largymore Primary School  
Le Quattro Stagioni  
Magdalen Farm  
Modena Est  
Mun. VIII I Monelli  
MUSE - Museo delle Scienze di Trento  
ODZ Jiva Vida  
ODZ2 Zvezdica Zornica  
ODZ59 Elhitsa  
Officine Culturali - Orto Botanico  
Orto Botanico Erbario  
Orto botanico Giardino dei Semplici Museo di Storia Naturale Università di Firenze  
Piparrika  
Private English Kindergarten Cosmos Kids  
Private Schoolgarden Casa Dei Bambini  
Proyecto VIRERE - Centro turístico de energías renovables, permacultura y bioconstrucción  
R. Pezzani  
RHS Garden Wisley  
Riverdale Primary School  
Scuola dell'infanzia Don Minzoni  
Scuola dell'Infanzia Zamboni  
Scuola dell'Infanzia Statale Montegrappa  
Soc. Coop. Open Group  
Soleluna  
Speedwell Trust Parkanaur Forest  
State kindergarten Detska Radost  
State kindergarten Cheburashka  
State kindergarten Igljika  
State Kindergarten ODZ Elitsa  
State kindergarten Slunchice  
Teatro dei Mignoli/Ai 300 scalini  
The Organic Centre  
TICE  
University Botanical Garden  
Virgen de la Vega School/C/Escuelas  
Vitosha  
Vivens hortis - Espacio para la agroecología y el arte  
Waldorf Kindergarten Nikolay Raynov  
Waldorf kindergarten Zlatno zrance  
Waltham Place Farm  
ZAEDNO - Communication for Support and Development Foundation  
Zappata Romana



# REFERENCES





## 7. REFERENCES

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Dovigo, F. (2014). *Nuovo Index per l'inclusione: percorsi di apprendimento e partecipazione a scuola*. Roma: Carocci.

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<http://www.gardenstogrow.eu/en/>

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of the European Union





**gardens to grow**

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