CHITKARA UNIVERSITY

YELLOW POINT FARM

TOWARDS SUSTAINABLE AGRICULTURE - A REPORT

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THE REPORT UNFOLDS

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SOWING THE SEEDS OF SUSTAINABLE AGRICULTURE

The ideation of our Yellow Point Farm.

Punjab is an agriculturally advanced state and holds 2.5% of cultivable land of the country. But ironically it consumes 20% of the pesticide produced in the state. The alarming fact is that most of these pesticides are carcinogenic in nature, which could be the reason of the state having the highest number of cancer patients. Sadly, there are no Government run cancer treatment centers in the state and treatments in private hospitals is not affordable for a normal family. Sadly, a train that helps cancer patients to commute from Bhatinda (in Punjab) to Bikaner (in Rajasthan) is called the "cancer train".

Food quality and safety are the two important factors that have gained attention in general consumers. Conventionally grown foods have immense adverse health effects due to the presence of higher pesticide residue, more nitrate, heavy metals, hormones, antibiotic residue, and genetically modified organisms. Moreover, conventionally grown food is less nutritious and contains lesser amounts of protective antioxidants. The demand for organically grown food has increased during the last decades due to their probable health benefits and food safety concerns. **Organic food production** is defined as cultivation without the application of chemical fertilizers and synthetic pesticides or genetically modified organisms, growth hormones, and antibiotics. The popularity of organically grown foods is increasing day by day owing to their nutritional and health benefits.

A venture that would enable organic cultivation and enable students and other stakeholders to understand and learn sustainable agriculture, with least pesticides and yet more yields, so that we can contribute directly or indirectly towards healthier, sufficient, and safer food, and thus reduce hunger.

The first tree planted @ Yellow Point Farm


REDMI NOTE 9 PRO
QUAD CAMERA

These seeds of thought led to the germination of the concept of YELLOW POINT FARMS at CHITKARA UNIVERSITY, PUNJAB. The unique & pious venture for organic farming was inaugurated on 15th September 2020, as part of the birthday celebrations of the Honorable Chancellor Dr. Ashok K Chitkara in 2 acres of land .

OBJECTIVES OF YELLOW POINT FARM

(SDGs 1, 2,3, 4, 5,8,10,12 and 17)

- ⇒ Creating Sustainable Employment Opportunities
- ⇒ Women Empowerment – Employing women labor from nearby villages, training them on processes of organic farming and providing them employment; thus, empowering them.
- ⇒ Educate students on Sustainable Agriculture & Horticulture
- ⇒ Create opportunities and ideal demonstration plot in smart agriculture for the local farmers and industries.
- ⇒ To provide safe, healthy, and nutritious food to stakeholders.

THE WORKING CONCEPT

Yellow Point Farm works on 5 concepts – we call it the **5C Module.** Through this 5C Module we have succeeded in reaching out to the masses. This module helps us in nurturing organic farming not only in the state of Punjab but across the boundaries reaching up to the remotely located states of Arunachal Pradesh & Assam. The venture is not limited to one or four crops; it has crossed all the boundaries & reached out to the producers of cereals, oilseed crops, tobacco, millets, pulses, fiber crops, forage crops, as well as sugar crops. In order to reach the masses, we approached progressive farmers and simultaneously hand-held the corporate world too.

5C Model - Our **5C model comprises** of the following aspects -

CULTIVATION

- Organic Farming of cereals, vegetables, fruits & oilseed crops,
- Sustainable Mushroom Production Unit
- Miyawaki Forest

CONSULTANCY

- Organic Waste Composter
- Sewage Treatment Plant
- Modern Mushroom Production Unit,
- PAN INDIA Projects & International Projects

CORPORATE TRAINING PROGRAM & WORKSHOPS FOR STUDENTS

- With Mahindra & Mahindra Group
- Workshop for Students

COMMITTEE MEMBERSHIP & CONTENT WRITING

- Ministry of MSME & Training Program,
- Research Publications

COLLABORATION

- Agri Tourism
- Indian Institute of Wheat & Barley Research
- Directorate of Mushroom Research
- National Institute of Himalayan Environment
- Indian Agricultural Research Institute
- National Bureau of Plant Genetic Resources,
- Department of Forest & Wildlife
- *Kheti Virasat* Mission
- National Dairy Research Institute

CULTIVATION

ORGANIC FARMING OF CEREAL, VEGETABLES, FRUITS & OILSEED CROPS

Crops being cultivated at Yellow Point Farm are of following categories:

- **CEREALS & MILLETS:** Rice, Wheat & Maize

- **OILSEED CROPS:** Mustard
- **VEGETABLES:** Seasonal vegetables such as pea, spinach, Beet Root, Radish, Carrot, Potato, Lady finger, Garlic, Onion etc. Besides, Exotic vegetables such as Pak Choy, Iceberg Lettuce, Red Spinach, Violet Cabbage, Broccoli & Lettuce. To enable complete utilization of the land about 25 different vegetables were also planted as an intercrop. These vegetables included a cocktail of exotic & traditional vegetables such as colored capsicum, Onion, Pea, Carrot, Coriander, Radish, Cauliflower, Broccoli, Cabbage, Chili, Brinjal, Lettuce, Iceberg Lettuce, & Turnip etc. were also
- **FRUITS:** About 15 different fruit species were initially planted at the farm which included Aonla, Jamun, Mango, Litchi, Phalsa, Chikoo & Guava and selected varieties of Guava, Pomegranate, Jamun, Red Apple Ber, Dragon Fruit etc.

Dr. Mansi Vatrana visited Yellow Point Farm to observe the efficiency of her Nano fertilizer in Traditional Basmati Rice variety known as Taraori Basmati. Besides, she also observed the high curcurmin content turmeric variety of SIKKIM known as LOKADONG at Yellow Point Farm. She planted a Guava plant at Yellow Point Farm which has achieved fruiting stage now.

Dr Rinku (Assistant Professor – Bangalore Agriculture University) , a pioneer in BIOCHAR preparation visited Yellow Point Farm & appreciated our efforts towards Sustainable Agriculture. Based on her advise , we tested the effect of BIOCHAR on the yield, yield components & quality attributes of Traditional Basmati. The results were quite positive in terms of farm yield as well as quality of Taraori Basmati a traditional basmati variety

SUSTAINABLE MUSHROOM PRODUCTION

In September 2023 YELLOW POINT FARMS initiated a Flagship Program – A **Mushroom Production Unit**. Mushrooms are identified as a priority item in the government's recent program of promoting production of vegetables & fruits in the country. Today INDIA produces 2,01,000 tons of mushrooms per annum. However, there's a long a way to reach the production levels of China producing around 33 million tons of mushrooms. Well, on the brighter side, at the moment, mushroom production is one of the most promising fields in the Indian agriculture.

WHY MUSHROOM CULTIVATION

As mentioned above, mushroom farming, is very promising in India at the moment. Over and above that, there are numerous reasons that attract mushroom cultivation.

1. Excellent source of good quality proteins (It contains all 20 essential amino acids in it) to fight protein malnutrition in the Indian masses. Highest producer of protein per unit area and time.
2. Profitable & environmentally sustainable way of recycling abundant agro-waste for food (Zero Waste Technology).
3. To reduce pressure on arable land (grown indoors utilizing space).
4. High medicinal value (diabetes, cardiac diseases & anticancer etc.).
5. Labor intensive providing gainful employment.
6. Foreign exchange earner through exports.

Cultivation of mushroom can be done via the Sustainable Mushroom Production Unit. The hut for this unit is prepared out of *parali* (paddy straw) of Basmati Rice and the wooden support is developed from scrap, leading to a low-cost hut. The only drawback of sustainable mushroom production unit is that

it is seasonal exercise & has short life span as the unit cannot bear extreme weather conditions. Besides, maintenance of hygiene is very challenging. The cost of erecting sustainable mushroom production unit is very low as compared to modern mushroom production unit. As far as quality of produce is concerned there seems to be no difference at all.

At our unit we are procuring spawn run mushrooms from a reputed Horticulture University of Haryana. This ensures us the authenticity of the spawn or mushroom seed which would ensure quality produce too!!!

MIYAWAKI FOREST AT CHITKARA UNIVERSITY

"Within a forest, biodiversity means balance, Birds control pests, insects pollinate plants, and beneficial fungi keep the trees healthy. Every organism has a role to play, and all these roles interact. And if you build a healthy, biodiverse habitat that can look after itself, it becomes self-sustaining. You can step away and let nature get to work."

Lead SUGi Forest Maker - James Godfrey-Faussett

What is a MIYAWAKI FOREST

For a quick forestation technique, one of the best techniques if the Miyawaki method. It works well because it follows the principles of natural forestry, which include employing local plants and imitating the processes of how forests regenerate naturally. It works very well in urban settings. In comparison to traditional forests, Miyawaki developed forest areas have been found to have more biodiversity and are proved to capture more carbon emissions.

Known as a pocket forest or Miyawaki forest, these are created by planting native trees, shrubs and groundcover plants to form a canopy layer of tall trees, a shrub layer, and ground cover in small urban areas . A Miyawaki forest planted by Urban Forests grows each year by a minimum of 1 meter.

We need the forest around us wherever we are, and instead of going out into the wilderness, the Miyawaki method brings the wild to you. Hence, @ Chitkara University, we decided to create a Miyawaki Forest.

Miyawaki Forest At Chitkara University

1200 plants in an area spread to 300 Sq Mts, at Yellow Point Farms, Chitkara University, Punjab is where the Miyawaki Forest is taking shape. This drive towards a greener plant was undertaken as a contribution towards a greener planet , to further improve on the flora and fauna in the surroundings of the campus.

The area was identified, land made ready and for the best of saplings for the Miyawaki Forest, some fruitful discussions with the Divisional Forest Department Officer, Mr. Kanwardeep Singh (IFS) led to Chitkara University acquiring 1500 local forest species for the plantation drive. Hence , for the first plantation drive at the designated area for Miyawaki Forest we requested the presence of Mr. Kanwardeep Singh (IFS)

Mr. Kanwardeep Singh (IFS) at Chitkara University, Yellow Point Farm, as he leads the plantation drive for MITYAWAKI FOREST

Amidst a gathering of 150 students & 10 faculty members Mr. Singh highlighted the importance of forest in our daily life. He appreciated the role of CHITKARA UNIVERSITY in career building of students. Students were informed about career in INDIAN FOREST SERVICES in our country.

CONSULTANCY SERVICES

The consultancy by Chitkara University started off as a humble endeavor to help farmers of the local villages.

Gradually, Chitkara University acquired numerous consultancies on techniques and technology for sustainable agriculture. A faculty, Dr. Anurag Tewari has been associated as Chief Consultant in **Rising Roots Agriculture Pvt Ltd**., a company based in Delhi, having a pan India presence a company registered under the Companies Act 2013. The Company offers agriculture consultancy services across pan India at an unparalleled rate, without burning a hole in the client's pocket. The organization develops and executes agribusiness, food processing, infrastructure, and retail distribution projects worldwide across the agriculture sector.

The consultants of Rising Roots Consultants Agriculture are more than equipped to handle the evolving requirements of agribusiness. The caliber of the wide range of consultants is not only industry-leading but sets a new benchmark for others to follow. Within the short duration of the incorporation of the Rising Roots Agriculture Consultants, the organization has already accumulated a loyal set of clientages at an unprecedented rate, which goes on to show the satisfaction of our clients towards the services rendered.

The chief consultant of the Rising Roots Agriculture Consultancy, Dr. Anurag Tewari has thirty-two years of diverse experience, including twenty years of Industrial experience, wherein he was actively involved in major International & National agricultural projects, most notable being (Organic Farming, Water Conservation Agriculture Technologies & Mushroom Production).

Few of our National Level Clients

DUGAR CONSUMERS PRODUCTS PVT LTD, ASSAM

SIESTA GREENS PVT LTD, BHOPAL

A B GLOBAL LTD, NOIDA

GRM OVERSEAS LTD, PANIPAT

RAKESH MASALA PVT LTD, KANPUR

MI LIFESTYLE LTD, HARYANA

BROWN PANDA PVT LTD, BANGALORE

R K INDUSTRIES LTD, KANPUR

GIRNARSOFT EDUCATION SERVICES PVT LTD, GURUGRAM

PICS LTD, CHANDIGARH

CHAVI AGROTECH LLP, NOIDA

RISING ROOTS AGRICULTURE PVT LTD, NEW DELHI

Few of our international clients

MESSIUM LTD, LONDON

FIRST SIGHT SARL, FRANCE

E 20 INVESTMENT LTD, DUBAI

NTI CONSULTING SERVICES, SOUTH AFRICA

CORPORATE TRAINING PROGRAM

PRACTICAL WORK—MAHINDRA & MAHINDRA LTD EMPLOYEES

Mahindra & Mahindra is a highly reputed nations indigenous tractor company with . A Corporate Training Program was launched for their employees , by Chitkara University, with a goal to make it's employees aware about the requirements of the farming community & to understand their expectations from the Mahindra & Mahindra Ltd. The objective of the Corporate Training Program was to make the participants aware about the various modes of Transplanting of Basmati Rice. The program was conducted at Basma Research Centre of Mahindra & Mahindra Ltd. near Banur. Training sessions and includes presentation on Agriculture Farmer's expectations from Mahindra & Mahindra Ltd.., a practical session of employees in rice or wheat field with tractor driving session and an objective type test.

Activities:

- Briefing about Direct Seeding, Conventional Transplanting & use of Transplanters
- Briefing about uprooting of Basmati Rice seedlings
- Demonstration of Puddling
- Demonstration of Levelling
- Use of rope & measuring stick for transplanting
- Demonstration & opportunity of driving of tractor
- Display of PUSA 1121, PUSA 1718 & PUSA 1509 paddy
- Briefing about weedicide in Basmati & importance of plant density
- Briefing about water saving in Basmati cultivation
- Display of different fertilizers
- Quiz based on learning

Evaluation:

- Identification of fertilizer
- Identification of Paddy sample
- Testing of driving skills
- Random questions on technicalities told in briefing

Expected Outcome:

- Right Identification of paddy varieties
- Correct Identification of fertilizers
- Tractor Driving efficiently
- Awareness on technicalities involved in transplanting, seeding etc
- Awareness on the importance of plant density in Basmati cultivation

EMPLOYEE AWARENESS PROGRAM ON ORGANIC FARMING

AT MI LIFESTYLE , KURUKSHETRA

The employees of Mi Lifestyle were provided an awareness program on a direct marketing company about the importance of organic farming. Besides, usage of NOP & NPOP certified products was also told to them. A session of one and a half hors comprised of presentation followed by question answer session. This training session helped the employees to sell their products to their customers who are undergoing organic farming. The resource person was Dr. Anurag Tewari, Dean, Chitkara University.

WORKSHOP FOR STUDENTS

Culinary Arts & agriculture are deeply integrated to each other. Until & unless students of culinary arts are exposed to sustainable farming, they can't do justice to their profession. Hence, a 2-week workshop was organized for Students of Culinary Arts, from College of Hospitality.

Under the workshop, culinary arts students were educated about the principles of sustainable farming in one session & practical exposure at YEL-LOW POINT FARM in another session.

The resource person for the session was Dr. Anurag Tewari.

"Tell me and I forget, teach me and I may remember, involve me and I learn."

So the students of culinary arts were taught the theoretical aspects and provided practical experience in farming too..!!

The students actively participated in the workshop. They were full of queries in the first session & in the second session they had fun while learning in as they practically immersed themselves in the task of gardening and soiled their hands. Students learnt about vegetables, cereals, oilseed crops & mushroom production in sustainable mode. Students also observed the functioning of an organic waste de-composter positioned at Yellow Point Farm .

COMMITTEE MEMBERSHIP & CONTENT WRITING

RESEARCH PUBLICATIONS

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Achieving the sustainable development goals in agriculture using nano fertilizer in cereal based system

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ABSTRACT

In recent times, the application of engineered nanoparticles has increased in the agricultural sector due to their use as nano-pesticides, nano-fertilizer, nano-sensors etc. A field trial of Nano fertilizer in Pusa Basmati 1509 was laid down in the present study to promote sustainable agriculture in rice production to reduce the consumption of urea in the region. Magnetite (Fe_3O_4) was used as a nanofertilizer for the present study, synthesized using co-precipitation technique and characterized by X-ray Diffraction (XRD) to confirm the phase and purity of the material. Influence of Magnetite was observed on yield and quality attributes of Pusa Basmati 1509 in comparison to control as well as various sources of nitrogen. Nanofertilizer in combination with a reduced quantity of urea was beneficial for the yield enhancement (15.64 Qtls/Acre) and quality (64.9 % Brown Head Rice) improvement of Pusa Basmati 1509. The use of nanofertilizer in isolation resulted in higher yield (13.72 Qtls/Acre) compared to control (9.2 Qtls/Acre). The application of Farmyard manure and poultry manure too resulted in higher farm yield (12.3Qtls/Acre and 11.76 Qtls/Acre respectively) in comparison to control (9.2 Qtls/Acre). This showed that the combination of urea and nanofertilizer had a synergistic effect.Thus, use of nanofertilizer reduced urea consumption in Pusa Basmati 1509, enhancing its yield and improving brown head rice recovery.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Technological Interventions for Sustainability.

1. Introduction

Nanoscience is the modification of atoms or molecules to synthesize new products measuring a maximum of 100 nm [1]. This field has gained popularity due to its applications in nanosensors [2], nanomedicines [3], wastewater treatment [4], and nanofertilizers [5]. Day by day increasing pollution and deterioration of soil has resulted in decreasing the yield output and ultimately affecting the national economy [6]. Therefore, to improve the productivity efficiency, nanofertilizers are being used on a commercial scale [7]. The use of nanofertilizers helps to overcome the water and soil pollution problems and lower the carbon emissions in comparison to the conventional fertilizers that affect the climate severely [8]. Nanofertilizers provide a flow of nutrients to the crop and hence affect the quality and yield. India is a country with a variety of crops and Basmati Rice is nature's exclusive gift to this subcontinent. In comparison to other varieties of scented rice, Basmati is distinguished by its distinctive and delicately balanced combination of favored characteristics that distinguishes it from the rest (such as superfine kernels, exquisite aroma, sweet taste, soft texture, delicate curvature and linear kernel elongation with least breadth wise swelling on cooking) [9].

PB 1509 (IET 21960) is an early maturing Basmati Rice variety with seed to seed maturity of around 120 days and average yield of 15.7 Qtls/acre. It has been reported to produce an average yield of 5.6% over PUSA BASMATI1121 in the Basmati growing regions of Punjab, Haryana, Delhi and U.P. [10]. PB 1509 is known to facilitate less use of water (about 33% saving of irrigation water). PB1509 offers various advantages over other Basmati Rice varieties in INDIA, including non-shattering at maturity and non-lodging behavior due to its semi-dwarf height stem (95–100 cm) and early maturity. This cultivar yields about half the biomass of PB 1121 and hence may help reduce environmental pollution caused by rice straw burning. PB 1509 has extra slender grains (8.41 mm) with very occasional grain chalkiness and very good kernel length after cooking (19.1 mm). PB 1509 is quite popular in Punjab state as it fetches higher prices in the grain market. In the year 2018 it could attract prices as high as Rs 3000–3200 per Qtl. In the year 2018 it was grown in 41,100 Hectares [11] considering the area under cul-

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MSME DRIVEN TRAINING PROGRAMS

Dr. Anurag Tewari, Dean, Chitkara University, received the Award of Appreciation bfrom Dr V. K. Sharma, DIRECTOR, Ministry of Micro, Small & Medium Enterprises for his contribution in evaluation of Ideas under MSME Idea Hackathon 3.0 (Women).

MINISTRY OF MSME DRIVEN MANAGEMENT DEVELOPMENT PROGRAM ON SUSTAINABLE & GREEN PRODUCTS

MINISTRY OF MSME DRIVEN MANAGEMENT DEVELOPMENT PROGRAM ON SUSTAINABLE & GREEN PRODUCTS

Management Development Program on Sustainable & Green Products was conducted w.e.f.; 13th February 2024 to 19th February 2024. Mr. Krishan Kumar ((Asssistant Director, MSME) launched the program with his presentation on various schemes being run by Government of INDIA for the welfare of youngsters. The motive of the program was to appraise the students about the principles & methods of Sustainable & Green Products viz a viz, GoI schemes.

One & half hour sessions were conducted in morning hours. In a study tour participants had a hands-on training with respect to various agro-based technologies being show cased at YELLOW POINT FARM. Three faculty of the University, Manager UCO Bank (Jhansla) & MSME official addressed the participants & informed them about sustainable & green products. A total of 30 participants were chosen for the said training program. Of these 30 participants 25 were students of CHITKARA UNIVERSITY, 3 were non teaching staff & 2 were faculty. All the 30 participants were awarded a certificate on behalf of Ministry of MSME.

COLLABORATION

MoUs in the field of Agriculture Tourism are in place with many Premier Institutes.

AGRI TOURISM DEVELOPMENT COMPANY PVT LTD:

INDIAN INSTITUTE OF WHEAT & BARLEY RESEARCH (ICAR)

KHETI VIRASAT MISSION

NATIONAL DAIRY RESEARCH INSTITUTE

Dr. R. C. Aggarwal /DDG EDUCATION – INDIAN COUNCIL of AGRICULTURAL RESEARCH

NATIONAL INSTITUTE OF HIMALAYAN ENVIRONMENT

Dr ASHOK KUMAR / DIRECTOR – NATIONAL BUREAU OF PLANT GENETIC RESOURCES

DIRECTORATE OF MUSHROOM RESEARCH

Directorate of Mushroom Research (DMR) is a premier institute of Indian Council of Agricultural Research. It is located in the small city of Solan, at Himachal Pradesh. The outstanding research work of DMR on mushroom helped educate the local people of the region on the art of mushroom production. This effort of DMR highlighted Solan city which is now known by the name of Mushroom City of India.

During COVID 19 , CHITKARA University approached DMR for a Technical Report on Mushroom Production & its processing. DMR delivered a project report for 365 Tons Per Annum Button Mushroom Project & 100 Tons Per Annum Processing Unit. We attribute the credit for the research work to Dr. V P Sharma, Director – DMR.

Thereafter, Chitkara University **collaborated with DMR** for technical guidance in the area of Mushroom production & its processing. Insights of the DMR have helped improve our contribution towards Mushroom Production.

DEPARTMENT OF FOREST & WILDLIFE, PUNJAB

It is a matter of pride that CHITKARA UNIVERSITY & DEPARTMENT OF FOREST & WILDLIFE, PUNJAB will ink an MoU on Agro Forestry & R&D for the sake of forest region of PUNJAB state. We await eagerly for this noble venture as the MoU takes shape for the final approvals !!!

MAHARANA PRATAP HORTICULTURE UNIVERSITY,

In a joint venture with Maharana Pratap Horticulture University, Karnal, Haryana CHITKARA UNIVERSITY started Sustainable Mushroom production unit in Yellow Point Farm. Spawn run compost was developed by Maharana Pratap Horticulture University & mushroom production was carried out at Yellow Point Farm. 4.5 Qtls of mushroom developed at our Punjab campus was delivered in student hostels & DHABA in splits. Mushroom is the only edible vegetative item that consists of all 20 essential amino acids in it. This makes it of high demand product in Indian as well as international market

FUTURE PLANS

YELLOW POINT FARM

A N AGRO TECHNOLOGY HUB

at

CHITKARA UNIVERSITY, PUNJAB

AGRO TECHNOLOGY HUB

Recently, Yellow Point Farm was chosen as an Agro Technology Hub in Punjab campus of CHITKARA UNIVERSITY. In order to show case a dozen of agro based technologies **at one forum** we are creating state-of-the-art display as well as training center for students at the Yellow Point Farm. The goal is a space where all techniques of Agro-technology are put to use and students can be provided practical understanding and hands-on training so that they put these learnings to practice and can disseminate and /or commercialize these technologies in the outside world.

These agro based technologies could contribute towards educating youth of nearby regions, thus helping them improve agriculture and have better yield in their land; thus encouraging them to cultivate in our country rather than move aboard in search of greener horizons.

Agro Tourism can also be integrated with these agro technologies. Tourists will be invited in Yellow Point Farm to relish rural India & to observe its potential. The agro based technologies being nurtured at Yellow Point Farm are as following.

a. Organic Fruit Production
b. Organic Vegetable Production
c. Organic Farming of Cereals & Oil Seed Crops
d. Vertical Farming
e. Protected Agriculture Through Poly House
f. Hydroponics
g. Plant Nursery

ORGANIC FRUIT PRODUCTION

Organic fruit production essentially excludes the use of many inputs associated with modern farming, most notably synthetic pesticides and fertilizers. To the maximum extent possible, organic farming systems rely upon crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral- bearing rock powders and biological pest control. These components maintain soil productivity and tilth, supply plant nutrients and help to control insects, weeds and other pests.

ORGANIC VEGETABLE PRODUCTION

In addition to being a source of highly digestible carbohydrate and nutritionally complete protein, are also an excellent source of essential nutrients, glucosinolates, antioxidants, fibre and vitamins, particularly niacin, riboflavin, Thiamin and vitamins A and C, etc. Green leafy Vegetables such as amaranth, bathua and spinach etc., are cheaper source of folic acid. Vegetables are the best resource for overcoming micronutrient deficiencies. Judicious mix of vegetables can provide the recommended daily allowance for vitamin, folate as well as significant amounts of other essential mineral nutrients required for human health.

ORGANIC FARMING OF CEREALS & OILSEED CROPS

Punjab is the state wherein very high consumption of fertilizers & pesticides are consumed in agriculture. Hence, in order to overcome this problem Yellow Point Farm in the heartland of Basmati growing region of our country is following organic farming concept in cereals & oilseed crops. We have successfully grown Taraori Basmati in Yellow Point Farm using various NOP & NPOP certified products.

VERTICAL FARMING

To solve the challenge of space shortage , Vertical farming comes to the rescue. Vertical farming is the practice of growing crops in vertically stacked layers. Objective of vertical farming is to achieve superior production & quality in lesser area. Generally turmeric with high curcumin content is grown in vertical farming under protected cultivation. This ensures us total produce of 50 acres from just one acre area.

PROTECTED AGRICULTURE THROUGH POLY HOUSE

Poly house farming is a renowned modern method of farming which is designed to evolve the traditional strategy of farming that can bring new opportunities for better yield and profit while using lesser resources. Polyhouses play a significant role in **protecting plants from continuously changing weather and climatic conditions like heat, sun-light, and wind**. It helps plants grow at any time of the year. Every factor affecting the yield can be controlled in polyhouse farming.

HYDROPONICS

A plantation technique without using soil and using nutrient-rich water instead. Hydroponics is put forward as a solution to combat climate change, to reduce the environmental damage and species extinction caused by overexploitation and intensive farming.

PLANT NURSERY

A nursery is a man-made place for nurturing plants and where plants are grown naturally as well as artificially under controlled environment. These plants are grown through seeding or the saplings. Sowing healthy seeds or planting healthy seedlings is an important factor in achieving a healthy and productive crop. Seedlings are raised in nurseries for various crops, including vegetables, fruits and ornamental plants.

The campus already has a plant nursery where saplings are created. The said Nursery would be shifted to this upcoming Agro-hub for improvisation and updated techniques in the field of horticulture.

ORGANIC WASTE COMPOSTER

Composting bio-degradable waste to create manure has always been followed at Chitkara University . This has been done through Waste pits where the bio-degradable is collected and it converts to manure in the natural process of rotting.. CHITKARA University now uses “Roto Komposter R-500” organic waste composter for converting its wet waste into organic fertilizer. The capacity of the machine, which is placed at the Yellow Point Farm, to convert wet waste into compost, is 500 kg per day, including saw dust, food waste, garden waste and bacterial culture. It is a fully automated non heater based composting machine which transforms the wet waste including food waste, animal waste, garden waste into organic fertilizer in 14 days. Composting can have a positive effect on carbon emissions by reducing the amount of organic waste that ends up in landfills, where it would decompose and release methane, a potent green house gas. By combining the avoided methane emissions and the carbon sequestration potential, composting one ton of food waste instead of sending it to the landfill can result in total carbon savings of approximately 0.7 to 1.4 metric tons of CO_2 equivalent.

SEWAGE TREATMENT PLANT

Sewage treatment (or domestic wastewater treatment, municipal wastewater treatment) is a type of wastewater treatment which aims to remove contaminants from sewage to produce an effluent that is suitable to discharge to the surrounding environment or an intended reuse application, thereby preventing water pollution from raw sewage discharges. A new STP with a capacity of 2 MLD is now being installed at the Yellow Point Farm

MIYAWAKI FOREST

Miyawaki method is a revolutionary approach developed by the Japanese botanist Dr. Akira Miyawaki to create fastest growing self sustainable native forests. A Miyawaki micro-forest grows 10 times faster and is 30 times denser than conventional plantations. It employs rigorous techniques and processes in order to achieve these extraordinary results. After 2-3 years, it becomes virtually maintenance free and what would remain is a self sustainable permanent forest. We have already mentioned our efforts towards a Miyawaki Forest in the earlier pages. This would be one of the sustainable green activities at our Agro Hub.

MODERN MUSHROOM PRODUCTION UNIT

Mushroom cultivation has gained significant popularity in India due to its nutritional value, economic potential, and adaptability to various climatic conditions. In recent years, the integration of Internet of Things (IoT) technology has revolutionized the mushroom farming industry, making it more efficient, sustainable, and profitable. In the earlier section we have mentioned ur contribution in creating a sustainable Mushroom Production Unit. At the Agro – Hub, we now plan to create a Modern Mushroom Production Unit.

There can never be an end to desires and we hope that all our dreams and desire to contribute towards Sustainable Greenery may grow greener every day. May our efforts be manure enough to boost the growth of these ventures at the Agro-Hub and many more !!!