



MHRD
Government of India

School Nutrition **Gardens**

Mid Day Meal Scheme





School Nutrition Gardens

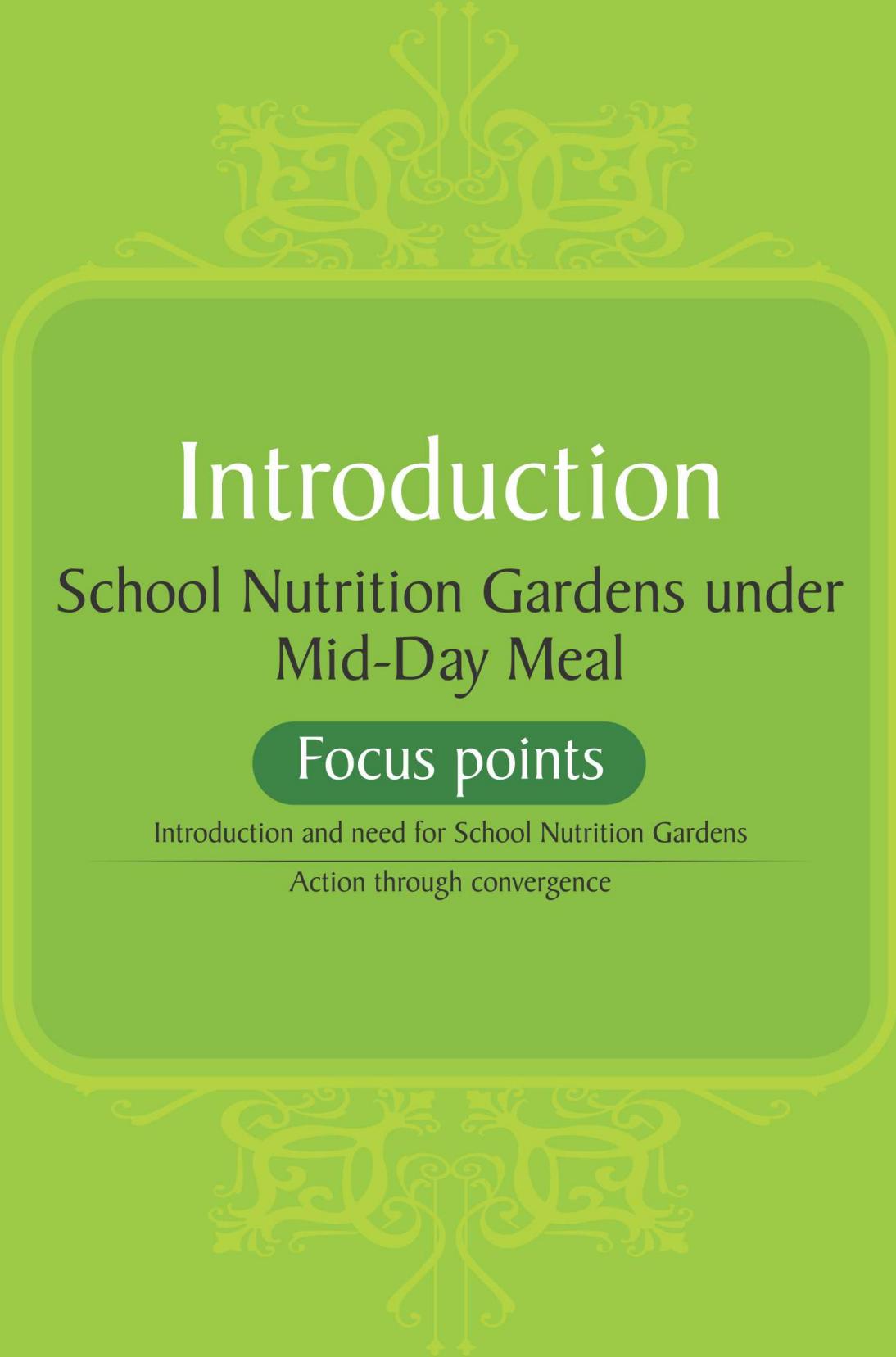
Mid Day Meal Scheme



CONTENT

	Introduction	03
Chapter – I	Objectives of School Nutrition Garden	07
Chapter – II	Action Points and Frequently Asked Questions	11
Chapter – III	Setting up of School Nutrition Garden	17
Chapter – IV	Planning and Monitoring	23
Chapter – V	Preparing the site and layout	31
Chapter – VI	What shall we grow to eat	37
Chapter – VII	Motivation for sustaining School Nutrition Garden	41
Chapter – VIII	Convergence with other Ministries / Departments	49
Chapter – IX	Awareness Generation / Publicity	55





Introduction

School Nutrition Gardens under Mid-Day Meal

Focus points

Introduction and need for School Nutrition Gardens

Action through convergence

I. Introduction and need for School Nutrition Gardens

Education, adequate nutrition and good health & wellbeing are crucial to the development of children and their future livelihoods. These priorities are appropriately covered in the Sustainable Development Goals (SDGs).

School Nutrition Gardens can be a vital part of Nation's endeavour to address hunger and malnutrition. School Nutrition Gardens can provide freshly grown nutritious vegetables that can be utilized for mid-day meals for the children. School Nutrition Gardens can take back the children to the organic methods of growing vegetables. To address the double burden of malnutrition due to excessive consumption of fast and junk foods by children, School Nutrition Gardens can offer opportunity for an outdoor activity while also teaching the importance of nutrients-rich diet. Most importantly, school gardens give a first-hand experience with nature. It is pertinent to mention that school nutrition gardens can also contribute as a platform for learning. It is essential to note that these School Nutrition Gardens should be considered as a way to better nutrition and education.



A school nutrition garden is a place where herbs, fruits and vegetables are grown around in the school premises for use in the preparation of Mid-Day Meal. School Nutrition Gardens are a wonderful way to use the school to reconnect the students to a natural world and make them aware about the true source of their food, and teach them valuable gardening and agriculture concepts and skills that integrate with several subjects, such as math, science, health & physical education, and social studies, as well as personal and social responsibility. As per the

information provided by States and UTs, nutrition gardens have been developed in over one lakh schools. Kitchen gardens are being promoted in many States viz Assam (49994), Kerala (6197) West Bengal (6197), Gujarat (2694), Tamil Nadu (1756) and Uttarakhand (955). The same practice may be scaled up to all schools across the country to enable the students to consume freshly grown vegetables.

The primary goal of a School Nutrition Garden is to allow the students to grow plants from start to finish. There is no greater reward than watching a tiny seed turn into a beautiful flower or something to eat. School Nutrition Gardens have many benefits. It will not only add fresh vegetables but also learn nature-nurturing activities. Students are given responsibilities to care for living organisms. Teamwork, social skills, healthy food alternatives can all be taught in the garden area. There is enormous scope for student learning outside in the garden. Gardening can be used for numeracy skills including: measurement, areas and volumes, data gathering and presentation and for literacy labelling plants, recording and describing plant development researching, creating written and multi-modal texts. Even creative arts can be effectively done in the garden – many schools install beautiful outdoor art works to decorate the garden area. Development and maintenance of nutrition garden should be part of school's development plan with teachers, students, parents and even local residents being involved.

Various stakeholders like parents, civil society, Panchayati Raj Institutions, experts of Krishi Vigyan Kendras and State Agriculture Universities etc. may be actively involved to manifest the idea of School Nutrition Gardens as a 'Jan Andolan'.





PARSLEY
Sylvestre Grise
Parsley
Petroselinum crispum
APIACEAE

CORIANDER
Cilantro
Coriandrum sativum

TARRAGON

Coriander

French

Herb

Leaf

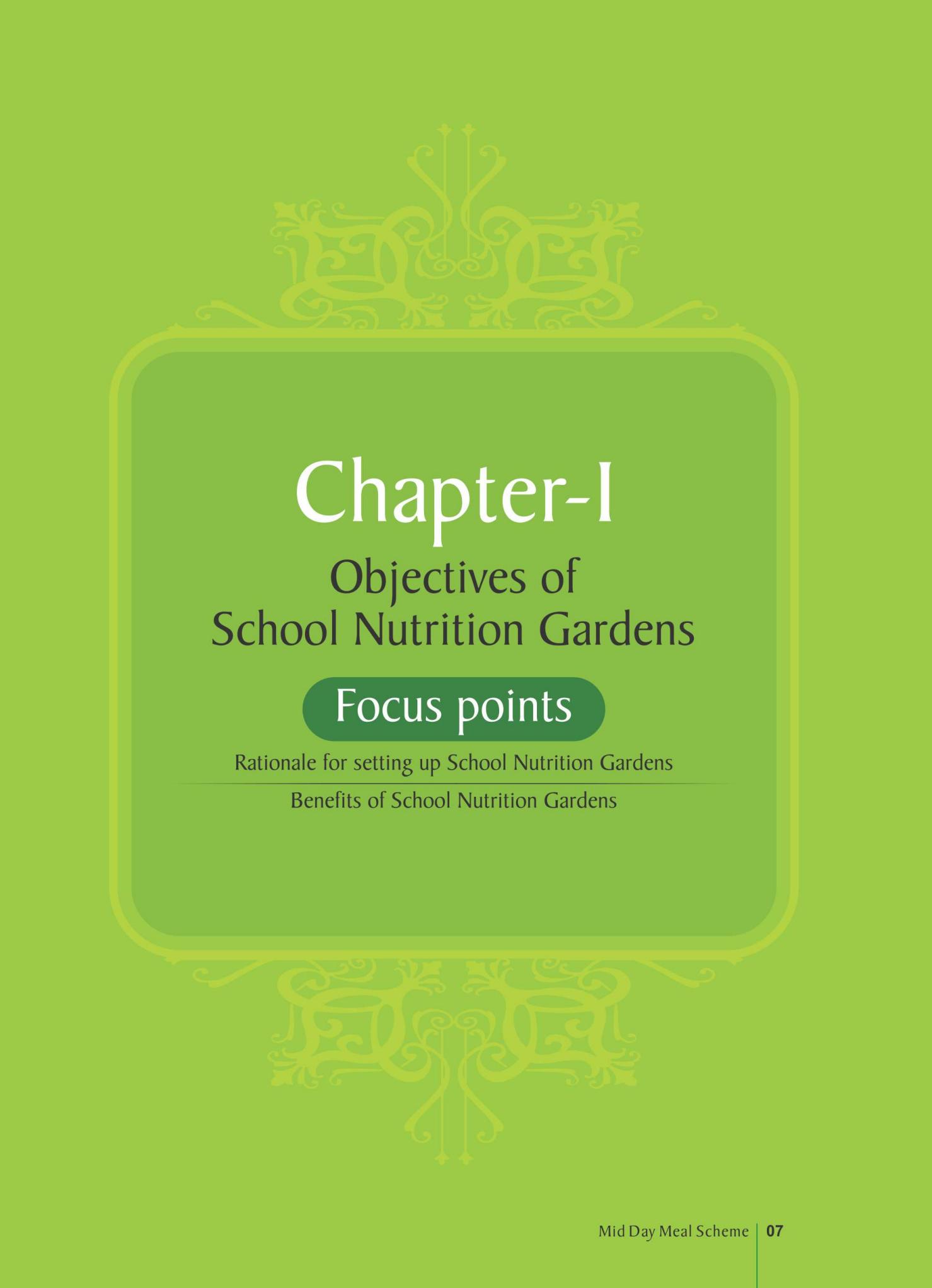
Root

Seed

Stem

Whole

Flower



Chapter-I

Objectives of School Nutrition Gardens

Focus points

Rationale for setting up School Nutrition Gardens

Benefits of School Nutrition Gardens

I. Objectives of School Nutrition Garden

- i. To help in addressing malnutrition and micro nutrient deficiencies by consumption of freshly grown vegetables.
- ii. To give children first-hand experience with nature and gardening.
- iii. To enhance the knowledge of children regarding nutritional aspects of vegetables and harmful effects of junk foods.

2. Need of School Nutrition Gardens:

School Nutrition Garden brings lot of advantages, some of them are as under:

- I. School Nutritional Gardens are good for learning: they are highly practical and direct form of education, where children can learn how to grow good food, which not only improves health, but also provide opportunities for livelihood and increased self-sufficiency. Apart from practical skills in agriculture and horticulture, gardens are a living laboratory for the study of environmental issues and life sciences.
- ii. School Nutrition Gardens are good for children's health and education: Good diet is essential for cognitive abilities which helps in learning. Children who eat well are likely to learn well. School Nutrition Gardens are not just for food, but for better eating. School nutrition gardens can make a direct and immediate improvement in children's diet. They can provide fruit and vegetables, rich in vitamins and minerals, add nutritional value to Mid-Day Meals, increase the variety that is so important for health and growth, and help children to appreciate and enjoy this variety.
- iii. School Nutrition Gardens improve the environment: Respect for the immediate environment begins at home - and also at school. The school grounds have elements of the natural environment, the built environment and the social environment: earth, plants and trees, insects and wildlife, sun and shade; water supply and sanitation facilities, paths and fences, buildings and shelters; places for recreation and study, social life and contacts with the outside world. Children's awareness of these, and the way they learn to treat them, will help them to grow into responsible adults.
- iv. School Nutrition Gardens are good for the earth: Organic gardening conserves the soil, protects the environment and works with nature rather than against it. It is a method of growing food that relies on the earth's natural resources, such as land, sun, air, rainfall, plants, animals and people. It uses natural methods to keep the soil fertile and healthy and to control insects,

There is an urgent need to visibly link nutrition garden work to scholastic achievement of students.

pests and diseases. Organic methods can help keep our water sources clean and free of chemicals. It is also safer for children because there are no dangerous chemicals.

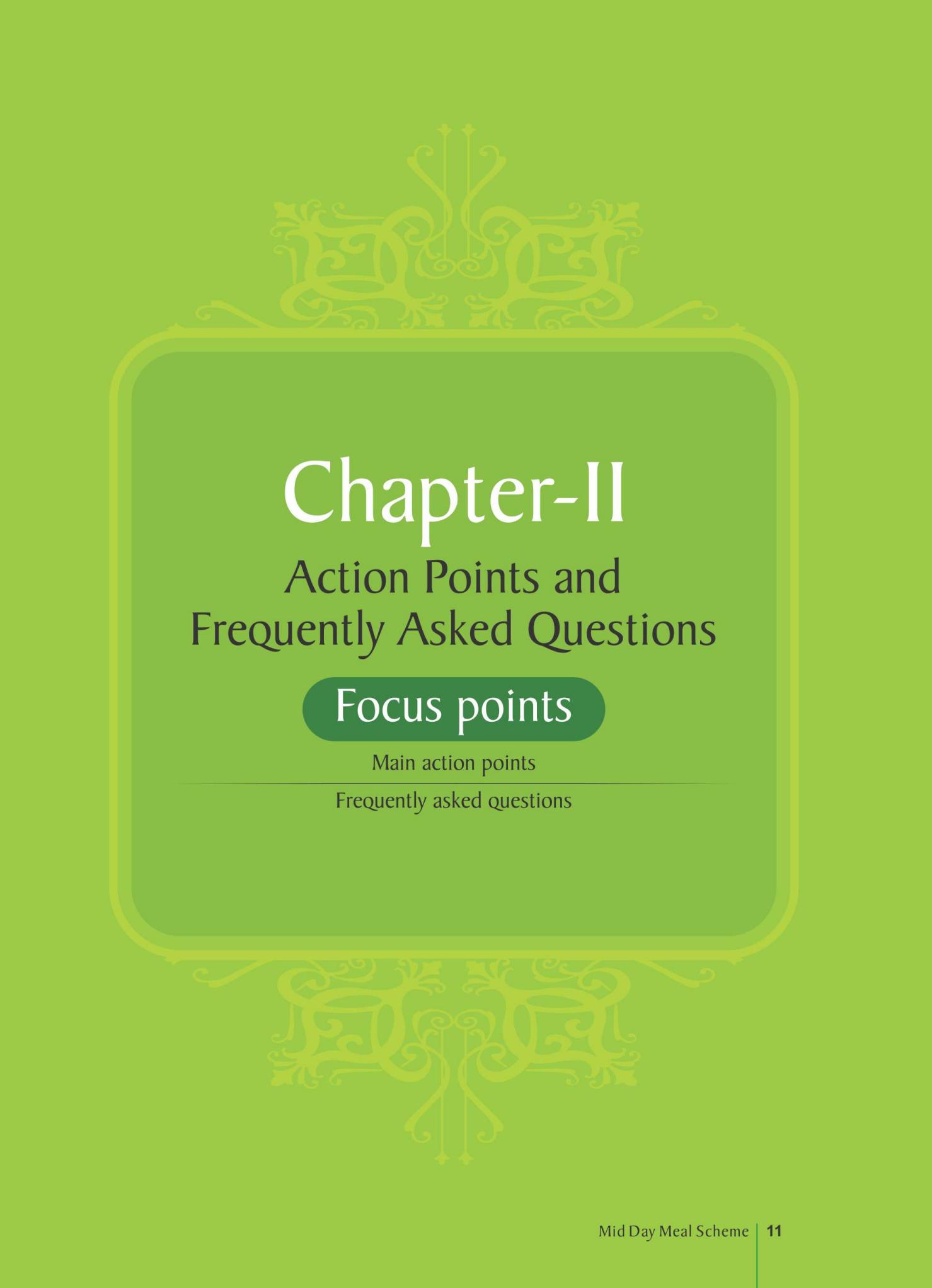
v. School Nutrition Gardens promote life skills: Children grow with the garden. "Life skills" are personal and social capacities such as managing work, planning and organizing, taking responsibility, working well together, understanding what one is doing, explaining it, taking pride in it and learning from experience. Including life skills in the garden curriculum means giving as much attention to "growing children" as to growing plants. It affects all activities and approaches.

3. Benefits of School Nutrition Garden: There are many practical and educational benefits of School Nutrition Gardens, some are mentioned in the table below:



	School's practical benefits:	Educational Benefits - Children learn:
Basics of organic farming	<ul style="list-style-type: none"> to create a successful, sustainable garden using organic methods to provide a model of a mixed nutrition garden for the community 	<ul style="list-style-type: none"> how to grow things in a safe and sustainable way, and how to run their own successful gardens to understand the concepts of organic farming to enjoy gardening and have positive attitudes towards agriculture and produce organic vegetables and fruits to talk to families and community members about gardening practices
Nutrition	<ul style="list-style-type: none"> to produce vegetables and fruits for the school to improve children's diet with garden produce to improve children's eating habits 	<ul style="list-style-type: none"> how to grow food for themselves how to improve diet and prepare healthy meals with garden produce to appreciate healthy foods and to change their own eating habits
Environment	<ul style="list-style-type: none"> to improve the school environment (trees/grass/paths/ flowers, etc.) to collect rainwater, grey water to encourage helpful insects; to prevent soil erosion, etc. 	<ul style="list-style-type: none"> respect for and interest in their school environment environmental awareness and understanding, respect for nature,
Development of life skills among children	<ul style="list-style-type: none"> to help children survive and prosper in the world 	<ul style="list-style-type: none"> how to plan, take decisions, collaborate, take responsibility, to explain and motivate
School & Community	<ul style="list-style-type: none"> to bring together school, children, families and community in a common endeavour 	<ul style="list-style-type: none"> to relate to adults in various ways and to be aware of gardening practices in the community





Chapter-II

Action Points and Frequently Asked Questions

Focus points

Main action points

Frequently asked questions

1. What is a School Nutrition Garden?

A school nutrition garden is a place where herbs, fruits and vegetables are grown around in the school premises for use in the preparation of Mid-Day Meal.



2. Purpose of School Nutrition Garden

The purpose of a School Nutrition Garden is to allow the students to grow plants from start to finish with the following objectives:

- i. To help address malnutrition and micro nutrient deficiencies
- ii. To give children first-hand experience with nature and gardening.
- iii. To enhance the knowledge of children regarding nutritional aspects of vegetables and harmful effects of junk foods.



3. Where School Nutrition Garden can be set up?

Rural, Urban or both?

School Nutrition Garden may be set up in both rural and urban areas irrespective of availability of land. It does not matter even if school has not much space. Plants may also be grown in small containers, cans, jars, discarded earthen pots, wooden peti, ceramic sinks, food tins, and atta bags etc, where land is not available. Large piece of land is not required for growing vegetables. Even roof tops can be used for growing vegetable/fruits in containers.



4. What will be the size of the School Nutrition Garden?

A few plants are enough for experimental observations (for example, studying germination). A single bed $1\text{ m} \times 2\text{ m}$ will produce token quantities of food. Where ever land is available the size of the School Nutrition Garden may depend on availability of water and several other factors like shade free area etc.

5. What part of the plant can be eaten?

The grown whole vegetables, fruits can be consumed. Some of the parts like stem (banana, bottle gourd, pumpkin) leaves (coriander, mint, spinach), flower (pumpkin flower, morringa). The leaves, fruits/vegetables and stems of some plants like bottle gourd (lauki), pumpkin (kaddu) etc can be consumed depending on the food habits of the region. The freshly grown vegetables may be used in the preparation of Mid-Day Meal in the schools.

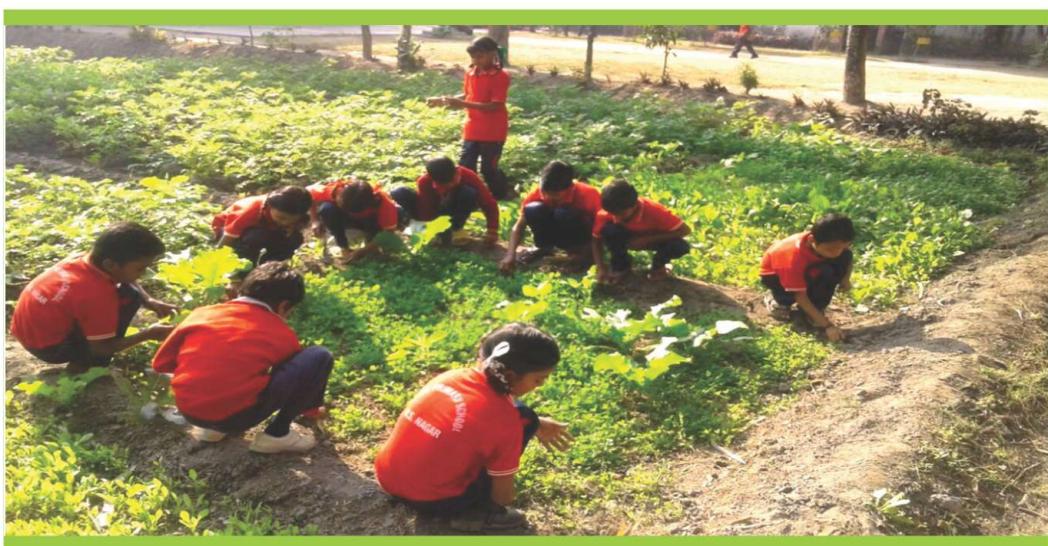
6. Convergence with line departments/agencies:

Technical assistance, training, provision of seeds manure etc can be obtained in convergence with various line departments/agencies like Krishi Vigyan Kendras, Department of Agriculture/Horticulture, Food & Nutrition Board, State Agriculture Universities, neighbouring families etc. Schools may also adopt the twinning model and work together with other schools.



7. Whom to involve in School Nutrition Garden?

Teachers, students, cook cum helpers, members of School Management Committee, Parents of the children, community members, Scientists of KVKS, Agriculture Universities may be involved for the preparation of site, crop cycle, layout of the School Nutrition Garden, procurement of seeds, manure etc.



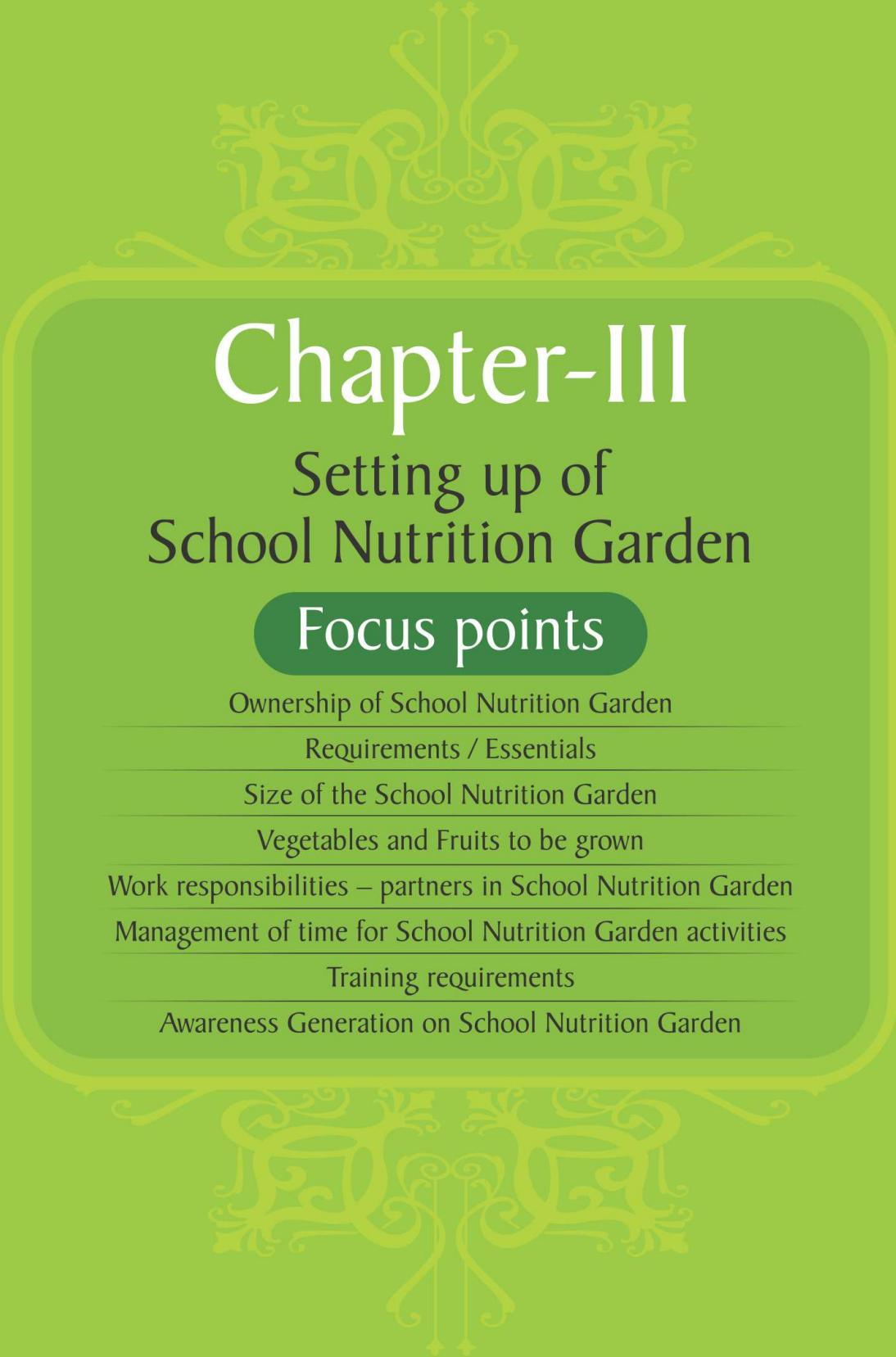
8. How to fund a School Nutrition Garden?

Under the 'flexi fund component for innovative interventions' in Mid-Day Meal Scheme, an amount of Rs 5000/- per School Nutrition Garden may be utilized for purchase of seeds, equipment, compost etc. on sharing basis between Centre and States & UTs. However, as the power for implementing scheme with minor modifications from the existing guidelines has been delegated to District Level Committee chaired by the District Magistrate, the committee may rationalize and allot funds on the basis of school specific requirement, within the overall average of Rs 5000/- per School Nutrition Garden. Moreover, activities like construction of boundary wall, leveling of land etc can be taken up under MGNREGA. Seeds/saplings may be obtained from Agriculture/horticulture department.

9. Monitoring of School Nutrition Garden:

Photos of the School Nutrition Garden (high definition) supported by small write-ups may be uploaded quarterly on the MDM - MIS portal.





Chapter-III

Setting up of School Nutrition Garden

Focus points

Ownership of School Nutrition Garden

Requirements / Essentials

Size of the School Nutrition Garden

Vegetables and Fruits to be grown

Work responsibilities – partners in School Nutrition Garden

Management of time for School Nutrition Garden activities

Training requirements

Awareness Generation on School Nutrition Garden

I. Who will be responsible for the School Nutrition Garden - Ownership of School Nutrition Garden.

Eco club, including group of enthusiastic children, may be formed in every school and School Nutrition Garden activities may be integrated with them. The Principal/Head teacher may become the team leader for establishment and maintenance of School Nutrition Garden at school level. A team of interested people with commitment, interest, experience, and authority (viz. SMC members, persons from community) may also be formed. It is also a good idea to establish an executive team of senior students who are able to carry on without much supervision after training.



2. What will we need – Requirements / Essentials

The setting up of School Nutrition Garden may be carried out in a planned manner. Equipments, seeds, seedlings and manure etc. to be used need not be costly. Local plant varieties, adapted to the local climate, are cheaper as well as safer. Organic approaches cut the cost of fertilizers and insecticides. In the schools where space is not a constraint, School Nutrition Garden shed may be constructed especially in case the school do not have proper fencing/boundary wall. Schools may receive resources in kind from NGOs, Civil Societies, Department of horticulture, Krishi Vigyan Kendras (KVKs) etc.

3. Size of the School Nutrition Garden

Large piece of land is not required for growing vegetables. Vegetables that grow as creepers or climbers i.e. Bottle gourd (Lauki), Tinda, Beans etc. can give a good yield even in pots. Plants

may be grown in small containers, cans, jars, discarded earthen pots, wooden peti, ceramic sinks, food tins, and atta bags etc, or as per the sources available in the schools where adequate land is not available for setting up of nutrition gardens. The size of the container may depend on the available spaces. The place outside of the school boundary may also be used for School Nutrition Garden if possible. Plants that are grown for eating should not be grown in any container or bag in which any chemical/pesticides has been stored, those chemicals may poison the vegetables.



As education and involvement of children is the foremost purpose, therefore it will not matter if school does not have much space. A few plants are enough for experimental observations (for example, studying germination). A single bed $1\text{ m} \times 2\text{ m}$ will produce token quantities of food. Three or four small beds can make up a model School Nutrition Garden for demonstration purposes.

4. How will we decide what to grow -

The main aim of developing a School Nutrition Garden is to grow vegetables, fruits etc. for usage in the preparation of Mid-day meal at schools and simultaneously providing learning opportunities to school children. In general, it is advised to choose crops, plants and trees that are adapted to local conditions, easy to cultivate and fit into the school term and culturally accepted in the area. Produces should fit in with local food habits, be easy to prepare and have high nutritional value e.g. Green Leafy Vegetables (Spinach, bottle gourd, drumsticks etc.), Orange and yellow fruits (Banana, Papaya etc.). In any case, it is very important that children should be involved in deciding what to grow.



5. Who will do the work – Partners in kitchen garden

Much of the work will be done by the students. They may be helped by volunteers (parents, community members, ex-students of the school). But the bottom line is that children/students are learners. Therefore they must enjoy their time in the School Nutrition Garden and learn from it. The garden should also give children opportunities to take responsibility, make decisions, plan, organize work, collaborate, evaluate and publicize.



6. How much time will it take – time consumed in nutrition garden

Class time: Ideally, lesson time and garden time should be matched one to one. Lessons are for discussing and explaining, planning and organizing work, setting up experiments and observations, and documenting garden activities and events. To maintain a school nutrition garden and get full educational benefits, a class may need about an hour of garden time and an hour of lesson time per week, with a little "garden homework" in students' own time.

Teacher time: Time to be spent on school nutrition garden depends on its size. Apart from organizing garden work and lessons, and helping children, teachers may be involved in encouraging volunteers, setting up garden events, organizing tours etc.

7. Training requirements

This depends on what knowledge and experience teachers and all the stake holders already have. The training of teachers may be carried out in convergence with the experts of the Krishi Vigyan Kendras (KVK) and other departments, on basic garden management, nutrition, organic gardening methods etc. Master Trainers may be prepared at each block level, who in turn can train other teachers in a cascading model. This reinforces the training, spreads the knowledge.

8. What support will be required?

Support from the school: Most important of all is to have a supportive head teacher and the interest of the whole school - the teachers, students, School Management Committee, Parent-Teacher Association etc.

Support from the authorities: The active support of the local authorities is very essential. They can help in providing special funds, organize inter-school competitions, give advice about management, recommend teaching materials, make timetable space for garden lessons and call on the health, agriculture and other sectors for technical support. They may set up a network of schools with gardens and to facilitate exchanges between them (e.g. with visits and newsletters).

Support from other services: Finally, good convergence with Krishi Vigyan Kendras, National Horticulture Mission, Food & Nutrition Board (FNB) and other departments is required for technical assistance.

Constitution of committee at District level : A committee under the chairpersonship of District Collector / CEO of Zila Parishad may be formed at district level for setting up of and maintenance of School Nutrition Gardens. The other members may include officials from

KVKs, Agriculture/Horticulture department, Forest Department, Rural Development, Women & Child Development etc. in order to gain the benefits of convergence.

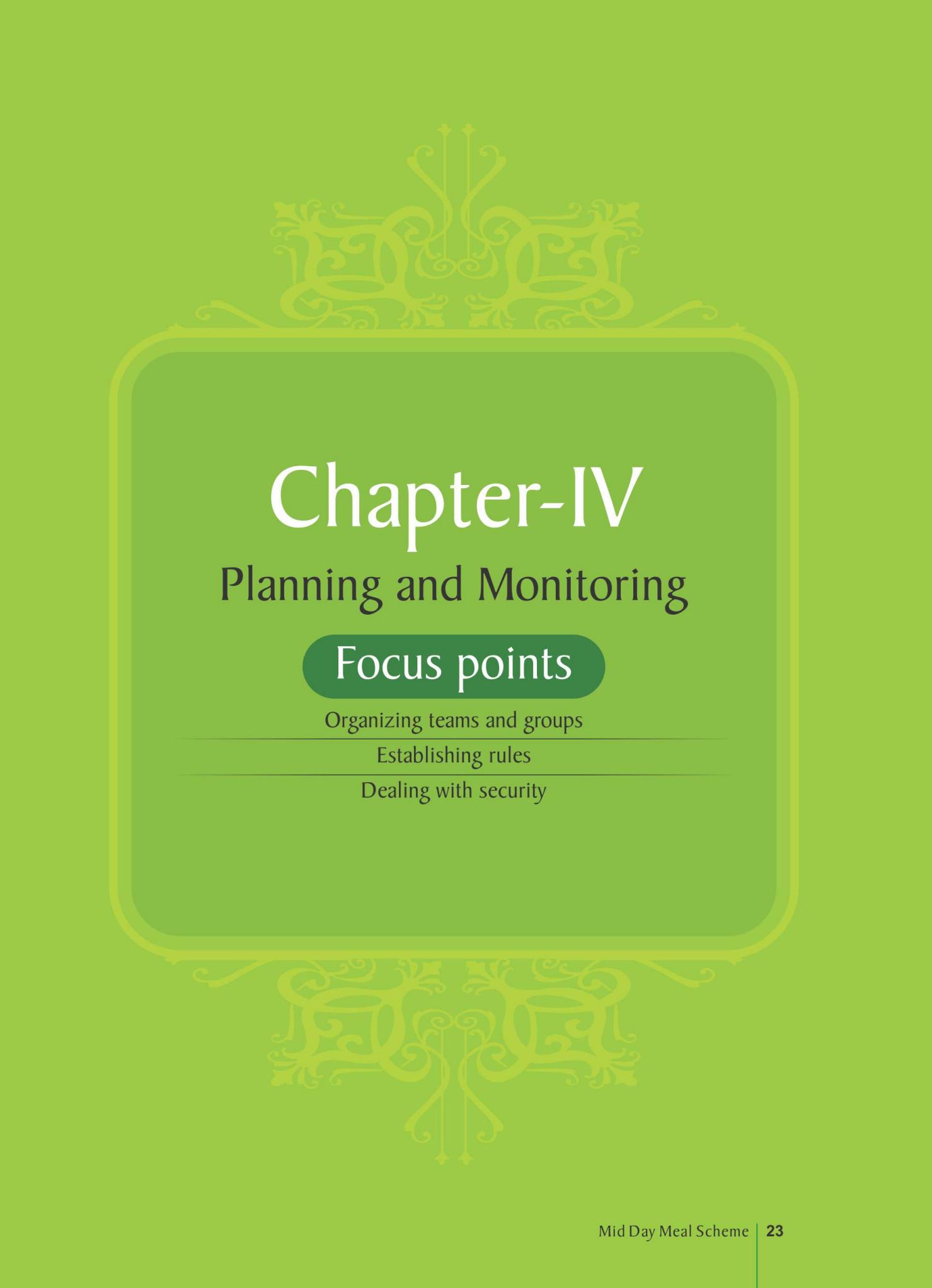
Provision of funds : Under the 'flexi fund component for innovative interventions' in Mid Day Meal Scheme, an amount of Rs 5000/- per School Nutrition Garden may be utilized for purchase of seeds, equipment, compost etc. on sharing basis between Centre and States & UTs. However, as the power for implementing scheme with minor modifications from the existing guidelines has been delegated to District Level Committee chaired by the District Magistrate, the committee may rationalize and allot funds on the basis of school specific requirement, within the overall average of Rs 5000/- per School Nutrition Garden.



Key Point: Keep all interested parties informed about what you are doing, and consult them frequently.

9. Awareness Generation on School Nutrition Garden

India has a long tradition of passionate home/school gardening. As gardening has a positive image in community, it will be easy to build on it. School Nutrition Gardens may be used for good publicity by involving community, focusing on education, building a sense of pride and showcasing that gardening can significantly improve physical and mental wellbeing of students and society as a whole.



Chapter-IV

Planning and Monitoring

Focus points

Organizing teams and groups

Establishing rules

Dealing with security

The work related to School Nutrition Garden will depend on the school traditions, the age of the children, number of teachers and classes involved, how much time can be set aside for garden work. Schools may reckon on each class putting in one to two hours a week, with children taking on occasional extra responsibilities for an extra half hour to an hour a week on a voluntary basis or in rotation. Schools may also organize some special sessions for major works such as ground clearing, when they invite volunteers and helpers from families and the community.

I. How to organize the work?

School authorities may bear in mind that the school's role is to protect, respect and facilitate children's right to education and children are in the garden to learn. There are many ways of distributing garden work through the school, but they should be evaluated in this light. Here are some possibilities:

a. Everyone in the school cares for the whole garden

- Classes rotate through different plots or through different tasks e.g. Class 5 will this week looks after the cabbages, or does all the watering.
- Garden records are kept for the project as a whole, with classes contributing according to their tasks.

This arrangement makes it easy to organize tasks and means that all classes get experience of all the crops.

b. Each class has its own garden:

- Each class works separately from the others, with some coordination to avoid overlap. The class can be divided into teams or groups which can work on their own beds and also contribute to assigned tasks.
- A garden diary is kept for the whole class.

This arrangement can foster class pride. Separate class gardens mean children can have easier or more difficult projects according to age.

c. Groups / teams have their own plots



This arrangement has many advantages:

- It gives a sense of ownership and continuity;
- It encourages personal and group responsibility;
- It makes it easier to assess work;
- It makes control experiments possible;
- It is flexible - small groups can have small plots and larger groups can have bigger ones

d. Assign managers and monitors

- Some nutrition garden management may be delegated to some older students. A “garden team” of two boys and two girls (optional) can help to organize work and supervise activities.
- This role should be seen as an honour: special badges to them will help. Each month the team briefs a new team and hands over.
- Individual students or small teams can specialize in particular communal responsibilities, with impressive titles such as “Pump Engineer”, “Tool Manager”, “Security Team”, “Compost King”. Children should be able to call on these “specialists” for information and advice.

e. Creation of a School Garden Club

- Keen students can participate in a garden club, meeting once a week as an extracurricular activity.
- Parents and volunteers also belong, and can accompany younger children.
- Children as young as six or seven years, can carry out simple tasks such as collecting mulch, carrying weeds to the compost, and watering and washing vegetables.

f. Teams and Groups

Teams or groups of five to seven Children are convenient for organizing work. There are many ways of organizing teams, more or less flexible and more or less self-governing. For example:

- Each team has a team leader.
- Teams and team leaders select themselves.
- Team leaders are constant.
- Teams are fixed throughout the season.
- Teams have their own garden plots.
- Teams choose their own names, colours, emblems.
- Teachers brief team leaders, who brief their teams.
- Adult volunteers work with teams as helpers and advisers.

- Teams work without a leader.
- Teams are selected by the teacher.
- Team leaders are rotated through the group.
- Teams change half way through the season.
- Teams move round different garden plots.
- Teams are given names by the teacher
- Teachers brief the whole class.
- Teams work without the help of adults.

g. Deciding the Time Frame

It is very important to decide on a calendar of activities for school nutrition garden. It is vital to incorporate the activities of school nutrition garden—like when does garden season begin and

end, timings for different activities, planting of vegetables so they may come for harvest at different times etc.



2. Mapping the site

There is plenty to do before starting on the School Nutrition Garden itself. Here are four actions for raising environmental awareness. It is best to undertake them early:

- Mapping the school grounds and the School Nutrition Garden site encourages observation and helps with later planning.
- Launching a “greening project” enhances the school grounds and draws attention to them.
- Looking at the existing garden terrain and wildlife raises children's awareness of the ecosystem.

a. Mapping the grounds

The garden site If you have a choice of positions for the garden, mark possible sites for the garden, and use the map to discuss and decide where it should go. Ideally the garden should be:

- on level ground;
- visible from classrooms (and near to them if possible);
- Easily seen by visitors.

b. Mapping and describing the garden site

The map should show:

- Terrain (e.g. stones, rocks, slopes, mounds, hollows, etc.);
- vegetation (e.g. trees, bushes, plants, grass, major weeds) and any other items
- fences, hedges, paths;
- water sources;
- Other facilities (e.g. sheds).

3. Monitoring, recording, documenting

Children should inspect their crops every day - on the way to class, during breaks, or going home. Establishing this habit early in the year by leading the whole class out for five minutes every morning will help in a long way. Younger children can observe and report orally; older students can collect measurements and data and can produce weekly reports to be kept in a portfolio or in their group's Garden File (see Box on the next page). Keep the class interested by enquiring after the health of particular plants by name, and asking for suggestions. Monitoring in respect of School Nutrition Garden is checking or keeps track of progress in this way. For example,

- Notice : that a bed of plants is not doing well because it's full of weeds,
- Notice : fence is sufficient enough

Head teachers at school level may keep accounts and maintain regular reports.

- Upload photos (high definition) of the School Nutrition Garden supported by small write-ups, on the MDM - MIS portal on quarterly basis.
- Keeping records is also important educationally for students.
- It builds up the habits of "taking stock" and "keeping track",
- It helps them to observe closely, recall what they have done, see where they are doing and look back afterwards;
- it reinforces learning and makes them aware of the significance of events.
- Best practices may be shared with all the stakeholders.

Many developments can be monitored. For example:

- the growth of plants, weather, rainfall, etc.;
- the condition of compost;

- the presence of beneficial and harmful insects and their effects;
- the amount of fruit/vegetables produced (per plant, per square metre, per plot, overall);
- the number and types of weeds;
- the work done and the time spent;
- Money spent and received.

At different ages, and in different ways, students can do all of these. Monitoring instruments may be:

- physical checks and measurements (e.g. rainfall, growth);
- counts (e.g. of weeds pulled, seedlings planted);
- diagrams (e.g. of project plans);
- graphs (e.g. of growth);
- calculations (e.g. of yields);
- drawings and photographs;
- work diaries or logs;
- reports, written or oral;
- cash books and accounts

If students wish they can specialize, and organize:

- a Pest Patrol (insects, worms, etc.)
- a Plant Health Patrol (growth and quality)
- a Plant Protection Patrol (soil moisture, weeds, mulch, fences).

Officials while visiting the schools may also check the progress in School Nutrition Garden.

- Whether school has uploaded photographs on School Nutrition Garden on MDM – MIS portal regularly;
- Participation level of children;
- Is School Nutrition Garden produce is being used in preparation of Mid Day Meal.
- Overall upkeep of the School Nutrition Garden

State will ensure submission of information related to School Nutrition Garden periodically as per the prescribed formats.

4. Rules and Garden Etiquette

India is a country with traditions. School Nutrition Garden rules are to be enforced by a code of practice, a culture of good garden behaviour which everyone understands. But most practices need training and children need reminding before they become automatic. With this in mind, encourage children to make and maintain the rules themselves. For example:

- At the start, take students into the garden. Get them to demonstrate what to do, and to say why.
- Get older students to train younger ones, or team leaders to explain to their teams.
- Ask particular children to remind other children.
- Let children take turns acting as garden monitors.

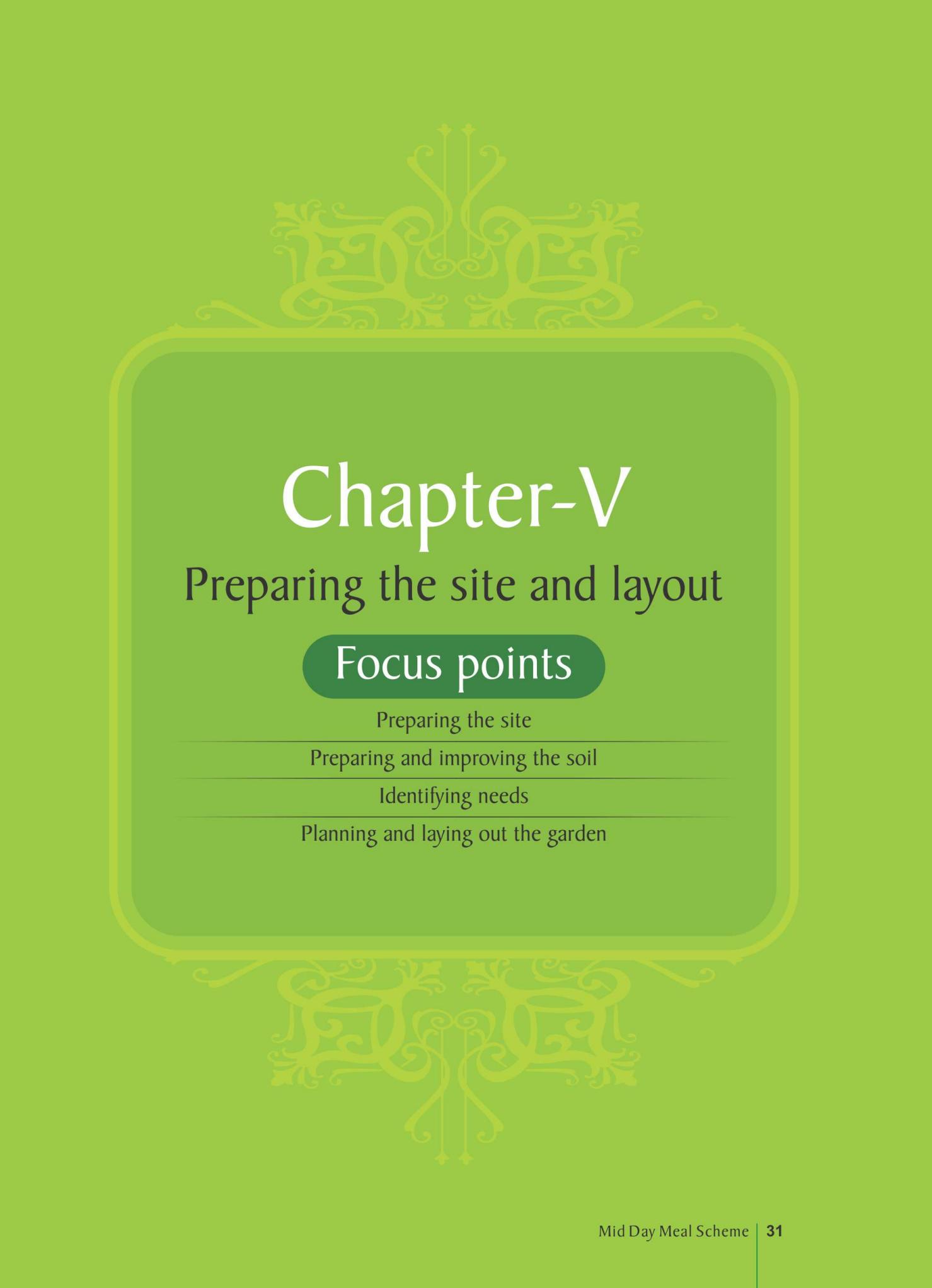
5. Garden Security

Predators may be chickens, birds, goats, wild pigs, buffalo, and monkeys - to name just a few. Or people! Discuss garden security with SMC members and community and decide on what measures to be taken and when they will be needed. Finding or creating the most effective scarecrow or bird scarer makes a good competition.



6. Taking the Eco-view

This will introduce students to the idea of ecosystems and interdependent systems of living things, and will help them to understand organic approaches to gardening. They will learn the valuable habit of making observations of insects, plants and earth, which can build up later into regular garden patrols. The results of these inspections can be added to the Garden File/booklet.



Chapter-V

Preparing the site and layout

Focus points

Preparing the site

Preparing and improving the soil

Identifying needs

Planning and laying out the garden

I. Preparing the site /what have we got and what do we need?

a. Water supply:

is extremely important. Vegetables in particular take a lot of water. Good water supply leaves you free to decide when to plant and when to harvest. It must be reliable, clean, cheap and accessible.

- If water is scarce or expensive, measures to be ensured that how can the supply be improved.
- If there is a risk of flooding or waterlogging, what kind of drainage will you need? How can it will be protected plants from heavy rains?

b. Protection from the sun:

Plants need plenty of sunlight (at least eight hours a day). But in hot climates, some shade in the mid-afternoon is a help. Where will you put delicate plants? What can you use for shade (trees, walls, hedges tall plants, screens)?

c. Terrain:

Level ground is most convenient. Steep slopes need terracing, which is a big job. If the land has already been cultivated, what crops were grown? You should not plant the same crop again soon.

- Established trees give shade for people, plants and compost; fallen leaves for compost or mulch; shelter from the rain and anchors for the soil.
- Stones and pebbles can be used for making walls, marking out or decorating garden beds and paths, making weather-resistant signs, lining drainage ditches, making natural seats.
- Some rubbish has uses - for example, old car tyres make good container gardens, swings and even walls; plastic bottles can become watering cans and buckets; bits of bark, branch and plastic can be used for garden signs.



Here are some of the actions may need to take:

Site improvement	Water supply, water policy & irrigation system
<ul style="list-style-type: none"> • decide what to keep • remove rocks/roots/bushes • kill perennial grasses and weeds • level the ground • establish fences/hedges/walls • dig drainage ditches • provide a secure garden shed 	<ul style="list-style-type: none"> • improve and secure water supply • develop water for irrigation • establish watering/irrigation system
Soil improvement	
	<ul style="list-style-type: none"> • do a soil analysis • add lime/natural fertilisers • dig over the soil • dig in compost/manure/green manure • start compost heap(s)

2. Basic Equipment and Supplies

a. Equipment:

Tools may also be provided by KVks Indeed, some schools manage without any tools or equipment of their own at all. Some tools and equipment can also be homemade - if so, make sure they are light enough for small children. To decide type of equipments required. Children may also borrow tools from home.

Desirable basics equipments

- Wheelbarrows
- spades
- pangas/machetes
- watering cans
- hose
- water barrel
- trowels
- buckets
- baskets
- hand shovels
- pruning shears



b. Supplies:

Other supplies are seeds, saplings, cuttings, organic fertiliser. The Department of Agriculture/horticulture/KVKs may provide seedlings.

3. Planning and laying out the Garden

Planning and laying out the garden is one of the most enjoyable tasks. Children should be fully involved in the process

a. Garden beds and other essentials.

The main elements of your garden are beds, paths, plant nurseries, compost heaps and a garden shed if possible.

S. N.	Elements	Description
1	Where?	Try to give all parts of the garden easy access to water. If there is a slope, make beds across it to catch water and prevent erosion. If possible, put class plots near to the classroom window. This helps to keep an eye on crops, livens up lessons and scares away predators.
2	How big?	Children must be able to reach every part of the bed easily without standing on the soil. About 0.6 m wide is good for small children, 1 m for bigger ones. The length depends on how much land you have, how many plots you want and how much you plan to grow. 1m is a good length for small children, 1.5 m (the "doorsize garden") is big enough for most learning purposes, while 10m is a standard length for commercial production.
3	What shape?	Rectangular beds are the easiest to manage, but there is nothing wrong with crescents, circles, triangles, letters of the alphabet, or any other shape, provided children can reach the plants without standing on the bed. You may want to use conventional rectangular beds for the main production and have a few odd shapes for fun or for decoration. Consult the children.
4	How many?	The number of beds depends on how you organize the work. Have at least one bed for each class. Motivationally it is even better to have one bed for each small group, with some small individual plots for experiments, demonstrations or rewards.

5	Paths/walkways	Plan to have paths all round the beds, 1m wide, to allow for wheelbarrows and children passing - there is a lot of traffic when a whole class is working. Let other paths find their own way. If there is a lot of traffic, earth or grass paths will maintain themselves.
6	Plant nursery	Seed beds need shade and protection. One way to protect seedlings is to grow them on a table. They can be shaded with a frame roofed with fronds. A table is also useful for re-potting plants, drying seeds, writing out labels, etc.

4. Signs and labels

Making signs and labels for the garden should be part of students' garden work every year. They may give names, directions, information about plants, food values, sponsors and so on.

5. Involvement of the Children

Students may not be able to do all the work needed to establish a garden, but they should be involved as much as possible. They can participate by:

- Mapping and studying the site;
- Discussing and researching supplies and equipment needed;
- Observing and recording garden works;
- Guiding visitors round the site and keeping families informed;
- Studying garden layout and garden beds;
- Labelling and signposting the garden.

Work	Objectives	Activities
Preparing the site	Students have a clear picture of the garden site, recognize what needs doing and are able to interpret site preparation activities.	<ul style="list-style-type: none"> • Students walk round the garden site observing and describing the main features, existing plants, contours (slopes and bumps) and facilities • They discuss what to do with rubbish; trees, bushes, grass and weeds; bumps, rocks and stones etc. • whether there is a need for fences/hedges, • what the soil needs, • what to do about water supply and • where the garden beds should be.

		<ul style="list-style-type: none"> Older students make a map of the garden incorporating proposals and prepare to present ideas to other classes or visitors. To follow up, pupils explain what needs doing to their families, and record site preparation activities in drawing or writing.
Garden layout	<p>Students recognize essential elements of garden layout, and contribute to layout planning</p>	<ul style="list-style-type: none"> The class discusses what is needed in their new garden (e.g. plots, paths, signposts, flowers, shed, taps). They inspect the garden, discuss and decide: <ul style="list-style-type: none"> How many beds are needed (one for each class/group)? Where they should be (near classrooms, across slopes)?; How big they should be (wide enough to reach the centre without standing on the bed-pupils try this out for themselves)? Where the paths should go (all round the beds, along existing paths)? How wide they should be (enough for a wheelbarrow or for carrying buckets - pupils try this out for themselves)



Chapter-VI

What shall we grow to eat

Focus points

Deciding what do to plant by:

Finding out the nutritional value of local foods

Choosing foods to grow which will improve the diet

The School Nutrition Garden may not provide a large part of children's diet. One reason is that the children are not at school all year. Another is that they may not have enough time and space to grow a great deal in the garden. But the garden can have a strong influence on what children eat:

- **It can increase the variety in the diet** by adding essential vitamins and minerals in fruit and vegetables, that are essential for child growth and intellectual development.
- **It can create a taste for a variety of nutritious foods** so that children and their families will plant and cook more varied and nutritious foods themselves.
- **It can extend and balance school meals.** Fresh fruit and vegetables from the garden can make all the difference to creating well-balanced and varied meals.
- **It can build awareness** among children and their families of what makes a healthy diet.
- **It can promote crops** that are neglected and undervalued, or that can be stored/preserved for the hungry season.

I. Malnutrition: a double burden

Malnutrition is a major health problem in India. NFHS - 4 (2015-16) states that 35.7% children are underweight, 21.0% children are wasted and 38.4% children are stunted. Children's growth and behaviour are good indicators of their overall health. If they are small for their age, tired, unable to concentrate and frequently sick, they may be malnourished. The three main kinds of malnutrition are:

• Under-nutrition

When children are not getting enough of the right mix of foods, they are tired, fall ill easily and do not grow well. They may also have problems related to learning at school.

• Over-nutrition

If children eat too much, do not get the right mix of foods, and do not have enough exercise, they can become overweight. This may lead to adult overweight or obesity and many health problems.

- **Micronutrient malnutrition**

Many children do not get enough of some essential vitamins and minerals. These “micronutrients” carry out vital tasks which make the body work well. They give good sight and skin, protect the body against diseases, help to release the energy in food, allow the brain and body to develop properly. It is estimated, for example, that a million children die each year because they do not have enough vitamin A. Most vitamins and minerals are available in foods which can easily be produced in home or school gardens. Often people simply do not realize that these foods are essential for health.

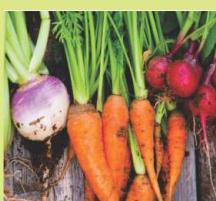
2. What kind of diet is required:

A diet is not only what you eat, but also how you eat it, how many different things you eat, how often and when.

The Nutrition Factsheet; Nutrients in foods shows some foods which are rich in various nutrients, necessary for growth, energy and health.

a. What foods should our children be eating/eat which can be grown in School Nutrition Garden?

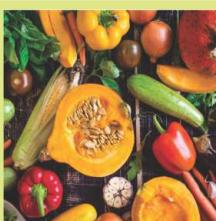
To grow into healthy intelligent adults, children need to be eating all these foods regularly:



Roots and tubers (e.g. sweet potato, potato) are very good sources of energy and some vitamins, but have less protein than cereals. They should be eaten with many other foods.



Legumes (e.g. cowpeas, chickpeas, beans, soybeans) are a rich source of protein. Some also have fat, vitamin E, calcium and others have iron and zinc, which children need to grow and to develop their brains.



Vegetables and fruits are rich in many different vitamins and minerals and other substances which protect our health, especially dark green leafy vegetables and yellow or orange fruits and vegetables (e.g. pumpkin, yellow/orange sweet potatoes, papaya, mango, carrots). Dark green leafy vegetables release all their nutritional value when combined with other foods. Children should eat five different types and colours of vegetables and fruits every day (dark green, yellow/orange, red, citrus and legumes).

b. Good meals

A well-balanced meal is usually based on staple food - a cereal, root or tuber (for example, rice, potato, chapati etc.). This is commonly eaten with a relish which may have fish, meat or legumes, and vegetables. Dark green leafy vegetables and orange vegetables are particularly good. A little oil or fat helps to absorb the nutrients in the vegetables. Flavouring is very important for making the meal tasty. Finally, every meal should finish with a piece of fruit.

c. Variety

It is not enough for children simply to have a lot of food. It is not enough even if all their meals are well-balanced. To provide everything the body needs, we need variety: many different grains, roots and tubers, vegetables, fruits, legumes and nuts, and animal foods.

3. What can we grow to improve diet of students

a. What can the School Nutrition Garden do?

To recapitulate, here is how the garden can help to improve the children's diet:

The Questions	How can School Nutrition Garden help?
Are there any particular micro-nutrients lacking in children's diet?	The School Nutrition Garden can contribute fruit and vegetables rich in vitamin A and iron.
Are children getting all kinds of food? What in particular do they need?	The School Nutrition Garden can give vitamin-rich fruit and vegetables, legumes and nuts to increase the fat and protein in the diet, and perhaps even chicken and eggs for animal protein.
Are the children getting well-balanced meals at home? At school?	The School Nutrition Garden can add fresh vegetables or fruit to children's meals.
Does the children's diet need more variety?	The School Nutrition Garden can add variety, for example by growing several kinds of dark green leafy vegetable and a variety of fruit throughout the year.
Do the children enjoy their food?	Children can learn to appreciate the appearance, smell, flavour and texture of fresh garden fruit and vegetables.

Chapter-VII

Motivation for sustaining School Nutrition Gardens

Focus points

Motivating teachers, helpers and children

Creating a sense of ownership

In some States viz. Kerala, school gardening has acquired a very good name because children have learnt ways to cultivate in a small area with a lot of passion and dedication. When gardening is not seen as a chore, it is deeply motivating in itself. Garden lovers are never tired of seeing the shoots come up, tasting the season's crops, experimenting with new plants and new methods, battling against pests and diseases. The best motivation is this sense of achievement. However, other motivations may be needed to fight prejudice, to draw students in to discovering the real pleasure of growing things, or just to keep going through the less exciting garden tasks. These are some of the reasons why good garden managers keep motivation in mind.

I. MOTIVATION FOR ALL

Everyone needs motivation. Keep everyone interested with an annual programme of events to do with the garden. Publicise the programme with a poster or an illustrated calendar. For example:

- Have a ceremony or a garden "opening".
- Celebrate the main garden events (planting, harvesting) and have visits
- Get students to create posters about foods, crops, garden projects, insects, compost, etc. and to make poster presentations to their own classes, other classes and visitors.
- Have a Carrot Day or a Tinda Day (or Pumpkin Day or Bean Day) when the crops are at their peak



2. Motivation for Teachers and Managers

What motivates teachers, school staff and garden managers? For them the garden may be any or all of these things:

- A source of pride and commendation from head teachers and local education authorities;
- something they can put on their CVs/résumés;
- a way of bringing new life to lessons;
- a way to gain skills and qualifications in gardening, nutrition education, etc.;
- a way of bringing the whole school together in a common interest;
- a way of enjoying fresh healthy food.

Make sure that some of these are true in your school. For example:

- talk to the education authority about certificated training courses in gardening, garden management, nutrition and project work;
- organize informal training using local garden experts
- workshop on gardens may be arranged;
- District authorities may arrange a competition with other schools for the best lesson plan centring on the garden



3. Motivation for Cook cum Helpers and Parents

Cultivating people is as important as cultivating plants. Supportive parents and cook cum helpers can make all the difference. Here are some ways to catch and keep their interest.

- **Involve them** Get them involved in discussing and planning the garden project, so that they are personally committed to its success.
- **Give them choices** Volunteers have different motivations and talents. Discuss what tasks need doing, but let them choose for themselves.
- **Get donations** Ask for and accept donations of plants and seeds. Show donors how they will be helping. If possible, show them the garden, or at least a picture. Introduce them to children who can talk about what they are doing.
- **Keep in touch** Invite families and friends of the garden to garden events. Keep them informed about what is going on.
- **Say thanks** Acknowledge all contributions and advice warmly. All who help and show interest should be thanked individually.



4. Motivation for the Children

For the children, the garden should be a place with many positive associations:

- produce something to be proud of;
- learn how to do things and take pride in their skills;
- show others what they have done and talk about it;
- make their own observations and talk about them;
- have fun with earth and water, play games and relax;

a. Create values

- Show that gardening and growing your own food are important and worthwhile.
- Make School Nutrition Garden work a reward.
- Make the School Nutrition Garden an attractive place to be.
- Let children identify imaginatively with plants and garden creatures through role-play, stories and drama.
- Reserve some garden projects for older students only, so that these activities are associated with growing up and becoming more important in life.

b. Create variety

- Treat each year's work as a separate project, and change it from year to year.
- Plan interesting events to take place in the growing period, when routine work gets boring.
- Plant for beauty and interest as well as for utility.

c. Encourage children to promote the garden themselves

- Get children to label and signpost the garden.
- Encourage children to tell families and friends about plans and activities.
- Have pupils explain their plots to visitors.
- Train them to act as "garden guides" and give them a badge when they qualify.

d. Reward success

- District authorities may give rewards for individuals and groups - personal praise, public commendations, prizes, gold stars, good marks.
- Give a school mark for practical work in the garden and another for garden files, diaries or drawings produced by individuals or teams.
- Encourage pupils to congratulate each other, and older pupils to help and praise younger ones.
- Have competitions and prizes like the biggest yield, the healthiest-looking green leaves,

the most pest-free plants, the best-kept plot, the most attractive flowers, and a booby prize for the biggest weeds. Children can decide who should have the prizes and organize the prize-giving.



5. A Sense of ownership

One of the most powerful motivations is the sense of ownership. This is also an important condition for developing life skills.

- a. **Having responsibility** (Motto: "Our School Garden") Children should:
 - see the garden as theirs, and see that adults respect this feeling;
 - have access to their plots at all times;
 - have both personal and communal responsibilities (e.g. my plant, our turn to water);
- b. **Making decisions and taking initiatives** (Motto: "Our plan, my idea"). Adults and teachers will have to make some of the main decisions, but children must also be able to make real choices and decisions, both individually and in groups/classes.
- c. **Sharing knowledge and skills** (Motto: "Ask and tell"). Children should be encouraged to seek information and advice from others, and to pass on their own knowledge and skills to families, younger children, classmates. This socializes and reinforces learning.
- d. **Know what is going on** (Motto: "Be in the picture"). Older Children pupils in particular can see a project as a whole from the beginning. This helps them to plan and organize, talk about the project and evaluate it.

6. A FINAL WORD

Children's health is the concern of the whole school and community. The classroom curriculum, extra-curricular activities, the school establishment and the school environment should reinforce each other and work together with the family and community to ensure that children have their basic rights to education and to adequate nutrition.

The School Nutrition Garden Guide works on all these fronts - growing food in the garden, learning about it in the classroom, involving the Mid day meal service, and bringing in the family and community to support the programme. This multi-faceted approach is the best way to successful education for better nutrition and long-term health. More than that, it may play a part in promoting not only the children's health but also the health of their families and of the natural environment.

This Manual is not long enough to deal with everyone's needs and circumstances. We hope, however, that you have enough practical information here to start thinking and planning, a variety of ideas to suit your circumstances, and enough inspiration and good examples to carry you ahead. We also hope that you will adopt some of the watchwords of this Manual.

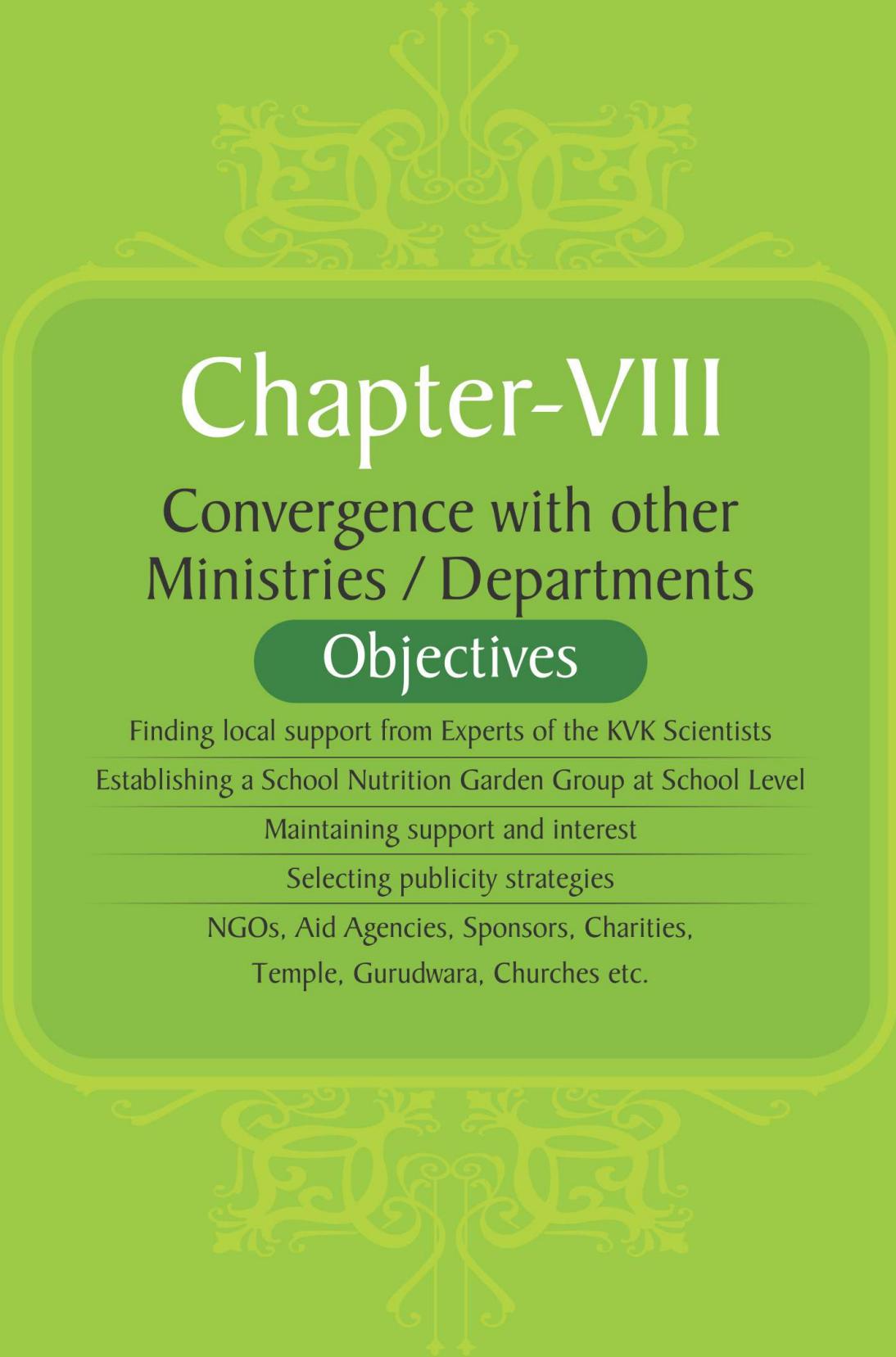
Watchwords

Use school gardens	Give your garden
• for learning	• water
• for interest	• protection
• for good food	• good soil
• for pleasure	• friendly insects



See people as	Help Children to
• guides and experts	• learn, work, observe
• helpers	• eat well
• friends of the garden	• grow up responsible and cooperative
• willing listeners to children	• respect the environment





Chapter-VIII

Convergence with other Ministries / Departments

Objectives

Finding local support from Experts of the KVK Scientists

Establishing a School Nutrition Garden Group at School Level

Maintaining support and interest

Selecting publicity strategies

NGOs, Aid Agencies, Sponsors, Charities,
Temple, Gurudwara, Churches etc.

I. Finding local support from Experts of the Krishi Vigyan Kendras(KVKs)

Krishi Vigyan Kendras are working under Indian Council of Agriculture Research. As of now 706 KVKs are functional in the country under the jurisdiction of II Agricultural Technology Application Research Institutes (ATARIs) across the country. KVKs are an integral part of the National Agricultural Research System (NARS), aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations. KVKs have been functioning as Knowledge and Resource Centre of agricultural technology supporting initiatives of public, private and voluntary sector for improving the agricultural economy of their respective districts.

The scientists of KVKs may play a crucial role in the establishment of School Nutrition Garden. Technical support, provision of free seed/seedlings, manure, and training of all the stakeholders at all levels and continuous capacity building on cascading manner may be carried out in association with them.

Krishi Vigyan Kendras in India	No. of KVKs
ATARI, Zone I, Ludhiana – 69 KVKs	
Himachal Pradesh	13
Jammu and Kashmir	21
Punjab	22
Uttarakhand	13
ATARI, Zone II, Jodhpur – 63 KVKs	
Delhi	01
Haryana	18
Rajasthan	44
ATARI, Zone III, Kanpur – 83 KVKs	
Uttar Pradesh	83
ATARI, Zone IV, Patna – 63 KVKs	
Bihar	39
Jharkhand	24
ATARI, Zone V, Kolkata – 59 KVKs	
A & N Islands	03
Odisha	33

	West Bengal	23
ATARI, Zone VI, Guwahati - 46 KVks		
	Assam	26
	Arunachal Pradesh	16
	Sikkim	04
ATARI, Zone VII, Barapani – 43 KVks		
	Manipur	10
	Meghalaya	07
	Mizoram	08
	Nagaland	11
	Tripura	07
ATARI, Zone VIII, Pune – 79 KVks		
	Maharashtra	47
	Gujarat	30
	Goa	02
ATARI, Zone IX, Jabalpur – 79 KVks		
	Chattisgarh	27
	Madhya Pradesh	52
ATARI, Zone X, Hyderabad – 74 KVks		
	Tamil Nadu	31
	Puducherry	03
	Andhra Pradesh	24
	Telangana	16
ATARI, Zone XI, Bengaluru – 48 KVks		
	Karnataka	33
	Kerala	14
	Lakshadweep	01
Total		706

2. Establishing a School Nutrition Garden Committee/ Group at School Level

School Nutrition Gardens shall be much more successful when the community is interested and involved. It would be prudent to involve them right from the start in planning and discussing the garden. This will build commitment, spread the workload and stimulate interest in the school's activities. The aims and principles of school kitchen garden should be made clear to everyone from the very beginning. Above all, people should be able to see clearly that the garden is intended to benefit the school children and the school as a whole - physically, educationally and psychologically.

Children studying in the school should be involved in discussing what foods can be grown to improve the children's diet. Cook cum Helpers should be consulted about what foods are easy to cook and what is needed to improve school meals. They are usually experts on what children are willing to eat - often a problem when you are trying to change dietary habits. They can also provide peel, old fruit or bones for the compost heap.

1. **School may Organize:** field days, a garden clean-up day.
2. **Schools may Build:** a garden shed, a fence, a wall.
3. **KVK role in capacity building:** training material, publicity material on importance of nutrition gardens, create a group of master trainers, monitor the development of nutrition gardens through spot verification, gardening techniques,
4. **KVKs to Provide:** Soil testing, , seeds, seedlings .
5. **Teachers to talk to the children** about what they are doing in the garden.

3. Maintaining support and interest of Parents / community members

Parents and families: Parents and families will become interested in school gardens if they can see the value for their children. Individual parents may act as volunteers, helping with garden work. Families can help with children's "garden homework", visit the garden and participate in talks, demonstrations, food fairs, celebrations or presentations. Garden work can even be taken home, with families' agreement and help. For example, if the school does not have much space, children can learn about gardening at school but actually create their own gardens at home or they can plant copycat gardens at home, following the model of the school garden.

School may make time to introduce the garden to as many families as possible. Invite them to visit and get children to take them round. Give them opportunities to discuss the garden and make suggestions. Listen to them and make use of their expertise and experience.

4. Selecting publicity strategies :What individual volunteers can do for Community Mobilization

The local newspapers and radio and publicity outlets may be used for awareness generation. Posters can be displayed for publicity purposes.

- schools hand over part of the school garden site in return for help and support;
- Community can learn something from the school about growing good food, organic approaches or market gardening. If children take their learning home, everyone benefits.
- Regard the community as a source of expertise, and recognize local practices that have stood the test of time.

Joint efforts by Parents

- There is an urgent need to create awareness among parents regarding their involvement in the School Nutrition Garden. It is best to deal with this attitude quietly, in the long term, just by giving status to gardening work and letting it be seen. Let them also participate in the garden with their ward, bring in well-known local people to endorse it, make the school known for its garden, and get the children to enjoy what they do and be proud of it.
- Some parents cannot participate because they simply have too much to do, whether they are busy or overworked farmers. Get them to "invest" in the garden in very small ways - for example, donating a few seeds or some household rubbish for the compost heap. A contribution of any sort is a commitment.

The Home Science teacher can advise on nutrition, food hygiene, food preparation and food conservation.

Business Studies teachers can give advice on sales, marketing and keeping accounts.

Other teaching staff may use the garden in their own teaching. Gardens are observatories, especially valuable for science, mathematics, environmental studies and technology, and a good stimulus for writing.

School cooks should of course be consulted.

A committee may be formed at district level for setting up of and maintenance of School Nutrition Gardens including the following :

- i. District Collector / CEO of Zila Parishad - Chairperson
- ii. KVK in-charge from the district
- iii. Officer from Forest Department
- iv. Officer from Rural Development,
- v. Officer from Agriculture/Horticulture department

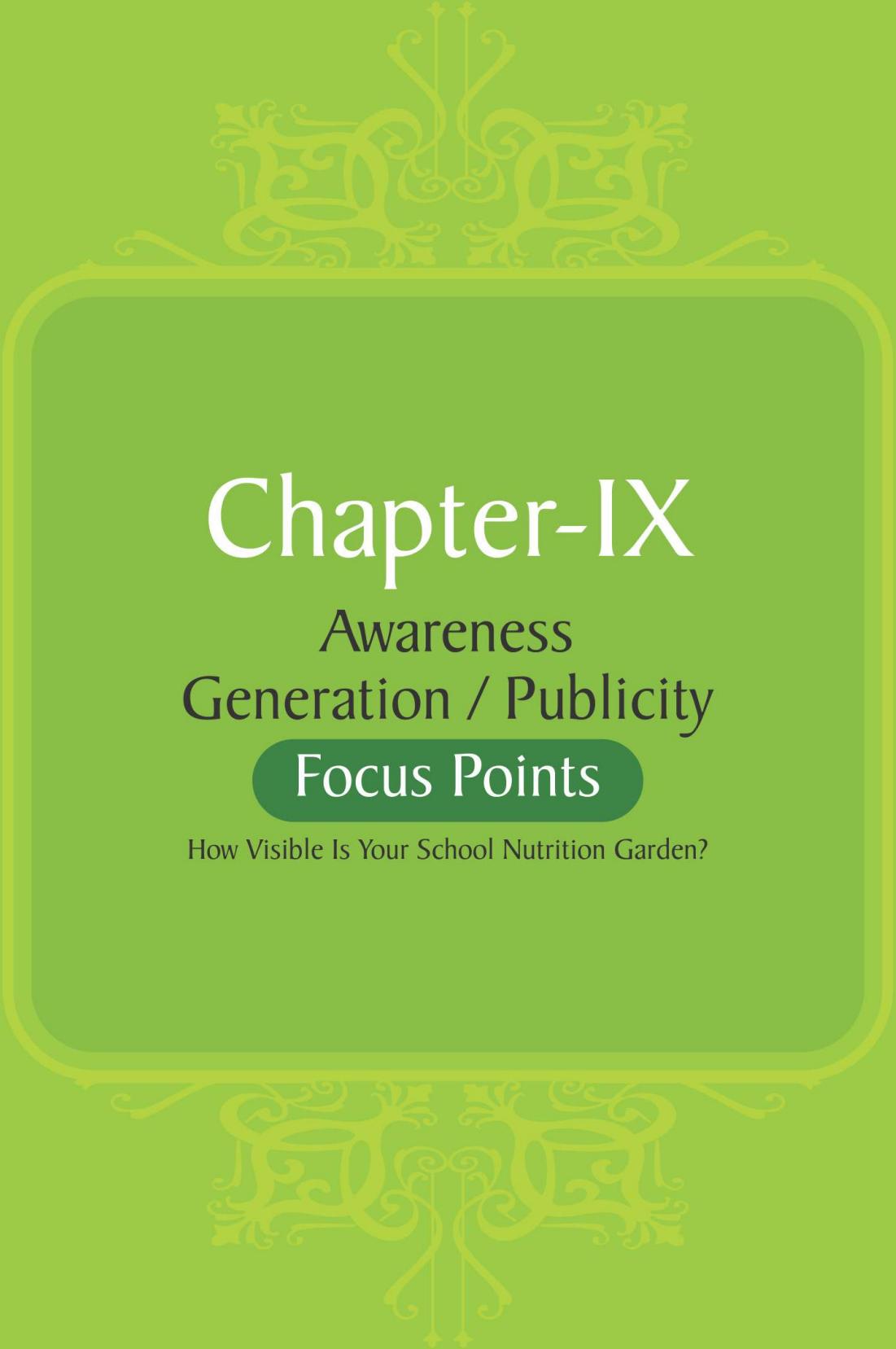
- vi. Child Development Project officers.
- vii. District Education Officer – Convenor

6. NGOs, aid agencies, sponsors, charities, Temples, Gurudwara, Churches etc

Specialist NGOs may be able to help with funds, supplies, advice, information or education. Individual sponsors (e.g. local firms) may also offer seeds manure etc if they are approached. They may understand the project and get a little favourable publicity for themselves. Local charities, temples, Gurudwaras and Churches reach wide audiences. An appeal may be made to them for voluntary help or donations in kind. They make a good audience for talks about the school garden, and can spread the reputation of the school.

- Informal networks in which teachers and children maintain personal contact with helpful and active people. This works well for garden managers who like socializing.
- Eco Club involving children, teachers and volunteers which meets once a week for work, discussions etc., may be created.
- A class-based parents' group that helps with the activities of the children's class.
- SMC during their meeting may discuss the related issues in every meeting.
- Special working links with local groups such as a Young Farmers Group, a youth group, a farmers' association or a women's gardening club may also be worked out.





Chapter-IX

Awareness Generation / Publicity Focus Points

How Visible Is Your School Nutrition Garden?

I. HOW visible is your School Nutrition Garden?

It is essential to carry out awareness generation campaign of School Nutrition Garden to make it "visible" - to give it a little publicity. This spreads the word about good gardening and good nutrition in the community, fosters a sense of pride, and shows that the school is active and cares for students. Gardens lend themselves particularly well to publicity because:

- they can be viewed (in guided school children tours and demonstrations);
- they have visible and edible products (which can be displayed and sampled);
- they are decorative and inspire good pictures (photos, drawings, maps and plans);

They are easy to understand, for both children and adults.

Small educative Videos/films /booklet/Pamphlet

Short educative films may be prepared on different aspects of setting up of School Nutrition Garden which may be shared with others by means of resource sharing.

Sn.	What to be done	Objective	Activities
1	Starting with soil	Children learn to distinguish top soil and subsoil, recognize good soil by feel and sight, and become aware of all the components of soil	In the school grounds students/children dig a hole to observe topsoil and subsoil, then inspect samples of good and poor soil, answer questions about them and learn the slogan "Good soil is damp, dark, crumbly and full of life". They also do experiments to establish that soil contains air (put a soil sample in water), and water (cover a sample with a plate and leave in the sun).
2	Soil quality	Children have a good understanding of soil structure and its importance	Students discuss which soil components contribute to: opening up the soil for air, water, roots; keeping the surface soft; providing essential food for plants; dissolving nutrients; holding soil in place; holding plants firm; allowing animals and bacteria to live; trapping water or helping it to drain. They identify the type of soil in the school garden (clay, silt, sand) by feel.

			<p>They test drainage by digging a hole, filling it with water, letting it drain, filling it again and timing how fast it drains with a measuring stick (should be 6–10 cm per hour). Finally, they recognize that adding compost is the way to improve soil drainage.</p>
3	Seeds and germination	Children understand the nature of seeds and know how they germinate; they learn how to produce edible sprouts, and eat and savour them.	<p>Children inspect some seeds and discuss which plants they come from, then offer ideas about what seeds are. To make seed sprouts, they put suitable seeds (e.g. beans, pumpkin, sunflower, wheat) to soak for a day, pour off the water, put in a glass jar, cover with a cloth and leave the jar on its side in a warm dim place in the classroom. Children predict what will happen. Twice a day they rinse the seeds with cool water, observe what is happening and compare it with predictions. After the seeds have sprouted, put them in the light for a day or two until they turn green, and then eat them.</p>
4	Growing plants	Children become aware of how plants are grown and the relation to the plant's life cycle	<p>Children learn what happens after seeds have sprouted. They look at plants in different stages of development (seedling, growing plant, flowering plant, fruiting plant and seed head), place them in order and find others in the school grounds to fit each category. They then apply these categories to crops they know well, or are planning to grow, deciding in each case if we harvest leaves, stems, roots, fruit or seeds.</p>
5	Organic gardening	Children are motivated to keep records of gardening events and activities, learn how to make a documentary record and become aware of its value.	<p>The teacher shows some well-known "garden documents" (e.g. photos, map, drawings). Pupils arrange them in chronological order, suggest titles, captions and dates for each and nominate writers to label the documents.</p>



Government of India

Ministry of Human Resource Development (MHRD)

Department of School Education and Literacy

Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi - 110001