

**National Seminar 2011  
Organic Urban Gardening, Mumbai  
Hosted by Urban Leaves**



For Private circulation only.

All material in this booklet can be shared, discussed and circulated. However please note that the material in this booklet is not for Commercial sale.

**Booklet Compiled by :**

URBAN LEAVES,

An initiative of Vidya Varidhi Trust

Email: [urbanleaves@gmail.com](mailto:urbanleaves@gmail.com)

[www.natuecoci tyfarming.blogspot .com](http://www.natuecoci tyfarming.blogspot .com)

[www.urbanleavesinindia.blogspot .com](http://www.urbanleavesinindia.blogspot .com)

**Cover illustration & Booklet Design by :**

Nurturing Grounds, Mumbai

[tejal@nurturinggrounds.com](mailto:tejal@nurturinggrounds.com), 9833707598

Dear friends of the earth,

On behalf of Urban Leaves, I welcome you to the 2<sup>nd</sup> National Seminar for Organic Farming.

The 1<sup>st</sup> National Seminar was held in Bangalore last December. The Urban Leaves team from Mumbai formed the largest representation of outstation participants in Bangalore and welcomed the challenging task to organize the current seminar. The planning and excitement for the present National Seminar began in January and the brave hearts in our team took on the daunting responsibilities with a smile. The results are there for you to see.

The Urban Leaves team has been exceptionally busy over the last year raising the bar set for itself. We organized children's camps, school workshops, initiated a second community urban farm at Nana Nani park and a second terrace garden at Maharashtra Nature Park, began work on a school garden project at Abhabai Petiti School, Bandra, tweaked our blog making it engaging and more relevant, participated in the Times of India (runners up in Mumbai) and Mahindra Rise contests, updated the 'amrit mitti' manual, visited Natueco organic farms at Malegaon all this while having a good time, making new friends and motivating each other.

A few highlights of the year were the celebration of KGI Day for Kitchen Gardeners on August 28 and triggering similar activities by many groups in other cities, a 5 day Permaculture workshop by Rico in October, and releasing a documentary on Urban Leaves by Suma Josson titled " Reap what you sow, eat what your grow".

We have planned the National Seminar as a learning opportunity and are bringing together experts and practioners in various related fields. We hope this Seminar will draw the attention of urban farmers in India and elsewhere and also the global community to the fact that India is rising to a sustainable future to grow what we eat and eat what we grow. All that without the need to degrade the earth and destroy our health with expensive chemical fertilizers and pesticides, or fall prey to the persuasions of the genetically modified crops lobby that is seeking to monopolize farming at a global level.

The organic farming movement is no less than a historical revolution. It is about a conscious decision taken by people all over the world to take charge of their life, their health, their food supply chain, and to share responsibility for keeping the earth alive and rich.

On behalf of the Trustees of Vidya Vaaridhi Trust, I heartily thank Team Urban Leaves for putting up this excellent show. Thank you all, dear members, volunteers, associates, donors, well wishers, and participants. A special thanks to you, the participants of the 2nd National Seminar for turning up in large numbers and encouraging us in our efforts. Your cooperation is essential to sustain the urban farming movement.

The message of the 2<sup>nd</sup> National Seminar is clear: We need to lovingly nurture the earth and the plants so that the earth and the plants will bestow upon us nutritious and wholesome food, good health and prosperity.

**Uday Acharya**  
**Trustee, Vidya Varidhi Trust**  
**Mumbai**

<b>TERRACE / CITY FARMING THE PERMACULTURE WAY</b> Presented by Clea Chandmal	<b>4</b>
<b>HOME REMEDIES &amp; MEDICINAL HERBS IN URBAN GARDENS</b> Presented by Smt. Kusum Dahivelkar	<b>15</b>
<b>SELF CARE IS HEALTH CARE IS EARTH CARE</b> Presented by Anju Venkat	<b>19</b>
<b>SOME CONCEPTS FROM PLENTY FOR ALL - PROF. S. A. DABHOLKAR</b> Presented by Dr. C. M. Pandit	<b>23</b>

## TERRACE / CITY FARMING THE PERMACULTURE WAY

Presented by Clea Chandmal

Clea has an undergraduate degree in genetics, masters in plant breeding, and is now a specialist in plant molecular physiology (specifically plant growth regulators/hormones). She is a Permaculture practitioner and consultant, who also teaches Permaculture in her demonstration farm in Goa.

---

Your presence here indicates that you have already been convinced to do terrace/city farming. For those who have come out of sheer curiosity or are still unsure, here are some good reasons to try and start your own terrace garden/city farm.

- 1. Well being:** Fresh food, flowers for adorning your self or your respective gods, and beauty of your terrace/garden/parking lot/park.
- 2. Healing and de- stressing:** It has been found that nurturing plants, watching them grow and eating self grown harvest is healing and a de- stressing activity.
- 3. Nutrition:** organically grown plants have been shown to have a wider complement of nutrients than its industrially farmed transported counterpart. They have been found to have far more essential micronutrients and phytonutrients. Phytonutrients are nutrients that fall outside the category of 'carbohydrates, protein, and starch' . Examples include antioxidants, vitamins, carotenoids (thought to help in preventing cancers and aid in liver regeneration amongst other functions) polyphenols, and other medicinal molecules. The list is growing every day. This is because a compost or a forest soil is made from a biodiverse mix of plant materials each plant type contributing its own set of essential nutrients. Most agricultural soils lack essential nutrients/minerals today. This is because practices such as terracing removes all nutrient rich top soil, the practice of burning 'waste' kills all soil organisms whose actions generate soil fertility, the practice of adding pesticides kills even more microorganisms and the practice of ploughing disturbs underground life, brings them up to the surface where the sun kills them. Over time the soil dies out, and plants lack their true nutritional capacity. After ruining their soil, farmers apply fertilizers that do not always contain the entire complement of nutrients that a plant needs (today there are 18 major plant nutrients, the list is growing though as is our understanding of how new forms of nutrients and how pH affects nutrient availability and uptake grows). They mainly apply urea and NPK (**N**itrates, **P**hosphates, **P**otassium – its chemical abbreviation is **K**). These are salts, and so this practice salinises soils, rendering them infertile in the long run! Plants grown on these nutrient deficient soils would and do lack nutrients (for themselves and us). Nutrient deficient plants are susceptible to disease, and so more pesticides are applied. As disease sets in, a field of food for the pest is laid out in monocultured farms, and so the pests breed and spread fast. All they have to do is a small hop to get to the next juicy bit! And so more pesticides are applied and the desperate cycle continues. To add fuel to the flame, farmers add more inorganic Nitrogen based fertilizers to the soil. When plants take up inorganic N in the form or Nitrates, they also take up more water. Nitrate uptake and water uptake are coupled. This is not the case for organic nitrates. And so the plants get more plump. The slightest mechanical damage or damage by a sucking insect on plump watery plants leads to infection. And so more pesticides are applied and the desperate cycle continues. F1 hybrid varieties are even more susceptible to disease. Can you imagine what happens to the soil in a F1 hybrid monocultured pesticide and fertilizer ridden farm? Govt. subsidies for this kind of farming are increasing and so this encourages farmers to ruin our soils and food even further! To transport fruits and vegetables to the market they are picked when raw. This prevents damage on transport. Fruits/tomatoes ripened off the tree do not contain the all the nutrients a tree-ripened fruit does. It has been found that nutrition deficiency leads to obesity. A disease now in the US of A. Cravings for sugar, fats and carbohydrates only occur when the body is lacking in essential nutrients. Eating these filling foods stops the craving for a short while, but since the body is lacking nutrients cravings to eat keep occurring. If we chose the right foods we lose our cravings.
- 4. Health of the earth:** the practices described above not only ruin soils but also kill all life in water bodies. Plants need very little N, the amount used by our farmers, where 'more must be better' prevails, is actually toxic to humans and plants. When these fertilizers wash off the land by rain

and enter ponds, lakes and rivers, they promote the growth of alga. The green cover seen on most ponds and lakes today. This prevents sunlight entering the water and deprives the water from being oxygenated. All plant and animal life dies in these water bodies. When pesticides enter water bodies it kills some water organisms and has strange effects on others. When soils are depleted and waterways dead, then these regions are open for the growth (no competition) of undesirable invasive species.

5. **Health of humans:** in Punjab and UP, cancer rates are rising like in no other Indian state. Outside Punjab and UP people get a smaller but regular dose of these cancer causing chemicals in our already nutritionally deficient food. Washing and peeling makes very little difference, as most pesticides now are 'systemic'. That is, they enter the plant and work from the inside. And, peeling makes your food even more nutritionally deficient.
6. **Peak oil:** we all know that oil is getting scarce. The farming practices described above depend on huge fuel consumption to make the chemicals and fertilizers used, package them and transport them. Additionally, transport of food over long distances is going to become increasingly more and more expensive and not viable. This will make our nutritionally bad food even more expensive! More expensive than locally grown ORGANIC!
7. **Food for free:** terrace/city farming will provide you with at least 30% if not more of your food for free. Your only input is some of your time and your kitchen waste! Done correctly, you may not even have to put in much time once you have set it all up. All you will be doing is turning compost, planting, mulching and harvesting. This won't take more than an hour a week. Even watering can be planed so as to require little or no labour.
8. **Plants give us energy, oxygen, nitrogen and water: planting trees and growing food around you is 'step one' in care for the earth and all species within.** All energy available to living organisms is delivered to us by plants. Plants harvest sunlight and store its energy in carbohydrates and sugars. This process is called photosynthesis. All oxygen on this earth is provided by plants, it's a by product of photosynthesis. A large portion of nitrogen (think protein) available to us is via nitrogen fixing bacteria that fix nitrogen from the air into the ground in the form that plants can take up. Many such bacteria live freely in soils and many live in association with plant roots. Without this association we would not get soil fertility, or naturally occurring N for the synthesis of proteins. All cows, sheep, horses and elephants and vegans get their protein from plants! Planted areas have heavier rain fall especially in dry areas, where transpiration from trees is the only way water reaches the skies. So plants make rain, and so they cycle water. Lightning during the rains converts nitrogen in the air to a soluble form and brings it to the earth dissolved in the rain. This increases soil fertility further.
9. **Waste as a source of nutrients and energy,** terrace and city farming is often carried out using homemade compost as the soil. There are several methods of composting. Many use kitchen waste - a biodiverse mix of fruit and veg providing a biodiverse mix of nutrients to the soil. This recycling prevents land fills getting toxic and stinking from fermenting waste (composting done right doesn't smell or release methane gas). Composting plant material keeps energy in the system (burning wastes it - when you burn dry leaves, the energy stored via photosynthesis escapes unused. The heat of the fire is the energy being lost). Composting is planned and monitored decomposition of plant matter. The decomposers: bacteria, fungus and earthworms gain this energy.
10. **Waste as a sponge for holding water:** Composted plant material increases the water holding capacity of soils. Hence, plants grown on composted materials require less watering.
11. **Cooling:** We in the sub-tropics want to be cool. Planted areas provide water evaporation and shade so they remain cool. Planted terraces keep the building cool.

The points made here are so as to give you an idea of the **interconnectedness of systems** - one system can affect another seemingly unrelated system. That fertilizers in Punjab leads to

eutrofication in Bengal. That plants attract rain and lightening enhances soil fertility. That decomposed plant material acts as a water reservoir in the soil.

In Permaculture it is important to understand how one thing can affect and benefit another seemingly unrelated thing. Permaculture design is the linking of systems to maximize efficiency; an integrated systems approach to sustainability; or ecological engineering. Permaculture is organic but not all organic farms are sustainable. There are huge inefficient organic farms in the US of A now, with straight lines of one crop grown organically, with machinery, no mulch and organic pesticides. These farms are fuel, energy and water intensive. There is no care for the Earth here.

Cuba is great inspiration, oil imports dropped drastically in the 90s. And so every one was forced to grow their own food. All waste was composted, and so no fertilizers had to be manufactured or brought in. Doctors, mechanics, architects, and artists, grew their own food. Here's a lovely video clip taken from **THE POWER OF COMMUNITY: HOW CUBA SURVIVED PEAK OIL**.

Even so, you might say, "me with my little patch will never manage to feed my self and my family". To start with you could aim to do at least your greens if nothing else. These are easy to grow. Growing these will make a big difference to your health as it will force you to eat them (!) and because you will be free of toxic pesticides that are often sprayed on spinach and lettuces. You will be surprised how much you can grow if you do it efficiently.

## **GETTING STARTED**

As one begins, one must keep in mind that Permaculture is not energy or capital intensive, but is information intensive. It is the quality of thought and the information we use that determines yield. Not the size or quality of site. If we take time to read, observe, discuss, and experiment we naturally begin to think in terms of multidisciplines (the interconnectedness of systems), and to design systems which save energy, space and time and give us yields.

### **The blank slate:**

**Design must ensure that all the energy from sun reaching the site is stored, via photosynthesis. So design must ensure that every possible space is planted. Photosynthesis stores this energy in carbon containing molecules that make up plant matter. Harvests become our source of energy. Waste plant material provides beneficial soil organisms with their energy - as they ( bacteria, fungi, earthworms, insects) eat, they decompose plant material, nutrients are released into the soil enhancing fertility and carbon is added to the soil enhancing its water holding capacity. This completes the energy, nutrient and carbon cycle on our site itself.**

**So, in Permaculture, we design for the efficient use of waste and the efficient use of space to maximally harvest all sunlight available. The rest follows.**

### **Observation**

The first step is to make some observations. The direction of the sun, where it sets, where it rises, how the shadows move during the course of a day, the wind, its direction, humidity, rainfall, drainage, temperatures, the wastes of the house/site, the birds which visit, the trees in the area, if you are situated by the ocean, the direction of ocean winds, and so on. Keep a note book and draw these factors into a 'site drawing'.

### **Your site**

You will probably be faced with a cemented terrace floor, a tiled balcony, a window sill, a car park or a high maintenance lawn. For terraces and balconies, the first issue is that of water proofing. There are many ways of water proofing. If you don't want to carry out major waterproofing work, then lay down a thick plastic sheet that will withstand some weathering (examples include pond liner, silpaulin).

The other thing to consider would be: how much load your terrace or balcony can handle. This will determine the kind of container you choose to use.

A good way to start would be to copy what Preeti Patil has done.



She uses aerated plastic containers, old tin drums and raised beds made using two lines of bricks.

If your terrace/balcony is strong any container of your choice should be fine. Anything that once contained something, or can but never has contained something, is good, let your imagination work.

If your terrace is near the sea, you will need to put in a planted trellis and or some shade net/plastic barriers to prevent the salt air from damaging your plants. The best shape for this trellis is zigzag or a 'V'. These

shapes provide the least resistance and so the best protection from oncoming winds.

Determine your south facing walls and ensure that this is trellised in some way to grow creepers. At our latitude, the midday sun is nearly over head. And so a planted trellis around the entire edge of the site would work well.

### **Paths: for access, to prevent soil compaction, to increase edges, and for easy watering.**

Paths have to be placed to allow harvesting *without* having to walk on soil. Compacted soil is no good for growing roots. Whether the path is straight or curvy, narrow or wide, will be determined by whether or not you need wheelbarrow or wheel chair access. How you choose to water may also determine the shape. A sprinkler waters round planted areas best. Using a watering can may require you to make thinner beds as your arm may not reach the middle. Using a gardening hose might be easier with straight paths. The distance between one path and the next parallel path is determined by the width between these paths, the width must be two arms in length. This ensures harvesting without soil compaction.

There are many path plans that prevent soil compaction, maximize edge, use space efficiently and allow for efficient watering and harvesting. These plans dictate the shape of planting beds - straight raised beds, the keyhole raised bed, mandalas, double mandalas, spirals, and permutations and combinations of these. It is up to you how you adjust these to suit your needs.



Curvy paths are favored in Permaculture as it maximizes the amount of edge. A curvy path is longer than a straight one. The more the edge the more the space for new niches to be created as there will be some shaded areas, some sunny areas, some more moist than others and so a biodiverse mix of plants can be place together. Biodiversity stabilizes a site. It protects from pest infestation as the different colours and smells confuses the hell out of them, it invites pollinators, it attracts predators of pests, the different root architectures of the various plants prevent soil

erosion and improve soil structure by physically holding soil particles together (in a biodiverse mix of plants some roots are shallow and fibrous holding top soil, others are straight and deep improving soil structure and others are branched and deep holding soils in place and creating air gaps to aerate roots). Additionally, only a biodiverse compost mix (you will be composting your leaf litter, pruned parts and other unused plant matter) will have all nutrients required for a good soil.

The orientation of paths should be such that the long length of beds is in the North-South direction if possible. This ensures that the entire bed gets sun over the course of the day. Putting in trellises around sunny edges and delineating paths for keyhole beds in Preeti Patils terrace garden, increased the already packed planting area and the length of edges considerably.

### **Watering systems**



Using water efficiently is also designed into the Permaculture city garden/farm. Taking care to design a good watering system will pay off in the long run. Roof rainwater is a good source of free unchlorinated water. This can be collected and stored in tanks for use at any time. In Goa the rainfall is high and there are water shortages in April and May. My designs always have a system to harvest roof rain water in the monsoon and store it in closed tanks until April and May. Apart from rainwater, we have grey water.

All soapless water used to wash vegetables, dals, rice and hands may be put in a watering can and used in the garden. There are many solutions for soapy grey water, ranging from very complex to very simple. The simplest is to pass grey water through a mulch basin (an area full of dry leaves), the water that passes out is clean, the process of decomposition ends up also detoxifies some chemicals found in soapy water. Bacteria break down many chemicals and decomposed plant matter tends to lock away sodium in soap (the part toxic to plants). Furthermore, decomposed leaf litter adds fertility to soil.

Efficient watering systems include a timed drip irrigation system that can be set to automatically water at certain times even when you are away. The matka system is my favourite easy low cost drip irrigation system which also works when you are away. In this system an earthenware matka is buried in the planted bed, or in the container with the fruit tree. Once filled, these matkas release water slowly into the soil.

Video clip of the matka system being used in a terrace garden in the **GLOBAL GARDENER**.

And then there is the wicking bed system. This is essentially a perforated pipe attached to a tap and blocked at the other end that runs along the bottom of your planted bed. The pipe is filled once a week. The water seeps out into the bed and raises up to the top soil slowly by capillary action. Evaporation is minimized and so watering is reduced considerably.

One can combine pipes with the matka system and get a very efficient drip irrigation system. Here, a network of pipes fills strategically placed matkas when a tap is opened. Make gravity work for you, by placing matkas slightly down hill from the water supply. The whole garden is watered by opening and closing a single tap once in 10 days.

If you have no matkas, attach a tap to a bucket and place the bucket in a raised position. Attach a system of perforated pipes to this tap. Close the other end of your tap. The pipe may be placed over or under the soil in your whole garden. Make gravity work for you. To water your entire garden you have to only turn the tap on.

These systems release water slowly into the soil saving water and preventing soils from getting water logged. We don't want the terrace or plastic to get too wet.

Then we also have the watering can, filled with water used earlier to wash dals and vegetables.

Lastly the garden hose, attached to a municipal outlet tap. This is the easiest but the least efficient and laziest option! Acceptable when we have loads of water at hand.

## **Soils**

Compost is the best soil. There are several ways of making good compost. Amrit Mitti, is one excellent way. Today, this is taught by Deepak Suchde, Preeti Patil and Urban Leaves. I personally use adapted versions of Amrit Mitti to suit my farm and I have developed my own method of composting home waste for more urban situations.

The key to **all** methods is to keep the mix diverse and to make sure the decomposition is aerobic. Aerobic decomposition is facilitated by correct Carbon and Nitrogen ratios. (brown and green ratios), the amount of water in the mix, and turning.

In our climate, which is predominantly hot and humid, we need to slow down the rate of decomposition to get a good aerobic batch of compost. The rule of thumb is 2 buckets of crushed/finely chopped/shredded browns for 1 bucket chopped wet kitchen waste, be it cooked food, grease, citrus peels, or meat and fish. No watering is needed. Soil or more browns can be

added to absorb excess water released after a day or two. This can be composted in a pile/heap, a bin, a pit and must be kept in the shade. This mix can be added every day to the pile and turned in until your pile reaches a cubic meter in size, then you must start a new pile. The old one should be turned once a week. Compost is ready in a month. If your composting area is in the sun it must be covered with leaves, palm fronds or a shading net. Compost should not be wet. It should be damp, like a well squeezed out towel.

All decomposition releases carbon containing gasses. Aerobic decomposition releases CO<sub>2</sub> and anaerobic releases methane. Both are green house gasses. Burning waste releases CO<sub>2</sub>. Even so, composting is environmentally friendly as alternatives (synthetic fertilizers) hugely damage the soil, waterways and huge amounts of fuel is burned for its manufacture and transport.

Amrit mitti, is ready made garden soil. Compost from kitchen waste is too strong for saplings. To make garden soil from compost made from kitchen waste you have to mix it with approximately 20% soil or a mix of soil and sand.

If you are in a rush to get your garden started, you could buy some garden soil mixed with decomposed cow dung and keep supplementing it with homemade compost.

### **Thinking the Permaculture way**

In Permaculture, the **yield from a site** is not limited by its size, but rather by how effectively we can use a particular niche (specific spaces/times and territory occupied by an organism).

It is the number of niches in a system that will allow a greater number of species to fit into our design. Our work is in working out how to create these niches. For example, the number of birds in an area depends on the number of ledges. So if we want bird droppings to enhance soil fertility, we must provide more ledges or bird baths in our garden. Even if we have an energy efficient property (where the waste products of one system is used for the needs of another) fully planted and under control, there is always some better way it can work, always another niche to fill. The only limit on the number of uses of a resource possible within a system is in the limit of the information and the imagination of the designer.

If one observes a healthy ecosystem, one finds that every niche is filled. There are no gaps and bare spaces. In a forest, pioneer plants are where there is sun, the large trees form a shaded canopy, under which smaller trees and shrubs grow in areas allowing some sunlight, each tree has a creeper growing up to the sun and there are several shade loving plants occupying the shaded areas. Birds are drawn to fruiting trees, their droppings fertilize the ground underneath, animals rest in the shade in the afternoon, they eat fallen fruit. Their dung in turn fertilizes. Fallen leaves and fruit are foods for fungi, bacteria, and worms. As these decompose by their action nutrients and carbon is released into the soil enhancing fertility and water holding capacity of the soil. Bacteria form symbiotic relationships with tree roots, and so do a type of fungus called mycorhyza. They aid in plant health and in turn get sugars from the plant. The network of roots harbours other useful soil organisms each having a crucial function to keep the whole system working. The burrowing action of termites and earthworms aerates soils. The panther and owl hunts only at night. And so, each niche in time and space is filled. This enables the system to be stable and resilient requiring no human input.

To have an efficient garden that maximizes the harvest of sunlight and is largely self maintaining one has to plant intelligently.

### **EFFICIENT PLANTING STRATEGIES**

Now that we have set up the paths, sizes and shapes of beds, placed trellises in strategic positions, installed our watering systems, and made sufficient soil for the garden, we need to plant.

This is the most imaginative stage. And this stage keeps changing and evolving.

### **SOME RULES**

**Feed the life in the soil not the plant:** keep adding mulch or semi-decomposed leaf litter to the top of your soil for soil organisms to decompose slowly. Your plants will thank you for keeping soil organisms alive and well. The work of soil organisms is to provide nutrients in the form available for

plant uptake, they also aerate the soil and their action forms soil aggregates making it easier for roots to grow deeper and wider.

**Mulch.** Mulching is the practice of lightly covering bare soil with fine particles or small pieces of dry plant matter. Sawdust, dry leaves, straw, sugarcane bagass and wood shavings are good examples. Covering the soil prevents soil erosion, soil compactation, water evaporation, allows beneficial soil organisms to live in a cool moist environment (they die on exposure to the sun), suppresses weeds, prevents rain from washing away newly planted seeds and prevents birds from detecting newly planted seeds. Green manures are nutrition rich or nutrition providing ground covers. Many are also crops. These act as live mulches, and are turned back into the soil once they have grown.

**Don't dig too much, if you have to loosen compacted soil then do so and mulch immediately.**

**Transplant plants with the least root shock.** Instead, sow directly and thin later.

**Companion planting** is a method of planting that encourages beneficial interactions between the plants.

1. Plant vegetable or herbal ground covers to **reduce invasive grasses and weeds**. Spinach beneath a guava plant.
2. Plant trees/trellises to provide **physical shelter** from sun scorching, the drying effect of the wind or salt laden air provide nutrients and assist in pest control. Cocoa, coffee and vanilla will not survive in the hot sun. Corn provides partial shade to lettuces.
3. Plant green manures and legumes to **provide nutrients**. Green manures are ground covers, such as clover and mustard, that are turned into the soil to add to fertility. Legumes fix nitrogen and so enhance soil fertility.
4. Plant flowers and shrubs that attract bees and insects to **increase pollination** of fruits and vegetables
5. **Plant to control pests.** Plant **trap crops**. These are plants that pests love, so that pests can be caught or destroyed on these plants. Marigolds are a host to soil nematodes, so planting marigolds with potato, carrots and mooli reduces infection. The French marigold root exudes a substance that kills nematodes. Dill (soha/shepu), carrot and fennel (sauf) **host insect predators** such as ladybirds and wasps which eat aphids. Plant **sacrificial plants** which pests prefer and so your crop is saved. Slugs love radish. Plant them amongst your lettuces as a sacrificial plant, or in a bed away from your lettuces. Leaf minors also love radish. Plant them along with your lettuces. **Plant insectivorous plants.** Plant **aromatic plants** such as mint, and geranium, which repel insects by their strong scent. Marigold repels white fly. Onions repel carrot fly. Cabbages repel aphids and white fly. Garlic deters aphids. Mint deters moths and ants. Coriander repels aphids. The edible flower nasturtium makes a great trap crop for aphids, and its scent deters most pests. It also attracts predatory insects such as lacewings, ladybugs and mantises. Planting a mix of these aromatic plants confuse pests and prevents them from finding their host. Plant **decoys** to keep pests away from the vulnerable main crop, most flowers act as decoys. Plant beans near maize, once the maize has grown to some height. The maize plant provides a **stand for the climber** and the **bean fixes N in the soil**. Some plants do better when planted next to another, for instance basil does well near tomatoes.

**Mixed cropping:** plants scattered amongst others make it difficult for pests to go from one food plant to the next.

**Crop rotation:** If a bed is planted with a predominant species, then plant something else once it harvested is wise. This prevents pests from being transferred over to the new crop and if the soil is depleted by one crop it is replenished in some way by cropping another. A good rotation is potatoes, then legumes (peas, beans and dals), then Brassicas (cabbages, cauliflower, radish, broccoli), and then the other roots such as beetroot, turnip and carrots.

Keep experimenting since beneficial combinations are wide and varied. You won't know until you try.

**Multifunctionality:** plant such that the plant will provide you with more than one function, so a fruit tree is a source of fruit, a stand for a creeper, and provides shade for pineapple. So then plant some pineapple in its shade. If it's a young tree then wait until it grows to plant the creeper and starts to shade before planting shade loving plants. Plant a ground cover as a source of food or herbs. This also prevents water evaporation by acting as a live mulch, it's a green manure if turned into the soil once you have harvested, and it fixes N if it's a legume like chowli.

If you follow these rules, you will be surprised how good you get and how productive your little patch will be in no time.

### **A SCENARIO**

Start by creating a place to sit to have a cup of tea in the shadiest area. You may end up getting all your 'great ideas' from being here. If you have no shade, plant fruit trees to create shade. Plant some shrubs as well. Then plant a creeper on this tree. Add a ground cover in the bare soil. Never leave soil bare and exposed to the sun. Bare ground is an empty niche, if we don't fill it (mulch or plant), weeds will come and fill the niche.

If there are no ground covers then cover the area with leaf litter, sugarcane bagass, straw or wood shavings. Alternatively, spinach, coriander and red spinach are often sold with its roots. Take of the large leaves for your meal and plant the roots.

Plant some fragrances like Raat-ki-rani, Mogra, Gardenia, Indian Magnolia, Parijat, and Ylang Ylang  
Add more fruit trees as wind brakes.

Add a trellis for more shade if required, plant it with climbers.

Place some fruit trees along paths for easy harvest.

Once you have the area around your sitting spot planted move outward. And start filling the spaces.

Plant companions, Basil with tomato and marigold, legumes with grains, French beans on sweet corn and melons as the ground cover. Cabbage does well with celery onions and potatoes

Plant flowers herbs and spices to confuse the hell out of pests.

Add bird perches to collect phosphate rich manure. Birds also eat vegetable chomping caterpillars.

Compost all plants that have been fully harvested, compost peels and leaves.

And keep going!

### **BASIC PLANT LIST**

The list of **fruit trees** to start with is long: chikoo, custard apple, ramphal, lime, pomelo, grapefruit, mango, guava, loveapple, cocum, star fruit, papaya, banana, pomegranate, fig, sour sop, cinnamon, clove, allspice, amla, tamarind, neem, and drumstick.

Some **shrubs and grasses:** hibiscus for its flower and a healing tea, curry leaves, tulsi, mulberry, karvande, pineapple, lemon grass, tomato, brinjal, okra/ladies fingers, turmeric and ginger.

**Ground covers** include mint, methi, mustard greens, spinach, red spinach, dill (soha/shepu) groundnut and chowli.

**Climbers** include: jasmine, passion fruit, pepper, kundru/tendli, climbing spinach and cucumber, bottle gourd, karela, peas, sword beans and pole beans.

### **SOME APPLICATIONS FOR PEST CONTROL**

If with all these measures you still get pests, here are some basic and helpful recipes for organic pesticides. You will find many more if you read around. Ubai has a few other concoctions that he uses successfully on his farm.

### **Bordeaux Mixture:**

- Dissolve 100 gram of builders' (hydrated) lime in half a standard (plastic) bucket of water. (About 5 litres).
- Dissolve 100 grams copper sulphate (available at garden centres) in a separate half bucket of water.
- Keeping the lime mixture agitated to prevent settling, pour it steadily into the half bucket of dissolved copper sulphate.
- If necessary add enough extra water to make up a total of 10 litres. This is Bordeaux mixture. It is at its most effective strength when freshly mixed so must be used immediately or within a couple of days.
- It is sprayed to completely cover the main branches and infected areas.

Bordeaux mixture colours the sprayed plants blue. The spray can withstand light rain. However a disadvantage with this mixture is that it tends to quickly settle so must be constantly agitated during spraying operations. The lime content also tends to easily block the fine nozzles of sprayers.

### **Black Spot Spray/Bicarb Soda Spray**

- 1 tablespoon of bicarbonate soda
- 4.5 litres of water
- 1 tablespoon of homemade Oil Spray concentrate (see below)

Spray weekly as a preventative treatment to minimise black spot and mildew. Improve air circulation around plants. Avoid wetting the foliage and thin out overcrowded growth. Remove any leaves affected by black spot as soon as they are sighted.

### **Casuarina Tea**

Casuarina trees contain high levels of silica. Biodynamic gardeners make a spray made from casuarina foliage for use against fungal diseases like anthracnose and other mildews.

- Simmer 60gm dried Casuarina needles in one litre of water for 20 minutes using a stainless steel container.
- Strain and dilute 1 part concentrate to 40 parts water.
- Spray in the air around trees early in the morning.

For further information go to [www.biodynamics.net.au](http://www.biodynamics.net.au)

### **Garlic Spray**

- Three large cloves of crushed garlic
- 1 tablespoon of vegetable oil
- One teaspoon of liquid soap
- One litre of water

Combine the garlic and vegetable oil and leave to soak overnight. Strain and add to the litre of water along with the liquid soap. Spray regularly. Garlic is known for its antibacterial properties, but it is its insect repellent qualities that most gardeners admire.

### **Powdery Mildew Spray/Milk Spray**

Powdery mildew appears as grey or white powdery spots on the new foliage. It causes puckering of the foliage and in severe infestations, a burnt appearance and leaf fall. This disease occurs most frequently when night temperatures drop and relative humidity remains high. Avoid the over-use of high nitrogen fertilisers as these can tend to make leaf growth that is soft and more susceptible to disease.

- 1 part of milk
- 9 parts of water

- Spray regularly over the leaves, paying particular attention to soft new growth

### **Homemade Oil Spray as a general insecticide**

- Mix 500ml of vegetable oil or better still neem oil (available at a chemist)
- ½ cup of dishwashing liquid or other liquid soap
- Blend thoroughly and seal in a clean, clearly labelled jar. Store in a cool area for later use.
- Dilute one tablespoon of the concentrate into one litre of water before spraying.

Oil based mixtures can be used to suffocate mites, scale and other soft bodied insects. They help to repel leaf miner moths and some gardeners even find them effective against grasshoppers. Avoid using on plants with hairy leaves and during very hot weather.

### **Burnt Jaggery Spray**

- To burn jaggery you have to cook jaggery in a frying pan with water until all the water evaporates and the sugar blackens.
- Dissolve one tablespoon of burnt jaggery into a litre of warm water.
- Add one teaspoon of dish washing liquid or other liquid soap

Spray regularly over the leaves of all plants attacked by caterpillars and other chewing pests. Caterpillars would rather starve than eat leaves sprayed with this mixture. It has also been used with success by some gardeners for the treatment of soil affected by root knot nematodes by doubling the concentration of burnt jaggery.

### **TAKE HOME MESSAGE**

**The efficient use of space and efficient harvesting of sunlight requires one to fill in all niches and create new niches. This generates biodiversity, which in turn gives stability to the system and makes it resilient to pest/wind/rain.**

**Contact Clea Chandmal  
[cleachandmal@gmail.com](mailto:cleachandmal@gmail.com)**

## HOME REMEDIES & MEDICINAL HERBS IN URBAN GARDENS

Presented by Smt. Kusum Dahivelkar

### Kusumtai Dahivelkar's Introduction

She is a retired forest officer basically from Gujarat but worked and lived all her life in Maharashtra. During the course of her career she interacted with tribals in various areas and observed various medicinal practices they followed. She also hails from a family of Ayurvedic doctors and has various texts nearly 200 years old with her. Her knowledge of medicinal plants comes from the various texts she has and her vast experience working in the tribal areas. Most of her cures are based on live experiences and observations.

After her retirement she has dedicated her life to a nursery she has setup in Nasik where she protects and propagates various medicinal and forest trees. The nursery Hirve Punya is run entirely on her savings and is not a commercial venture.

Here are some of her day-to-day cures

**Note : 10 grams = 1 tea spoon approx.**

---

### Dry Cough

#### 1. Adulsa

Take 7 leaves of Adulsa (Adhatoda vasica nees)

7 cloves (Syzigium aromaticum).

Boil in heater till water is 1/3<sup>rd</sup> reduced.

Take 3 spoons of this kada 3 times for 7 days.

Adulsa is available in two variety red and white; she prefers the white one though even the red can be used.

### Wet Cough

#### 1. Aloe Vera

Take 2 spoons of Aloe Vera (Aloe vera Linn) leaf pulp, 1 spoon of honey and have 3 times for 3 days.

To make aloe Vera pulp put the leaf in boiling water to extract the pulp easily.

#### 2. Ginger + Lemon

Ginger juice 1 spoon, Lemon juice 1 spoon, a little pipali fruit (Ficus ingectoria), 2 times daily.

#### 3. Imli + Hing

Take imli /tamrind (TAMARINDUS INDICA) leaves (10-12), Hing / asoetofodia (FERULA NARTHEX BOISS) 5 gm, rock salt 5 gms and have for 7 days once a day.

#### 4. Pepper Corns + Sugar

Pepper corns(Piper nigrum) 2 gms, Honey 1 spoon, pinch of sugar (khadi) once for 3 days

#### 5. Haldi

Fresh Haldi/ turmeric (domestica valenton) 5gms roast, to be chewed at night before going to bed.

---

### Tuberculosis or Bronchitis

#### 1. Onion

Onion Juice 10 gm, Honey 10 gms, Cow ghee 5 gms have once a day for one month.

#### 2. Garlic

Garlic 10 gms to be had with buttermilk (tak) for one month.

#### 3. Jeera + Turmeric + Cardamom

Jeera 5 gms, Turmeric 5 gms, one green cardamom, sugar 2 gms all to be powdered and to be had with cow milk for a month.

---

### Diabetes

#### 1. Stevia Leaves (Stevia rebaudiana)

good sugar substitute can be added to tea or coffee instead of sugar

#### 2. Insulin Plant Leaf (Costus Ingneus)

One leaf of Insulin Plant to be chewed every day

#### 3. Gudmar (Gymnema Sylvestre)

Eating the leaves of this plant paralyses the sense of taste for sweetness and bitterness

#### 4. Bivle (Pterocarpus Marsupium), also known as Indian Kino Tree

Drinking water stored overnight in a glass made from the bark of this tree is known to cure diabetes. This has been

observed in many tribal areas. We do get Bivle powder in the market now which can be added to water and consumed.

5. **Pomegranate Leaves**

Chew 10 gms of tender leaves every morning and evening for 14 days

6. **Triphala** Churn 10 gms. Neem bark (**Azadirachta indica**)10 gms, Babul (**Acacia nilotica**) 10 gms, Mango bark 10gms. Add to 2 gms. of cow ghee and consume for a month once daily.

Triphala Churn is made of Whole powdered fruits and/or herbal (fruit) extracts of Beleric myrobalan ie.Vibhitaki or Behada, Chebulic myrobalan (Terminalia chebula)Harada or Haritaki and Emblic myrobalan (Indian Gooseberry) Amala or Amalaki

7. **Black Jamun seeds(Syzygium cumini)**

20 gms powder and have daily for a month

8. **Karani (Pongamia Pinnata)**

Collect flowers of the tree 10 gms add 1 spoon of honey and consume for 21 days

---

**Blood Pressure**

1. **Arjun (Terminalia Arjuna)**

10 gms of bark with 1 spoon honey. This tree has a reddish coloured bark that sheds every year. Each year a tree can shed around 300 gms of bark. It is good to have this as a preventive rather than wait for heart related problems to set in. It would be advisable to have this at least 7 days a year as a preventive. Note that there are 2 types of Arjun trees one that sheds and one that does not shed, so advisable to check before buying.

2. **Mimemula (Colieus Barbette)**

The root of this plant (land creeper) can be cut into small pieces after removing the small bump on it and then used in any kind of pickle. Usually added to fresh haldi, lemon and salt and stored as pickle. Have regularly for a healthy heart.

3. **Onion**

Onion juice 3 spoons, sugar and home made white butter (as per taste), to be had for a month daily. Regulates heart beats.

4. **Adulsa**

leaves of Adulsa chopped 2 spoons, honey 2 spoons, a little sugar to be had for 15 days. Good for heart related problems

---

**Kidney Stone**

1. **Panphuti (Brio Fillum)**

A leaf before sunrise for at least a month. This leaf can also be used on fresh wound and is known to stop bleeding immediately. It is stated in old Texas that soldiers used to take the pulp of this plant with them when going into battle

2. **Umbar (Ficus racemosa)**

Leaves juice 60gms, sugar 20gms have once daily for 7 days

3. **Neem**

Collect dried fallen neem leaves, burn them and collect the ash. Have 2 gms of this ash with buttermilk (tak) every evening for a month

4. **Gokshura (Tribulus Terrestris)**

The fruit 10 gms, honey 10 gms to be had in 1 cup of milk daily once for 15 days

---

**Reduce Weight**



1. **Jaiphal/ Nutmeg (*M. malabarica*)**  
5 gms of Nutmeg, honey 4 spoons to be had in one cup of milk for 2 months.
  2. **Ashwagandha (*Withania somnifera*)**  
3 leaves every morning is good for general fitness
  3. **Hot water with Lemon Juice**  
1 cup hot water with lemon juice 10 gms early morning on empty stomach for 45 days
- 

### **Menstrual Problems**

1. **Aloevera**
    - Pulp of Aloevera 6 spoons, 3 times daily for 10 days around the time the cycle begins will reduce painful periods.
    - Leaves Take 3 leaves and boil in a plain brass vessel till they turn brown and become solid. Keep this aside and have 1 spoon of this mixture mixed with water at early morning and evening. This has to be started on the approximate date the menstruation is to begin and continue for the next 7 days. It is known to regularize irregular cycles.
  2. **Hibiscus Flowers**  
Dry the flowers in the shade and powder. Have 1 spoon of this powder morning and evening
- 

### **Fever**

The following 9 items work to break a fever. It is available in the market and the powder can be bought separately and mixed and stored together.

1. Indrajav Anti Dysentery Fruit/ Bael Fruit/ Stone Apple (*Aegle Marmelos*)
  2. Takla (*Cassia Tora*)
  3. Adulsa Leaves
  4. Nirgundi roots (*Vitex negundo*)
  5. Ajwain (*Trachyspermum ammi*)
  6. Gudvel Stems (*Tinospora cordifolia*)
  7. Bringraj Maka (*Eclipta Alba*)
  8. Dried Ginger /Shunth
  9. Ringini (*Solanum Indicum*)
- 

### **Gas**

1. **Triphala**  
Powder of Triphala 1 spoon in hot water in the morning on empty stomach.
  2. **Ginger and Gur/ Jaggery**  
mixed both the ingredients together and rolled into small pea sized balls. Pop one ball before every meal.
  3. **Garlic**  
Garlic cloves 5-6 fry in cow ghee and consume for severe attacks of gas
- 

### **Acidity**

1. **Mukhi Jaswant / Hibiscus flowers sorbet**
- 

### **Arthritis**

1. **Nirgundi**  
Take 1 kilo of Nirgundi leaves and add 1 litre of water and cook in cooker for 10 minutes. Extract the juice and filter the same. Boil this extract till it is reduced to half the quantity. Take equal measure of this extract and till oil / sesame oil and use this to massage the affected areas. One can also tie some rice in a piece of cloth and add it to the cooker. This rice can be eaten.

2. **Maharasnyadi Kada Gugulyuktha**

available in the market ready. Each 30 ml contains

Rasna 9.6 gms, Javasa, Bala, Erandmool, Devdaru, kapur, Vach, Vasa, Sauth ,Harad, Chavya, Nagarmotha, Punaranava, Giloi,Vidhara, Saunph, Gokharu, Asagandha, Atis, Amalthas Shatavari, Peopla, Dhania, Katteri Badi & Chotti. Each 192 mg  
Guggulu 1.1904 gms,  
Gur 19.2 gms,  
Dhaiphool 960 mgs

---

**Cancer**

1. **Ringini**

full plant powder 5 gms powder with water daily in the morning

2. **Touch me not plant (Mimosa Pudica)**

the one with thorns, take 4 spoons of the leaf juice or 1 spoon of powder in one cup of water and have for one month

---

**Menopause**

1. **Mehndi Leaves (Lawsonia inermis, also called mignonette tree)**

2 spoons twice daily on an empty stomach

---

**Jaundice**

1. **Buhi Awla plant (Phyllantus Niruri)**

Boil the entire plant and have with ½ cup of milk for 7-21 days in the morning on empty stomach.

**Smt. Kusum Dahivelkar**  
chirantan@hirvepunya.com



## SELF CARE IS HEALTH CARE IS EARTH CARE

Presented by Anju Venkat

Anju Venkat is a nutritionist at the Health Awareness Centre for the last 16 years. After her graduation Anju did a post graduation in Nutrition and was conferred a Doctorate by the life Science Texas, USA. She is a professional member of the American Society of Nutritional and Dietary Consultants. CASA – an NGO that works with HIV +ve people – worked with Anju for over 3 years to understand how to improve their nutritional needs. CASA incorporated these ideas in their programmes.

The Health Awareness Centre has been started to orient people to look after their own health. It is committed to help people enhance and realize their potential for well being, especially when ill. The emphasis is on correct foods and their role in health management.

It motivates and educates people to look after their own health. All activities of the Centre are based on the belief that health is the result of healthful living or living according to the laws of nature. The emphasis is on “Health through Nutrition” – and explorations of the connections between our living habits and the environment as well as the role of correct foods in health management.

---

### EARTH CARE

Ecology is the study of the relation of living organism to their environment. All these organisms, including people, require food, water, fresh air and sunshine to live. These are gifts from the earth, our planet and life supporting system. In assessing our health we normally fail to consider our personal well-being together with the well – being of the earth, which is interconnected.

Poverty, water Shortage, Energy crisis and climate change. These are very powerful symptoms and pictures of our times. At the same time, all our basic necessities, our fundamental tools for living, like the human genome, water, seeds, food, airwaves and media – are being globalized and taken over or corrupted by Corporations.

Proper appreciation of ecology will help us to assess and maintain both our health and that of the planet. **Presently, very few of us see the direct connection between our own needs, demands and choices and their repercussions on the earth.**

Integrating the knowledge into our lives involves choosing between different life styles, systems and types of production. We continue to use and abuse our bodies and the planet. Striking the balance requires that our needs and demands support the life support system of the earth, and play a role in integrating the needs of the two systems of health.

Food is of value only in the connection with air, water, sunshine, rest and sleep, activity and mental poise – in short, all the natural or normal circumstances that we know to be necessary for the preservation of health. This is true nutrition, a process that utilises all the above factors to promote health.

But instead, today's process of food production is destroying other factors necessary to support life. The production of cereals, milk and milk products, meat, poultry, sugar, salt, drugs, tonics, tinned and packaged items is directly responsible for damaging the soil, air, water and atmosphere. Besides, these foods harm our bodies by creating toxins in them.

The popular selection of food is based on the Recommended Dietary Allowance (RDA). This prescribes food in terms of calories, vitamins, proteins, fat carbohydrates and minerals – without any consideration for the effect of this process on the earth. For instance, meat and meat products, which clog the heart, also clog the planet.

Feeding, growing, slaughtering and transporting thousands of animals daily is a stupendous feat and one that devastates the environment.

According to a 2006 report by the Livestock, Environment And Development Initiative, the livestock industry is one of the largest contributors to environmental degradation worldwide, and modern practices of raising animals for food contribute on a "massive scale" to air and water pollution, land degradation, climate change, and loss of biodiversity. The initiative concluded that "the livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global."

The food group that gulps the lion's share of their energy for food production is made up of animal products, including milk and dairy products. Not fruits, vegetables or any of nature's other gifts.

Food production has also changed from organic methods to mechanised, commercial, chemicals based agribusinesses which damage the soil and affect the quality of the crop. People who attend health seminars are concerned about all the pesticides and chemicals sprayed on fruits and vegetables, but no one seems to raise the same question about meat, chicken, eggs, fish and dairy products (milk, curd, butter, ghee, paneer, lassi, etc)!

Of all the toxic chemical residues found in food, more than 90% is found in animal products and 10% in fruits and vegetables. Factory farm animals have a dangerously high concentration of these chemical toxins in the bodies from a life time eating feed that has been sprayed with these deadly biocides. Moreover, fruits, vegetables and sprouts are living foods that can tackle the chemicals – fresh, raw, fruits have enzymes that animal foods lack.

The animal products industry also consumes more water than all other industries combined. It also pollutes air and water, apart from being responsible for deforestation, loss of agricultural land and acid rain.

We know that air is crucial for existence. Six minutes without air and there is no life – as part of the grand symbiosis between the plant and animal kingdom ( including people), trees utilize the carbon dioxide that we give out and give us life – giving oxygen. Trees are the lungs of the earth.

The irony is that at the time when carbon dioxide levels are getting dangerously high, we are cutting trees for the production of food instead of protecting and conserving them. Large dams are also built to increase agricultural production, destroying thousands of acres of fertile land and old forest, further aggravating the problem. Deforestation also causes rivers to run dry. No forests, no rivers, no water.

### **EARTH CARE = HEALTH CARE**

Isn't it clear how our food selection, based as it is on the RDA, on outdated customs and habits, ignores the impact of our choices on the planet? The most direct, simple and easy way to heal the earth is to place our demands more and more on fruits, vegetables, nuts and sprouts. ortunately, this also provides us with better health by reducing the toxins in the body. These foods are eco-foods, more than health foods – which protect the earth and heal the body. Thus helping you to live ethically and economically, without drugs.

### **HEALTH CARE= SELF CARE**

The nature of Nature has not changed. In all these millions of years of evolution the structure and function of the body, and the process of nutrition has remained much the same.

Instinctively the body is geared towards revitalizing itself-at all levels.

But there is a gap between what is potentially optimum for the body and what we are actually experiencing.

Since we are also attempting to achieve better health, let us look at the way we Nurture ourselves.

Nourishing our physical body is one way of enhancing health, and also making a difference to our lifestyle choices. Food, Exercise, Sunshine, Air and Rest, when consciously inculcated, with awareness, into our lifestyle can become a bridge between how we nurture ourselves- and how nature intended us to be. In other words, **these factors can contribute to put the connection back between “Ishwar Buddhi” and “Manushya Buddhi” or between Nature’s inherent intelligence and Human beings understanding.**

By becoming aware of our body its needs and functions, we can re-learn to tune in ourselves to both the gross and subtle mechanisms of the body. We can consciously walk the line between Nature and Nurture. We can maximize the genetic patterns of growth inherent in all of us. We can increase our intuitive power and connectedness to ourselves and Mother Earth.

One of the energy (fuel) sources for our body is Food, through which we can establish health and harmony. Most of our waking hours are spent in choosing what to eat, when to eat and how to eat it. Today, Food extends to our emotional attachments, our social interactions, our environmental heritage and cultural habits. Our food habits have a deep impact on our personal and social health. What we eat and how we choose it, directly and forcefully determines how we grow and how we feel.

**Yet we remain unaware that Food is designed by Nature for Biological Growth.**

Thereby, there appears to be such a sea of confusing answers on what we should eat. Such a simple question really- but no two professionals can agree. Obviously all cannot be correct!

The answers are very simple.

- 1. Food must be palatable in its natural and living state. This means mostly in a raw condition. Cooking has a history of only a few thousand years. One has suffered much as a result. Experiment after experiment shows that only a living food diet will sustain health at the highest level. Fruits and vegetables are palatable in their raw state, but meat and poultry cannot be consumed raw.**
- 2. The food must contain no harmful or toxic substances for it interferes with normal body processes- i.e. biological growth. Foods that have added chemical flavours, preservative, and additives may seem tastier or have a longer shelf life, but on consumption they overload the liver. E.g. soda bicarbonate, MSG, food colouring, food preservatives and genetically modified or irradiated foods.**
- 3. The food must be easy for digestion and assimilation. It must place no extraordinary burdens upon the body. E.g. One cup of tea takes 24 hours to be digested whereas any fruit takes only 20 minutes.**
- 4. The food should be ideally alkaline in its metabolic end products. Humans are among a class that require mostly alkaline foods. Sugar (white refined sugar) leaves behind an acid end product after digestion. Whereas lemon and all citric fruits that seem to be acidic outside the body, on digestion leave behind an alkaline metabolic end product.**
- 5. Food must contain a rather broad range of nutrients and food factors. Most foods in Nature are well-rounded in their nutrients, having a rather complete complement of vitamins, minerals, proteins, carbohydrates, fats, enzymes and other food factors known and unknown. In the 1900’s man started by discovering only 9 nutrients. Today, we know 108 such nutrients. Fruits differ only in their water content. Nutrient value of two fruits is just the same. Fruits contain all nutrients, those that we have researched and found today (i.e. they are known to us) as well as those that Science will discover tomorrow (are yet unknown). Processed foods, therefore are foodless.**

**Thus, the objective in the selection of food is to arrive at those that have the highest possible biological value for us.** Only fruits, vegetables, nuts and seeds in sprouted form, meet all these criteria. That too in the most admirable way.

Fruits vegetables, nuts and sprouted seeds are really, 'Living Foods' that nourish all living beings. This clears the environment too. All other foods are dead foods that provide little or no nourishment to the body.

Most importantly, our body is unable to utilize such food as fuel. 'Living Foods' are Raw, Wholesome, Natural, Pleasurable, Ethical, Ecological and Empowering. Seasonal and Regional Food choices strengthen the local culture and ecology.

## **SELF CARE**

Cooking, processing, breaking food down into its components, microwaving, adding chemicals in the form of preservatives, additives, colours, flavours, fertilizers and so on, genetically modifying foods, altering the temperature of the food as in pasteurization or deep freezing, we alter the structure and nature of the enzymes within the food making it un-usable by the human body. That means the food becomes dead.

Enzymes are the 'workers' in the body i.e. all functions within the body from talking to walking, sleeping to waking up, sugar regulation to temperature regulation, balancing and filtering of blood, cell division and repair, breathing, thinking, movement, ALL FUNCTIONS IN THE BODY REQUIRE AN ENZYME TO CARRY IT OUT. Foods that contain enzymes (are raw and living) give energy to the body. Foods that do not contain enzymes (dead) do not provide the body any energy rather they are a load on the body's reserves.

Instead of cooking foods it is important to 'make' food i.e. prepare it in such a way that we do not alter or kill the enzymes within the food. Making food means we maintain its nutritional content (of known and unknown nutrients) allowing the body to create energy from the food.

In the last 50 years we have grown up eating foods that deplete health and energy rather than preserving and enhancing it. We always make money and then spend it, similarly we need to enhance the energy that we add into the body, conserve by not wastefully spending body energy on foods that do not contribute to health and only spend body energy when for entertainment which is once in a while.

- Make 50% of your daily consumption raw- that is fruits and raw salads.
- Always start your cooked meals with a salad (as it provides digestive enzyme to break down the cooked food which conserves body reserves).
- Eat cooked meals (only twice) between 12:00PM and 8:00PM as at this time the digestive enzymes within the body are at their peak.

The key is to balance foods that we have for our 2 inch tongue (taste) with the foods that we should have for the rest of our body (health).

*It is often said that "WE DO NOT COME INTO THIS WORLD, WE GREW OUT FROM IT, IN THE SAME WAY THAT AN APPLE GROWS OUT FROM AN APPLE TREE."* We humans too, are an expression of this Life, constantly exchanging MATTER, ENERGY AND INFORMATION with the environment around. Today we see no difference between the health of the body and health of the earth- both require an urgent shift in awareness - That of taking PERSONAL RESPONSIBILITY towards its wellbeing, through the all important aspect of **SELF CARE, HEALTH CARE AND EARTH CARE.**

**Anju Ventak**  
**thacwellness@gmail.com**

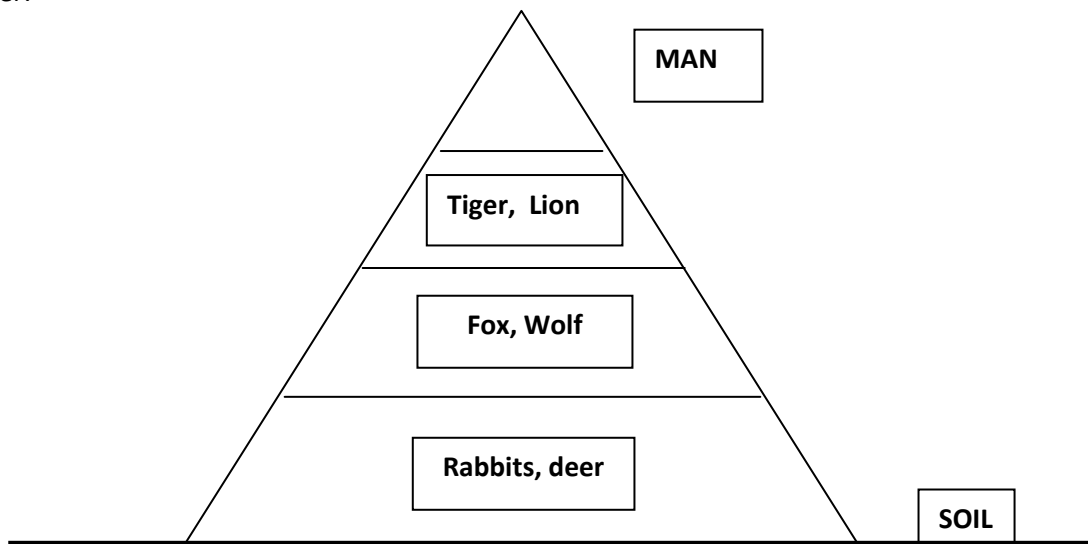
**SOME CONCEPTS FROM PLENTY FOR ALL - PROF. S. A. DABHOLKAR**  
**Presented by Dr. C. M. Pandit**

A structural engineer by profession, he got interested in Natueco farming and Prayog Parivar, became a close associate of Prof Dabholkar which continued for 16 years.

---

1. It is my privilege to put before you some aspects of late Prof. S. A. Dabholkar's book 'Plenty for All'. The book is a statement on total lifestyle and rural development. This cannot be brought out in a single lecture like this. I must also draw your attention to the fact that Dabholkarji did not subscribe to what is variously called organic farming, natural farming, ecological farming, no till farming etc. that trust Nature and empirical wisdom of ages or commercial techniques of modern farming. Instead he uses the concept of Nature farming. He is uncompromisingly scientific and knowledge based.

2. Before we go further let us generally look at food problem. The food chain looks somewhat as under:



Man cannot directly eat grass or vegetation. Only via animals – flesh, eggs, milk – he partakes of these. His digestive system does not permit such direct intake – length of his intestines & enzymes and the bacterias in it. We thus totally depend upon the plant world for our existence.

Dabholkarji proposed a sagricultural approach – a word coined by him from basic 4 's' → sun, science, sharing & sovereignty.

1. Let us first look to Science. All things have to follow basic natural laws like gravity. Two such laws are laws of thermodynamics.

The first law of thermodynamics states “The sum total of mass and energy on this earth is constant. They can be converted into other.” It is much easy to convert mass into energy but difficult to convert energy into mass. We can burn a piece of log and obtain heat energy, convert the same into electrical energy and so on. But to convert energy into mass is very difficult and requires tremendous energy making the exercise unviable. However through the planet life – as illustrated in ecology, forests, praries etc. – we can create abundance of material well being – food, fibre, firewood and timber.

The second law of thermodynamics is the law of entropy. Everything on this planet moves from order to disorder to degradation. In its full effect there would be total chaos. Here again plant life comes to

our rescue. By the help of 'Photosynthesis', we can convert solar energy into bio-mass, create an organized mass e.g a plant and thus work against entropy.

2. We will now study the phenomenon of Photosynthesis. This is a phenomenon by which green substance – chlorophyll – in plant leaves can harvest the solar energy coming from sun and with the help of water and carbon dioxide produce carbohydrates – various sugars like glucose etc. Four elements are involved – Hydrogen, Carbon, Oxygen and Nitrogen. We need not go into details of organic chemistry here. Suffice it to say that these are obtained from water, and air. The efficiency of photosynthesis is only around 1% to 1-½%. Energy from sun comes in the form of heat and light. Only light is used in photosynthesis. In fact very high temperatures – 35°C and above & very low temperatures below 15°C affect adversely photosynthesis. The work of producing mass – carbohydrates can be carried out only in day time and there also more efficiency in perhaps 6 to 8 hrs. Obviously more the plant leaf area per square meter of sunlight the more photosynthesis and so more bio-mass. This is very important to keep in mind, because the more leaves – green surface area – we are able to generate per square meter for solar energy – the more we will be able to harvest the sun. To reach the full efficiency of photosynthesis different plants require different leaf area per square meter. Usually this leaf area is between 5 to 10 times and is called the "leaf index". There are many aspects to this. The leaves may be vertical like maize, banana or horizontal like groundnut, the green colour may belong to various shades, transpiration may take place on both the sides etc.

3. We will now go into basics of plant physiology. A plant has 5 parts – Root, Trunk, Branches and twigs, Leaves, Flowers and Fruits.

Roots form almost 40% of the total dry mass of plant and is underground. There are two types of roots – support or anchor roots which anchors the plant firmly into the soil. They may also bring up ground water and micro nutrients. The other roots are feeder roots. These roots predominantly supply water and minerals to the plant. They spread all around the trunk, are confined to top 15 cms to 25 cms of soil and spread upto the canopy of the plant. There is a false impression widespread amongst people that roots take food from soil for plants. Plants produce their own food by way of photosynthesis. Roots only provide minerals, water, enzymes, etc. who help plant growth. A strong and vigorous growth of roots is necessary for continuous growth of plants.

Next comes the trunk. This is the main support of the plant above ground – it also carries material from roots to remaining part of the plant. It gives rise to branching which in their turn produce leaves, flowers and fruits.

4. Let us have a brief look at the life cycle of a plant. A plant goes through 5 stages in its entire life – childhood, youth or adolescence, adulthood, middle age & old age. Normally each stage is about 20% of the total life span. It is better to know these stages. Childhood is period of growth and needs all care. One does not expect fruits at this stage, just as in late manhood and old age. Supply of fertilizers and micronutrients have to be timed accordingly. Like the whole plant, parts of the plant like leaves and branches also go through stages. Fresh tender leaves, full mature leaves and old fading yellow leaves, or the early part of branch near trunk, middle zone and the end zone with foliage. Knowing these things enables us in proper pruning and pinching.

Contrary to general belief, water required by plants is of small order. Plants don't drink water as we do from a glass of water. They require some water at the roots for ion exchange with soil, main water for respiration (transpiration). They can take water from atmosphere also. Soils require only to be damp and in fact a watery soil suffocates the roots (no oxygen) and adversely affect the healthy bacterial action in top soil.

Soils play also an important role in plants. They should be nicely granular and loose. They should not be too fine (clayey) or granular, nor should they be very compact. Good granular loose soils allow water to be retained in the interstices by adsorption but not get flooded, or drain off water to lower layers. They should be loose enough to allow free air circulation in the root zone. Roots and the bacteria need oxygen for their growth and survival. In absence of oxygen, anaerobic bacteria will develop and encourage root rot and other diseases.



5. I have tried to give an overview of the general way Dabholkarji is thinking about the food problem and bio mass production. I have avoided details. It must be kept in mind that we are dealing here with “living matter” which responds to every action of ours as well as climatic and other external realities. Science normally deals with inert matter where manipulations are easier.

Another thing is there is nothing like Western knowledge, Eastern knowledge etc. There is only “your knowledge” what you have internalized. All else is reference material. Therefore whosoever is interested must himself carry on the experiments Dabholkarji has so elaborately described in his book.

There are no packets, handbooks or manuals. We must develop our own personal manual.

Kitchen garden, backyard garden is not agriculture in true sense. Agriculture is an industry and laws of industry apply here also (capital investment, marketing etc.)

Also, Agriculture is a team work as anybody in a village will tell you. “Prayog Pariwar” (family of experimentors and venturers) or networking is the way to go ahead. This would however need much elaboration and explanation.

6. I would like to end my talk with a brief narration of Cuba’s fantastic work on Organic Farming. Till 1989 Cuba’s agriculture was totally based on chemical fertilizer, hybrid seeds and mechanized (tractors, thrashers). All its product got exported to U.S.S.R and all inputs including diesel & petrol came from U.S.S.R. After the collapse of Soviet Union, Cuba’s agriculture collapsed, so much so that people went hungry lost weight upto 10-12 kgs over the years.

Then Cuba smarted up. Located old experienced farmers, found out now almost vanished local seeds, traced out draught animals and turned completely organic. They rose as one man, cultivated every inch of land including cities, terraces, balconies etc. And over the next ten years, they became self supporting, not only that they started exporting organic products!

Dr. C. M. Pandit  
6, Suruchi, Sant Janabai Road,  
Vile Parle (East), Mumbai – 400 057  
Cell: 9819836317