Vadamalai Media Group

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Agriculture & Industry Survey

India's Leading Business Magazine for Agriculture

Dr Sairam Reddy

With a Ph.D in Agriculture Biotechnology to his credit and varied, rich experience to back him up, the decision towards building his own entrepreneurial space, UrbanKissan was just a dream away.

Ms. Anu Meena

"We, at Agrowave, help farmers sell their produce, ensure that we hold a sustainable supply of fruits and vegetables directly from farmers."

Mr Chandrashekar Badsavle

An agriculturist all his life, the son of a freedom fighter. Currently promoting Saguna Rice Technique – a unique cultivation model which has the potential of great hope for farmers across the globe.

Mr Kenath B Menon

After a 20-year Industrial stint & Export Business in the USA & Middle East Mr Menon is now in India. He has passion to be part of Agriculture & Horticulture because life isn't just about making money, It is also about doing something worthwhile for the Humanity.

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Media industry scene today!

A country's media industry scene gives its civilisation and culture! How our media sector is doing?

The size, ownership, funding and the freedoms a media enjoys decides the purity of the media service.

Not all countries enjoy great reputations in the media industry. We, in India, inherited a great media tradition from our British colonial association. But today we need to invent ourselves to suit our times and our own country's priorities.

Vadamalai Media is a very small venture and priorities thus we have to be modest considering the fast-changing media world today. Of course we now live in a very radically changed world with new technological revolutions, with Internet and other technologies, specially the revolution communications technologies had transformed the way we live and communicate and do businesses.

As for the current media scenario, we needn't tell much, except to point out how every citizen of the entire world is driven by the mobile tech experiences. We have all the modern tech devices but do we really enjoy our freedoms thanks to these modern conveniences?

Do we have role models in the media scenario today?

And editors like C.P.Scott of the Manchester, Guardian or a very independent editor like Harold Evans who passed way, alas, recently.

The entire world is now on our palm thanks to the mobile phone and we enjoy so many freedoms to talks and converse with our friends and neighbours, why, with out own kith and kind even based abroad! So many conveniences at the touch of a click but do we enjoy all our freedoms? That is a question not many seem like asking!

Anyway, we were very much inspired and influenced by our experience in England where we went to Oxford for two generations. The London Times is still the bible for media men and women and though it has now become so emasculated there are stories from that long era of socially committed media times.

Today? And in India today?

If the current controversies and debates in India is any indication, it is now a chaotic world, indeed. The media known in both the print and the mediums are marked by a very deplorable tabloid culture and baseless allegations, crime stories and also very criminal stories hogging the headlines are the staples fed ever house of the day. The more tabloid the more noisy and sounding more profitable.

Now, the country is also undergoing some disturbing changes.

If the media is controlled by the monopoly capital, then, that is the end of media freedoms. Now, what chance is there for a development oriented media space?

Is there any chance that a sectors' vital sector indeed, like agriculture and rural development where the vast mass of people are concentrated has any chance to be heard in a fair and objective manner.

Long time ago, the government used to promote development journalism.

We like to request the government to create a space for the development journalism, with suitable incentives like priority in advertisement budgets and also many other priorities. The bureaucracy of the Indian broadcasting department almost ignored the development journalism space.

Of course much more important is the need to create more awareness and also support for development journalism space.

Our print publications for the last quarter of a century is something unique and we want the Indian media fraternity to know our existence!

We firmly believe the agriculture and rural development are the perennial themes and we hope we will see much awareness coming in the time of online media and even here we are already on the way to carve out a special place for our online, digital transformation, the way we prioritise and go for the overmuch needed awareness.

Only an awakened section of people in agriculture can raise productivity and help to raise the incomes of farmers and endless labour without much ideological noises. Thank you.

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Indian agriculture at the cross roads!

Our farmers must enjoy the benefits of new technological revolutions in not only cultivation but also marketing and realising higher incomes.

New Bills would only facilitate modernisation of out-moded practices!

Prime Minister's assurance of doubling of farmers incomes must be made a reality very soon!

Why there is continuation of farmers' agitations in Punjab and Haryana. Not much in other States? Down south in the Cauvery belt of the delta regions of Tanjore disticts the traditional paddy farmers are crying for inaction on the part of the government just for the opposite reasons of not lifting the harvested paddy that are left on the road sides and there is almost an outcry of neglect by the government, of course the state government. The simple reason is that what happens to big farmers in Punjab and Haryana is not big deal for the traditional small farmers of Tanjore who are left to tend for themselves or at the mercy of the state government which is not in a position to reform and restructure.

The traditional harvesting and marketing system in practice to put the paddy cultivation, procurement and marketing system in perspective we have to see only what is right now happening in the northern big States. You see there is in Punjab, Haryana there is already these traditional and powerful farmers' lobby states, there is enough clout and there are the big corporates like Adani business conglomerate that had set up almost a giant Grain silo, the Adani Agri Logistics plant warehouse of immense size and capacity to procure farmers grain product both paddy and wheat.

The Adani silos are in existence for the past 13 or so years and it can procure the paddy as they arrive and the silos changed the very face of the paddy procurement system. In Punjab, farmers are very happy to supply grain to Adani silos, the grain was accepted as soon as it is delivered and payments made within three days, say satisfied farmers interviewed by mainstream media.

This is not news for farmers in the southern states.

We have to write separately about the role of "arthiyas", there are an estimated 27,000 of them and there can't be any procurement system in Punjab without their presence and their well-established services and their role as buyers and money lenders and their intimate relationship with the farming families of the leading wheat producing state.

The Centre has enacted now the new legislation namely the 'The farmers' Produce. Trade And Commerce (promotion and facilitation) Act' on two principal counts. It provides greater choice to farmers and more importantly frees them from the clutches of commission agents.

But this is contested by actual farmers. Most farmers in practice are unhappy with these prospects, they don't like to lose the services of the commission agents. Of course they, the commission agents charge 2.5 percent commission on their services. The government says it wants to cut the commissions but this is unlikely to go immediately at least.

Why? This is the very old question, the commission agents who number almost 27,000 of them, all are licensed in the whole of Punjab and it is not an easy thing to change the age-old hold of these very able men who act as credit providers at the instant asking, no paper work, no other bureaucracy hurdles.

So, this is the ground level reality at the mandis level.

Of course, the Adani Agri Logistics weights and gives a correct figure, usually, the traditional system of weighing always under estimates and also payment, the government run FCI godowns it takes time and delays payments.

Each commission agent has at least about 100 farmers as close associates and so they know each other well. So the new assurances by the government would take time to be felt at the grassroots.

There are also other players in his space. There is one Fairfax company which has emerged as the biggest player in agricultural storage it is said that Fairfax-owned National Collateral Management Service which also gives farmers credit in the post-harvest season when there is a glut in the market and prices fall. Whether this commodities-trading type company is a new comer or there will be such players in the future we can't say right now. Anyway, there are going to be new players and new opportunities in the very near future.

The government's Farmers Produce Committees are also springing up in other parts of the country and only the future can tell !

Anyway, we have to welcome any new changes in the traditional types of farming systems. Farmers freedoms are paramount and we have to open our eyes and welcome new challenges.

One critical reason is the lack of any serious attempt to reform the age-old traditional agricultural practices.

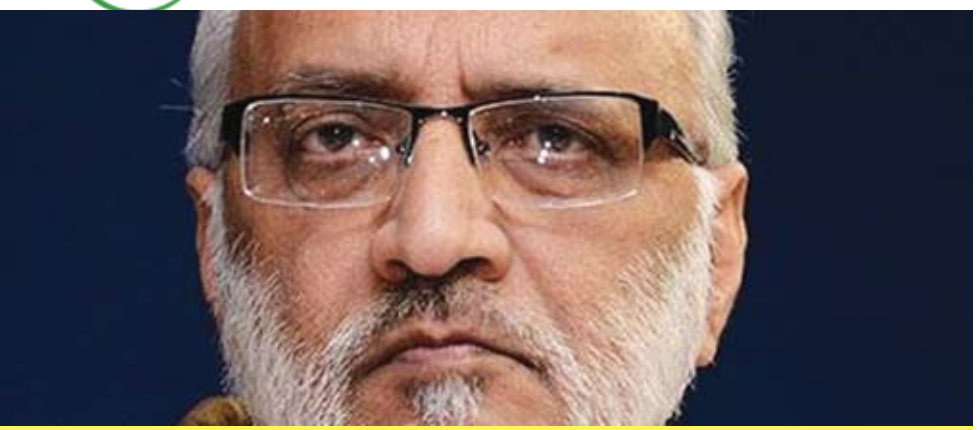
Machines have come in the form of tractors and other smaller machineries. In the South there is much change on this front.

The government must introduce new policies to modernise agriculture and also lessen the physical labour of the actual farmers. Also, rural housing projects must have special housing schemes for farmers, small and big ones.

Unless you have such special housing schemes, the big one would migrate to cities and the villages would all become deserted.

In fact these farming issues are all complex and the average political leaders, specially the populist, low calibre ones would only seek to drive a way the actual middle level farmers also to leave the villages.

Only the far-sighted thinkers and visionaries can only visualise the future of farming and the villages with a robust sense of realism and common sense.



Green shoots of the new farm bills will be visible in 3-5 years

The three farm bills introduced by the government last week is a bold step in the right direction and will lead to thousands of new experiments and unleash different models to improve the efficiency and competitiveness in agriculture, said Ashok Gulati, Infosys Chair, Professor for agriculture at ICRIER, New Delhi.

He was speaking at a webinar 'Will the new farm acts unleash the potential of Indian Agriculture?' organised by Chennai International Centre (CIC).

"You will start seeing the green shoots and I think in next 3-5 years horizon, you will see thousands of new experiments coming in to build direct supply lines connecting with the farmers, either with individual farmers or farmers organisations or FPOs as it happened in the case of milk cooperatives," Gulati said.

Possibility of green shoots

The Professor, however, said the green shoots also depend on complementary actions from the state governments where business people feel safe to invest.

"Bihar repealed APMC long back but nothing happened either in agriculture or manufacturing because it had some governance problems and there was no infrastructure in place," Gulati said, adding, "So, businesses will go where they can get good returns."

He also added that states, which welcomes investors with subsidies to create back-end infrastructure, along with FPOs, will take big lead and investors will be interested to go to such states to create processing facilities, valuation addition, and create organised retail or exports.

Noting that the Agricultural Produce Market Committee (APMC) is here to stay, Balram Singh Yadav, Managing Director of Godrej Agrovet said, "APMCs will not vanish.

They have infrastructure in place. They will become more efficient and reduce cost. Karnataka has already reduced the market fee, Haryana and Punjab recently reduced market fee for exports of Basmati which they never thought of earlier."

He also added that along with farm bills, the government is also pushing on creating more Farmer Producer Organization (FPOs) which will greatly help agriculture. "Consolidation of farmers is very important to realise a lot of benefits such as access to technology, credit, new skills and to be able to play in the e-commerce market, all of which requires consolidation and sufficient marketable surplus."

In the Union Budget 2019-20, the Government announced formation of 10,000 new FPOs to ensure economies of scale for farmers over the next five years.

Mekhala Krishnamurthy, Senior Fellow at Centre for Policy Research, New Delhi recalled how the Madhya Pradesh government's amendment allowing single license yards outside of mandis in 2002 led to widespread farmer strikes and huge resistance during those years.

"But over the years, the stronger mandis improved their competitiveness, upgraded systems and processes, besides recognising their unique strengths. Mandis also discovered its own comparative advantage during this process and interestingly many companies continue to buy both from farmers and mandis based on what their requirements were," Krishnamurthy said.

She also added that people often equate APMC mandis with minimum support price (MSP) which is a misconception. "No mandis in this country guarantees MSP, only if the government buys in the mandi, the government should guarantee MSP. Most mandis are markets for private trade between private sellers and buyers."

In his address, RG Chandramogan, MD, Hatsun Agro Product said while the milk cooperatives in Gujarat were formed to address the issues of unemployment, in Tamil Nadu the issue was about rapid urbanisation where farmers were looking for prosperity and not poverty alleviation.

He added that to bring prosperity in dairy farming, the company took several initiatives including reducing the basic cost to farmers, increasing the yield per animal using technology among others.

"We don't want him (farmers) to be financed by any local person so we forcibly brought all farmers to get directly paid by the bank even two years before demonitisation. Farmers were totally against us but in the next 6 months they understood the benefit," Chandramogan said and added that "Today, bankers are waiting at farmer's doorstep since their credibility has greatly increased."

"We have addressed productivity, cost reduction and avoided middleman. Over the years, the loyalty factor started playing among the farmers," he added.

Source : thehindubusinessline.com

India receives 7% higher rainfall; sowing up 5.7% annually

India receives 7% higher rainfall; sowing up 5.7% annually

At a time when Indian economy faces its worst crisis due to coronavirus-led lockdown, "above normal" monsoon is likely to provide some respite to agriculture sector, which contributes nearly 17 per cent of India's GDP and provides jobs to around 50 per cent of population. A report by CRISIL Research on Wednesday said that monsoon rains were 7 per cent above average this year, so far the best in five years, which led to 5.7 per cent year-on-year jump in sowing of crops.

As per the report, advancement in sowing has led to buoyant demand for agricultural inputs in the first quarter of this fiscal, albeit on a low base. June saw a 44 per cent jump in sowing over a low base of 2019, when a 19 per cent deficient monsoon had delayed kharif sowing. Though sowing growth has tapered with the kharif season's progress, but it is still expected to be 4-5 per cent higher on-year for the full season, it said.

"This year, southwest monsoon has covered majority of Indian states 12 days ahead of normal. Early arrival and good spatial and temporal distribution of rainfall advanced sowing across crops and states," Crisil said in its report.

The report said that increase in crop acreage and higher productivity will lead to a bumper kharif crop output, up 5-7 per cent on year-on-year basis.

CRISIL, in its last report in August, had forecasted a 2-3 per cent rise in sown area on-year at around 109 million hectares for kharif season 2020. It expected productivity to rise by 2-3 per cent over a low base of 2019, given the adequate water availability for critical growth stages. It estimated kharif output to rise 5-6 per cent on-year to a record, which would put downward pressure on prices of various commodities. Meanwhile, prices and profitability of vegetables are also likely to drop over a high base of 2019.

According to CRISIL, effective implementation of central and state government schemes will further support farmer incomes.

By Chitranjan Kumar
Source : businesstoday.in

Kisan Rail transports nutritious, immunity boosting Pomegranate from Maharashtra to Northern India

Kisan Rail, a blessing to farmers of Western Maharashtra, transports tonnes of nutritious and immunity boosting Pomegranate i.e. Anar to Northern India. So far in last one month transported more than 1100 tons. Farmers availing the benefit of the cheap and the fastest mode of transport are excited & happy as now the Kisan Rail is running thrice a week.

Kisan Rail is becoming popular day by day with the farmers of Maharashtra. It transports perishable goods like Anar, Capsicum, Cauliflower, lemon, Green chillies, Iced-Fish, live plants, Eggs and other vegetables from Sangola, Pandharpur, Kopergaon, Pune, Daund, Nashik, Manmad regions of Maharashtra. Out of the total perishable commodity transported by Kisan Rail so far, 1127.67 tonnes of Pomegranate were carried constituting about 61 percent of the perishable commodity. Started on 7th August 2020 as a weekly service from Devlali to Danapur and further extended upto Muzaffarpur and later attaching a link Rail at Manmad from Sangola/Pune, Kisan Rail is now running as a tri-weekly, shows the growing response from the Farmers. Pomegranate, the fruit has an impressive nutrient profile containing Vitamin C, Vitamin K, Folate, Potassium, etc. is being produced massively in western Maharashtra i.e Nashik, Pune and Solapur. According to the National Horticultural Board, the data provided by the National Research Centre on Pomegranate, Solapur, the share of Maharashtra in total production is 62.91%. Therefore, these huge produces are transported across India through road transport on trucks taking many days bearing huge cost, yielding low income for the farmers. Introduced by the Ministry of Railways with the support of Ministry of Agriculture Kisan Rail has brought hope & opportunity for the farmers to increase their income with faster mode of transport, fresh delivery of perishables, with no restriction on quantity, cheaper than road and saving huge transport costs including tolls. Officials of Akhil Maharashtra DalimbUtpadakSanshodhan Sangh, Pune expressed happiness that Kisan Rail by the Ministry of Railways has reduced the time as compared to other modes of transportation and since fresh goods are going to the market in less time, the demand for the fruits is looking good and yielding benefit to the farmers.

Source : krishijagran.com

News

Five IoT applications that are reshaping agriculture technology

India is a diverse and global agricultural powerhouse with its agrarian culture and varied regional climate significantly contributing to the global food basket.

In FY20 (till January 2020), exports of agricultural and processed food products totalled US$ 28.94 billion (Source:APEDA). Indian agricultural/ horticultural and processed foods are exported to more than 100 countries, chief among them being the Middle East, Southeast Asia, SAARC countries, the EU and the US.

India's food security depends on producing cereal crops, as well as increasing the production of fruits, vegetables and milk to meet the demands of a growing population with rising incomes as well as to grow revenue from agricultural exports.

This can be achieved only with an accelerated pace of transformation for a productive, competitive, diversified and sustainable agricultural sector in India. Technology is already playing a significant role in this transformation with many benefits delivered by application of the Internet of Things (IoT).

IoT innovations for small agricultural operations can significantly increase profit margins by minimizing the need for manual labour with automation, expediting machinery commands with remote and real-time monitoring, and allowing farmers to utilize resources more efficiently with preventative maintenance and environmental prediction. Mass embracement of these technology advancements in agriculture will allow small land holding farmers to manage more acreage, provide higher potential for profit, and higher yields on the upfront investments.

Following are five areas of innovation in farming technology that demonstrate how IoT is reshaping the agricultural landscape –

Environment and Micro-Climate Tracking

IoT is transforming traditional semi-automated weather stations into wireless units that give core climate framework information and give exact micro-climate data. These weather monitoring units alert farmers through an application on their phone or data center when acute risks, such as damaging frosts and heat waves, arise in areas local to their farms.

Real-Time Asset Monitoring

With assets distributed over several acres of land, travel, labour, and time; expenses can be cut by diminishing cross-property excursions to investigate fluid, fuel, feed tanks, ponds, and comparable resources. IoT monitoring technology does precisely that, permitting farmers to continuously track resource usage rates and improve delivery truck schedules to have the perfect measure of fuel, water, or feed available consistently.

Preventative maintenance is a strong suit of IoT technology. It is accomplished by equipping machineries, such as mining pumps, generators, and wind machines, with embedded IoT sensors. The technology alerts farmers in real-time when potential failures arise, eliminating the requirement for in-depth, hands-on diagnosis. Preventative maintenance for agricultural machinery can minimize unexpected costs and machine downtime due to progressive damages caused by overlooked issues leading to machine failure.

Remote Equipment Controls

Like monitoring assets, remote equipment can be controlled from centralized data centers, and even smartphones and wireless devices, to reduce travel time and costs. Remote power throttling can minimize electricity usage on equipment like generators, wind machines, pumps and valves located throughout the property. Equipment can be powered on or off at any time of the day from anywhere to expedite work cycles. Remote monitoring technology can also optimize refuelling schedules by measuring the exact run times for a given quantity of fuel and preventing pump issues from dry running. Technology can also help prevent expensive equipment theft with location tracking of each valuable asset, especially immobilising movable equipment such as tractors in case of a theft.

Cattle Tracking

Perhaps one of the most interesting IoT applications for agriculture is cattle tracking. Cattle movement can be tracked with network-connected collars and knowing their exact locations can prevent cattle loss or theft. Fertility tracking can ensure that each cow's small window of fertility time can be accounted for to optimize breeding opportunities. Furthermore, eating patterns and health-related activities can be monitored with a leg- or neck-mounted sensor to identify and monitor health issues efficiently.

Driverless Machines

Machine automation is not a new concept, as agriculturalists consistently have found ways to automate their equipment through IoT powered driverless machines bring automation to the next level. First, there is a slice in the costs required to pay laborers to man farm machines like tractors, seed drills, cultivators, and tillers, though the benefits of driverless machines do not stop with labour reductions.

Read full article @ https://bit.ly/2IcTUvX

Source : expresscomputer.in/news

INDIA'S AGRICULTURE TECHNOLOGY Can grow to $24.1 billion in 5 years

India's agriculture technology sector has the potential to grow manifold to $24.1 billion in the next five years, according to a new report. With a turnover of $204 million, India's agri-tech sector is at under 1% of its market potential today. A big chunk of the gains will likely be made by companies addressing supply chain and financial services solutions, driven by the availability of affordable high-speed internet and maturing of India's digital content ecosystem, the EY report on India's agri-tech potential said. The report has also forecast consolidation in the agri-tech space along with startups expanding horizontally to service the end-to-end needs of farmers within the next few years.

"Attractive market opportunity, nascency in investment funding and minuscule penetration by incumbent agritech players offer an opportunity for established players such as institutional retailers, ecommerce players and food processing companies to create impact at scale," said Ankur Pahwa, partner and national leader — ecommerce and consumer internet at EY India.

EY estimates that five key categories of agritech will control the lion's share of the sector's turnover, with the agritech market for supplying farm inputs being as big as $1.7 billion by 2025, the market for precision agriculture and farm management growing to $3.4 billion in that time, while the market for quality management and traceability could be worth $3 billion.

The market for tech enabled supply chain and output market linkages will be the largest segment, which could be worth $12 billion by 2025, according to EY. The second largest segment in the overall agritech market could be for financial services, with a market potential of $4.1 billion in the next five years. Funding in the sector so far is also skewed towards startups serving these five sectors, with a bulk of the money being pumped into startups building agri supply chains and market linkages.

Source : economictimes.indiatimes.com

Key positives for agri sector

Good monsoons, record sowing

Favourable monsoon, record kharif crop sowing and high reservoir levels are positive for the agriculture sector that contributes nearly 15% of India's GDP, credit ratings agency CARE Ratings said in a report.

The report said the above factors would spur rural incomes that could push up rural demand at the onset of the festive quarter, which would be a silver lining for economic growth as other sectors have seen more adverse impact of the pandemic. The economy is banking on the farm sector to grow by 3.5-4% across all quarters to prop up GDP growth, the report said. "To translate into spending power of farmers, price realisation would be important. All indications are that kharif output would be higher than that of last year for almost all major crops, a critical factor to determine how prices would shape up during harvest time. This will be important if the rural demand story has to play out in the festival season," CARE said in the report.

Large companies across consumer goods, appliances and durables and automobiles are pinning hopes on rural growth backed by higher farm incomes, good monsoons and government stimulus.

The country has so far witnessed favourable rains, with the South West monsoon at a six-year high. For the week ended September 2, 2020, rainfalls have been 31% higher than normal, the report said. CARE said nearly 88% of the country received excess to normal rainfalls while 12% have had deficient rainfalls so far.

Source : economictimes.indiatimes.com

Agriculture led revival?

Flawed claim!

A rather confident statement heard in the midst of India's COVID-19-induced economic slowdown is this: "Agriculture will lead India's economic revival". But how valid is this claim put forward by government spokespersons and some observers?

Four major arguments are offered. First, India's food grain production in 2019-20 was 3.7% higher than in 2018-19. The procurement of rabi wheat in 2020-21 was 12.6% higher than in 2019-20. These indicate, it is argued, resilience in the agricultural sector. Second, food inflation in the Q1 of 2020-21, at 9.2%, was higher than in the previous year due to "sustained demand for food". This shows a shift of terms of trade in favour of agriculture. Third, the area under kharif sowing in 2020-21 was 14% higher than in 2019-20. Higher kharif sowing was accompanied by higher tractor and fertilizer sales, which bodes well for economic recovery. Fourth, the government's economic package for agriculture — as part of the ₹20-lakh crore Atmanirbhar Bharat package — will further position agriculture as the engine of revival.

Rabi procurement

During the lockdown, State governments in many northern States put in considerable efforts to ensure that procurement did not suffer. As a result, procurement of rabi wheat was higher in 2020-21. However, this claim hides more than it reveals. As per official data, only 13.5% of paddy farmers and 16.2% of wheat farmers in India sell their harvest to a procurement agency at an assured Minimum Support Price (MSP). The rest sell their output to private traders at prices lower than MSP.

One should, then, be looking not at procurement but market arrivals. I compared total market arrivals of 15 major crops in India between March 15 and June 30 in 2019 and 2020. The market arrivals of all the 15 crops were lower in 2020 than in 2019. It was only in paddy, lentil, tomato and banana that market arrivals in 2020 constituted more than 75% of market arrivals in 2019. In wheat, barley, potato, cauliflower, cabbage and lady's finger, market arrivals in 2020 were between 50% and 75% of market arrivals in 2019. For gram, pigeon pea, onion, peas and mango, market arrivals in 2020 were less than half of market arrivals in 2019. In wheat, the most important rabi crop, only 61.6% of the arrivals in 2019 was recorded in 2020.

Thus, the most important problem faced by farmers during the lockdown was the loss of markets, stemming from the disruption in supply chains, closure of mandis and a fall in consumer food demand. Farmers suffered major loss of incomes, and higher procurement was hardly alleviating. In addition, there were major losses in the milk, meat and poultry sectors; industry associations estimate the total loss for the poultry industry at ₹25,000 crore.

Inflation and prices

Inflation rates estimated using consumer price indices are not representative of farmer's prices. Inflation was largely due to disruptions in supply chains and rise in trader margins. I examined the wholesale market prices for 15 agricultural commodities between March 15 and June 30, 2020. Prices of most crops declined. For example, average paddy prices were about ₹1,730 per quintal on March 23, but ₹1,691 per quintal on June 30. Average wheat prices were ₹2,045 per quintal on April 1, but ₹1,865 per quintal on June 30. A moderate uptick in prices was visible in a few vegetables, but not before June 2020.

The dark side of higher rural inflation in India is that small and marginal farmers are not net sellers, but net buyers of food. So, it was not just that farmer's prices fell; most were also forced to pay more for food purchases. There is also strong evidence from small sample surveys that rural households reduced food purchases during the lockdown. Thus, the claims that higher rural inflation benefited farmers, and that it was due to higher food demand, are misplaced.

Higher kharif sowing

There is no surprise in the growth of kharif sowings in 2020. Given that rabi incomes fell during the lockdown, many rural households may have returned to farming or intensified farming for food- and income-security. Lakhs of migrant workers returned to their villages from urban areas. They may have taken up agriculture in previously fallow or uncultivated lands. Data on monthly employment released by the Centre for Monitoring Indian Economy (CMIE) show that the number of persons employed as "farmers" in June and July 2019 were 11.2 crore and 11.4 crore, respectively. But in June and July 2020, these numbers rose to 13 crore and 12.6 crore, respectively.

These are indicators of distress, not prosperity. It is no cause for celebration also because the rural unemployment rates rose sharply in 2020, to 22.8% (April), 21.1% (May) and 9.5% (June). Even in August 2020, rural unemployment rates were higher than in February 2020 or August 2019.

By R. Ramakumar

Read full article @ https://bit.ly/2GhNlYE

Source : thehindu.com

ONLINE MEETINGS

@ www.agricultureinformation.com

Upcoming events

OCTOBER 14, 2020
11.00 AM
Dr. Bir Singh Negi on "Schemes and subsidies for food processing and value addition of fruit & vegetables"

03.00 PM
Dr. Sudha Narayanan on "Will the farm bill benefit the farmers?"

****

OCTOBER 15, 2020
11.00 AM
Mr. Altaf Aijaz Andrabi on "Saffron - highly priced spice - cultivation and marketing techniques.

03.00 PM
Dr. Venkatesh Devanur on "Nano technology based inputs for agriculture"

****

OCTOBER 16, 2020
11.00 AM
Mr. Japinder Wadhawan on "How I started my farm machinery business?

03.00 PM
Mr Sriram on "Hitech quality forestry plants, grafted fruit plants, flower plants and herbal plants"

****

OCTOBER 19, 2020
03.00 PM
Dr. R S Jadoun on " What is Sahaja Yoga? How it benefits farmers? "

****

OCTOBER 20, 2020
11.00 AM
Dr. Nita Khandekar on "Recent advances in soybean production technology"

03.00 PM
Mr. Sanket Belgudri on "Micro irrigation – Increasing farmers' yield using less resources"

****

OCTOBER 22, 2020
11.00 AM
Mr. Tejas Kulkarni on "My experience in organic fertiliser business"

03.00 PM
Prof. Suresh on "Achieving double digit growth in milk production by simple management approaches"

****

OCTOBER 23, 2020
11.00 AM
Mr. Abhijeet Bendre on "Hard water problems in farming and solutions"

03.00 PM
Dr. Parvinder Kaushal on "Everyday food : Growing vegetables – Simple sustainable methods"

****

OCTOBER 26, 2020
11.00 AM
Mr. Pushpakumar Rangasamy on "Orchid cultivation, marketing and economics"

****

OCTOBER 27, 2020
11.00 AM
Mr. Harshal Surange on "Cold storage and cold chain essential for storage of perishables"

03.00 PM
Mr. Madhavan Ellappan on "How to set up mango processing unit – Investment and economics"

****

OCTOBER 29, 2020
11.00 AM
Mr. Mandeep Verma on " Kiwi fruit cultivation, marketing and economics "

03.00 PM
Dr. N. Aswathanarayana Reddy on "Integrated pest management in mango"

****

OCTOBER 30, 2020
11.00 AM
Mr. Srinivas Katla on "Brown turkey and dayana – Cultivation & other details "

****

NOVEMBER 02, 2020
11.00 AM
Mr. Raju S.V on "Agriculture machinery – Types and usages for various stages of crop development"

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Dr. Ganesh Kumar B on "Linking livestock farmers to market to double the farmers income'

Dr. Ganesh Kumar B is the Principal Scientist, Agribusiness Management Division, ICAR-National Academy of Agricultural Research Management in Hyderabad, Telagana. His area of interest in agriculture is Livestock Economics, Marketing & Policy. To know more view https://bit.ly/3csRF2E

Mr. Sanjay Varma on "Increasing farmers income-with farm mechanisation, right use of technology and markets"

Mr. Sanjay Varma is the Regional Manager of Andreas STIHL India in Bangalore, Karnataka. His are of interest in agriculture is Farm Mechanization and has more than 10 years of experience in Agri Machinery, Agri Retail and Distribution, which has been key to transforming agriculture landscape in India. To know more view https://bit.ly/3017BEl https://bit.ly/32Q5cOA

Ms. Asha H C Sheshadri on "Anthurium – growing, packaging, marketing and future demand"

Ms. Asha Sheshadri is an Agriculturist and a Post Graduate in Sociology. She has been into agriculture for past 40 years and growing arecanut, pepper, rubber, agar wood, sandal wood, vanilla , few fruit crops and floriculture (anthurium and orchids). Their farm is about 68 acres located at Teerthahalli Taluk, Shimoga District, Karnataka in which high tech agriculture practices are done.

Dr. Krishna HC on "Postharvest management of fresh horticultural produce - Fruits, vegetables, flowers, plantation and spices"

Dr. Krishna HC is an Associate Professor – Postharvest Technology of University of Horticultural Sciences, Bagalkot, College of Horticulture in Kolar. He is specialized is maturity standards and harvesting, storage and packing of fruits; ripening technology of fruits. His area of interest is postharvest management of fresh horticultural produce like, fruits, vegetables, flowers, plantation and seed spices; judging maturity at harvest, good handling practices of fresh produce at field and shed , its storage, packing in enhancing postharvest quality etc.

Mr. Achal Singh on "Pearl contract farming"

Mr. Achal Singh is the Founder & CEO, Glittrati Farms Pvt Ltd., in Sawai Madhopur, Rajasthan. They are into connecting people to pearl farming sector. Mr. Achal Singh says as they are pioneers into this industry from last 12 years they have got contract farming concept in pearl farming sector and till date doing it successfully. Their Company has trained more than 10,000 people in India & abroad and have their pearl farms setup almost in every state of India.

Mr. Ramachandra Reddy Yeturu on "Agave cultivation marketing and economics"

Mr. Ramachandra Reddy Yeturu Director Yeturu Farms & Yeturu Bio-Tech Ltd., Hyderabad, Telangana. They are into growing of agave / cactus and aloevera since 2004 and multiplying the same to cater to the needs of poor farmers to cultivate the crops in drought-pron areas/waste lands were there is hardly any water, all these crops are grown with little rain fall and under humidity in the atmosphere, good results and good profit to farmers. To know more view https://bit.ly/3n1pGMl

Mr. Darshan Gautre on "PM FME Scheme-credit link subsidies for micro and small enterprises in food sector"

Mr. Darshan Gautre is the Associate Consultant at NXG Food Safety Works Pvt. Ltd., in Bangalore, Karnataka. His area of specialization is fresh food safety and quality assurance. Currently, he is assisting his clients for the PM FME Scheme which is a central government scheme through which the government is giving grants as well as credit link subsidies for micro and small enterprises in the food sector. To know more https://bit.ly/2Zy7lfP

Mr. Gajanan Kalyane on " Fruit Processing Technology "

Mr. Gajanan Kalyane is the Founder & Managing Director of FoodCognics India Pvt. Ltd., Pune, one of the leading food consultancy services in India. He is expert in forward Planning, Project Management, Spotting Business Opportunities, Implementing Plans and Market Intelligence. Mr. Gajanan Kalyane has done graduation in Food Science and Technology with excellent academic record and also underwent national, international seminars and trade fairs. He employed his innovative ideas for 7 consecutive years in progressive development of various food processing MNCs. To know more view https://bit.ly/3bNxGeD

Mr. Mohd Fareed Shamsi on "Setting-up herbal extraction unit"

Mr. Mohd Fareed Shamsi is the Proprietor of Able Engineering in Saharanpur, Uttar Pradesh. Able Engineering is a Fabrication company that offers their clients a wide breadth of experience and knowledge. Their team of professionals has vast experience in the Herbal Extraction Plants & Herbal and Solvent Extraction Plant Machinery, Pharmaceutical Plant Machinery, Food Processing Plant & Food Processing and Dairy & Milk Processing, Chemical and Calcium Machinery plants. To know more view https://bit.ly/3hEw08C

Mr. Mahesh BG on " Maize hybrid seeds suitable in different regions of India "

Mr. Mahesh BG , Zonal Manager, Eldorado Agritech Pvt Ltd ,Hyderabad has done M.Sc. Agriculture with specialization in Soil Science / Agriculture Chemistry and MBA in marketing. He has worked in various companies related to seeds mainly maize seeds. Eldorado Agritech provide world class seeds to Indian farmers at their door step. To know more view https://bit.ly/302lS3u

Padmashri Shri.Hukamchand Patidar on "How an organic farmer became a businessman?"

From a small village in south-eastern Rajasthan to international markets, Padmashri Shri. Hukumchand Patidar has made a name for himself in promoting organic farming. The 62-year-old farmer has made his village, Manpura, in Jhalawar district, famous in Japan, Switzerland and Germany, the three countries that import organic farm produce from the village. To know more view https://bit.ly/34sTXwP

Mr. Adarsh Kumar on "Cultivation of lemongrass and palmarosa for oil extraction"

Mr. Adarsh Kumar, Founder of Aaradhya Aromattics in Raipur, Chhattisgarh is an agriculture graduate from Anand Agriculture University, Gujarat. Aaradhya Aromattics are into cultivation, distillation and manufacturing of essential aromatic oils and do cultivation on their own as well as lease lands.

Mr. Naresh H. Chauhan on "Benefits of agro and food processing machines"

Mr. Naresh H. Chauhan is the Partner of Devika Industries Inc., Rajkot, Gujarat. They are manufacturer and supplier-cum-exporter of agri products processing machine like seed grain cleaning, grain grading machine for quality separation; D-stoner machine to remove stone from seed and grains; groundnut decorticator machine to process for deshelling of groundnut. He says, farmers and APMC traders requires these machines for processing. To know more https://bit.ly/34i9eAo

Mr. Anant Poddar on "Hydroponics - Future of farming"

Mr. Anant , Founder of Poddar Farms in Khurja, Uttar Pradesh says there is an ardent need of commercial hydroponics in the present era of excessive exploitation of natural resources and farmers too due to uncertainty of weather conditions. Also, it's the perfect choice for self subsistence and answer to all the chemical adulteration worries amongst the people. Poddar Farms is a hydroponics based farm-to-fork company that grows and delivers superior quality zero pesticide vegetables. With its innovative and hygienic work environment, the organization is the answer to all chemical adulteration worries among people. To know more view https://bit.ly/31RJbyF

Mr. H R Murthy on " Organic pepper cultivation in arecanut farm"

Mr. H R Murthy , Proprietor of Greengold Farm and President of Nesara Organic Trust in Mysore, Karnataka is a farmer practicing natural cultivation practices. He grows arecanut, pepper,coconut,avocado,lemon,guava,mango,sapota, tamarind and other fruit crops

Dr. Murugesan P on "Oil palm cultivation and economics"

Dr. Murugesan P is the Principal Scientist Division of Crop Improvement, ICAR CTCRI, Thiruvananthapuram, Kerala. His area of specialisation is breeding for hybrid seed/genetic stock production and PGR management in horticultural crops . To know more https://bit.ly/3mb1eHT

Mr. Kalidas Raj on "Chrysanthemum cultivation in open & protected areas"

Mr. Kalidas Raj, Partner, Agrri Unlimited in Bangalore, Karnataka are engaged in offering satisfactory range of plant, flowers & dried flowers etc. He says chrysanthemum flowers are the improved hybrid varieties imported from Netherlands and easy to grow & maintain. It grows in open and protected conditions round the year with different growing practices and can be grown in different locations. These flowers are used as pinched flowers for pooja and decoration purpose.

Dr. Pratap Singh Panwar on "Livestock Production & Management"

Dr. Pratap Singh Panwar is the Professor (LPM) of CCSHAU, College of Agriculture in Kaul, Kaithal has more than two decades of experience as teaching faculty for Livestock Production & Management; Law & IPRs; Consumer Protection Rights. Dr. Pratap Singh Panwar possess an expertise in domestic animal breed registration process and functioning of National Gene Bank for semen & somatic cells conservation. Having acquired expertise in animal evaluation, he has provided intelligence on several occasions as an Expert for government purchases and auctions.

Dr. T N Balamohan on "Ultra high density planting in guava"

Dr. T N Balamohan is the retired Dean and Professor – Horticulture in Tamil Nadu Agriculture University, Coimbatore. He is specialized in the perennial fruit trees cultivation namely banana, mango, papaya, and guava. Dr. Balamohan says, guava is a perennial fruit crop yielding twice a year. Area under guava is increasing owing to its medicinal and nutritive properties. High density planting is a new approach having 3 to 4 times more the population than the traditional system. This system yields more and uniform fruits for export market. Even a small farmer could produce a sizable yield and sustainable income by practicing the method.

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Ms. Anu Meena

Founder and CEO, AGROWAVE

What were your initial experiences?

I am a solo founder and so I struggled to build my team initially. That was one of my biggest challenges.

Being a fresh graduate I had zero financial back up and experience. To overcome that, I decided to raise funds first and build the team later. I raised investment based on my passion. I then built the team and launched Agrowave.

In terms of marketing, we basically sell the produce to hotel, canteens etc. We have different Apps giving us information on hotels and it gives our customer an easy way to order what they require without hassle as well. Since this segment is unorganized and B2B, we have a team who meet up with our clients and then we onboard them.

From the farmer perspective, we hire people from local villages and we make them micro entrepreneurs. They train farmers and help us onboard these farmers, buying the produce etc. In short, we are creating a network of micro entrepreneurs and a network of mobile pick up centres into different villages where farmers can come and sell their produce.

All our processes are technically driven. We have a mobile app through where they can fill in data like, what they want to sell, how much they want to sell, etc. We map the supply with the demand and then we send the truck over there and we do send them notifications regarding the time the truck will reach there, what location the truck would come to, the price they will get etc.

What is the name of the app?

It is Agrowave.

Today, what kind of challenges do you face?

There are different kind of challenges in every vertical. There can be cash crunch based on many factors - how the company gets funded, the market value of the products, etc. Then there has been operational challenges from time to time like maintaining the quality of the produce, implementing the technology in such an unorganized sector.

One must have technology iterations many times after understanding the user behavior since this is the segment which is not matured already. It is an unorganized segment where people are trying to build models now. Payments is a challenge in this model since it is a B2B model. People pay you in a week or 7 days/ 15 days in a month. Hence, you need to have working capital to do anything is Business to Business, especially in agriculture. Many farmers prefer cash payments, which is also a challenge. We are trying to resolve this by trying to see if we can have something technological which can help pay farmers instantly whenever we buy something from them.

There are challenges in terms of market conditions, price fluctuations, etc. This unorganized sector is littered with variables which needs a smart data intelligence oriented technology.

What crops did you focus on and where are the seeds/seedlings procured from?

We only deal with fruits and vegetables. We do not deal with seeds at all. We buy fruits and vegetables

We all experience a whole lot of things as and when we grow up. What we action in our adult life or the manner in which we behave are often a result of the sum total of these experiences.

"My mind often flashed excerpts of my childhood - those times when my grandfather used to struggle to sell his farm produce.

My research on this issue led me to understand that this was not just about my grandfather but is a story about fallen farmers all around India. So, I decided to work on this issue from 2017."

Ms. Anu Meena, who graduated from IIT Delhi in 2016, first worked in an American startup for a short while. This tenure helped her learn a lot of things about startups, unorganized set ups etc. This reinforced the pathway to her new venture Agrowave.

"We, at Agrowave, help farmers sell their produce, ensure that we hold a sustainable supply of fruits and vegetables directly from farmers."

directly from the farmer. We procure currently from different states - Rajasthan, Haryana, Punjab, MP, UP and sometimes from Maharashtra as well. Our businesses are based out at Delhi and Gurgaon.

Which segment do you target for sales?

The sales is made with hotels, restaurants etc. who are bulk users. We are also starting B2C now because during this pandemic, people are unable to go out. So, we are launching our app - one which is already there. We are launching it in Gurgaon as it is end-user healthy.

How do you segregate the rotten vegetables?

We do have sorting and grading at the farm. Before we procure the vegetables at the Mobile Pick up Stations (MPS), we send notifications to farmers regarding the quality we would be looking for. We do standardization for our organization in terms of Grade A, Grade B and Grade C. We do have teams in the villages who work with farmers to train them about quality, size of the produce etc. So, we do all the basic level grading at the farm itself.

What about the organic vegetables?

We don't have segmentations in terms of organic or inorganic. We do all vegetables in bulk. Organic is good for B2C. Also you need to cater premium segments since organic vegetables are expensive. Everybody cannot afford organic vegetables and then there are operational challenges as well to monitor if they are organic or not. In the Indian system, it is easy to get an organic certification and this segregation is difficult for us because we cannot be at the farm 24x7.

Is it feasible to start one such business in Eastern India, in your opinion?

Yes, in my opinion, it is feasible. There are two ways to look at this - the farm side and the supply side. Companies focus on different segments. Some focus on demand, some on supply, some focus on fruits and vegetables etc. It is a huge segment. India has huge diversity in its geography and in terms of quality, taste, etc. there is a good opportunity for anybody to enter into the agricultural sector.

Do you share the technology that you employ with other companies?

No, we maintain confidentiality regarding the technology we employ.

Which is the region that you focus on?

We are based in Delhi and supply is in Rajasthan, Haryana, MP, UP and Punjab.

Contact :
Ms. Anu Meena
info@agrowaves.in

Talking to

MR CHANDRASHEKAR BADSAVLE

AGRICULTURIST,
ARIVUTHOTTAM

Mr Chandrashekar Badsavle had been an agriculturist all his life. The son of a freedom fighter, he studied B.Sc Agriculture from Konkan Krishi Vidyapeeth, Dapoli, MH, India. After having acquired his Bachelors degree in 1970 he flew to America for his further studies to the University of California, Davis. After his post graduation, he worked there for 5 years.

Following his father's advise, he then returned to India in 1976, got married to Anuradha, a cancer immunologist, in 1977. Together with Anuradha, Chandrashekhar was always on a mission.

"We wanted to prove that a farmer can have a happy and nice life. The first 10 years was a struggle. After 10 years we promoted agro-tourism on our farm. This was in 1985-86. This phase gave us hope for a life of dignity. Since then, we have been a very successful farmer couple. I call it successful because our three children along with their spouses have been in foreign countries - Switzerland, Australia and Ireland. They have all returned to their roots. They have all settled close by to where we live. This is the biggest sign of our success."

Currently, Mr Chandrashekhar has been promoting Saguna Rice Technique – a unique cultivation model which has the potential of great hope for farmers across the globe.

What is the significance of your research?

The significance of SRT is that it is a regenerative method of farming. The existing methods of farming, of course, aim at producing more with the available resources at hand. Modern methods also end up hurting the ecosystem when you try to make things better. Using SRT we aim at better produce while regenerating the environment and the soil. I also fix the atmospheric CO_2 into the soil. I called it regenerative because I generate more life into the surroundings at the place where my food is produced.

Can you elaborate more on SRT?

This methodology can be applied to all crops. To explain better let us, for example, talk about rice. To cultivate rice, a farmer needs to plough, make a nursery (In Maharashtra, we practice burning the nursery land before sowing the seed). Then comes the transplanting. Transplanting operations require a lot of water because the farmer needs to do puddling which requires standing water. Once the puddling is done, the seedlings have to be uprooted from the nursery bed, brought to the transplanting area and planted. The farmer needs a plough/tractor and a lot of water and it also involves a lot of labor to do the transplanting of seedlings into the mud.

In SRT, all these hurdles of a rice farmer are taken away. In

SRT, the farmer can be free of dilemmas concerning optimum rainfall, water or irrigation. They do not need a plough/ tractor and they do not have to burden themselves with the need for huge labor. All this will contribute towards moving the happiness meter positively. This methodology also proves to improve the yield considerably. It is much more than what he or many generations of farmers have seen.

Where is this SRT method followed in India?

SRT method of rice cultivation is followed in about 16 districts of Maharashtra. That is in 5 districts of Vidarbha, 5 districts of coastal Konkan and Western Maharashtra. Farmers in another 5 to 6 districts having drought areas have also started using SRT for crops such as cotton, Soybean, Pigeon pea, Maize, etc. The outcomes with these farmers have been very successful. They are very happy. '

What are the advantages of the SRT method?

There are many advantages:

- The inputs that are required is minimal so the cost of cultivation goes down.
- The water requirement is at least 40-50% less. To produce 1 kg of rice, nature has to shower at least 3000 litres of water. Using this method that also gets drastically reduced.
- Rice farmers usually use a lot of fertilizers which is again drastically reduced in this method. Also, our method is such that the excess fertilizer doesn't get washed away and hence it doesn't pollute the nearby waterbodies etc.
- After having used this method, we have noticed the presence of earthworms in our paddy. This has happened for the first time. Earlier, Japan and America have tried to attract earthworms into paddy fields but have failed. The presence of earthworms in paddy is evidence that the soil is aerobic, which mean methane cannot thrive in the root zone area. Methane is far more dangerous than CO_2. These earthworms make burrows in the paddy fields, go deep into the soil for hibernation thereby transporting oxygen in the deeper levels of the soil. SRT is likely to be the most efficient model of cultivation.

Each time the farmer uses this method, the carbon level goes up and once the carbon level in the soil is more than 1%, all the food produced in that soil starts tasting sweeter. There is a scientific paper on this. The chemical formula of carbon is CHO, which is the same formula as that of sugar. If there is more sugar in the soil, plants absorb more sugar in the body which keeps insects away from the plant. This reduces the need to use insecticide.

Is this the same as organic farming?

No, we cannot call this organic farming. People can try using in their organic farms. But that is not our objective. Our objective is to increase the organic carbon of the soil rather than claiming it to be organic farming.

Can you briefly tell us about the SRT methodology?

In SRT method, the land is ploughed only once. Once the land is ploughed, a permanent raised bed should be made in specific dimensions. These dimensions are mentioned in our website - https://srt-zerotill.com/srt/. Once the permanent beds are made, two more things are required:

1. The SRT frame: SRT frame has got 20 pegs. Impacting the SRT frame on the bed makes 20 holes each time. The seeds are to be put into those holes and then it has to be covered.
2. Spray pump: To manage the weeds, we use weedicide combination 2 times. Once we use general purpose systemic weedicide to spray after the harvest of the earlier crop. We leave the roots of the previous crop in the soil. That is an important step. The second instance of weedicide is pre-emergence selective weedicide. If for example you have planted moong after paddy then we have to use selective weedicide.

We give fertilizer just once in case of rice, unlike 3-4 times like how farmers normally do. Within a year or two, once the organic carbon develops in the soil, our insecticide use is practically zero. This is basically how SRT functions. There are small technical aspects which can be viewed on our website.

How do you irrigate the plants?

In Maharashtra, paddy is rain fed. But if you need to provide irrigation, drip irrigation is the best suited.

People try avoiding weedicides usually...

That is one of the wrong notions in our country today. Recently I have visited America, Israel, China, Vietnam, etc. In all places they use ample amount of weedicides. I don't think the approach of not using weedicides is a great idea. By using this, carbon fixation takes place and the soil becomes healthy and microbial activities improve. People should use science and technology appropriately.

How has the feedback from farmers been after trying out the SRT method?

We have done a study called farmers' happiness index. We used 20 carefully designed questions and asked farmers to rate SRT based on those questions from 0-10. Upon analysis, we got 8.58 marks on an average. This shows that the farmers are extremely happy with this method of farming.

Before this, there was just a farm-

ers' happiness index that was done by the University of Malaysia. There they confirmed that a rice farmer can never be happy unless there is a radical change in the technique of rice cultivation. SRT is the answer to that. The rice farmer is happy and so is the environment and the soil.

What are your other areas of interest?

I am a full-time farmer who is 70 years old now. I have been an agriculturist for the last 45 years now. I love agro-tourism. My observation is that the youth who is able physically, technically, etc. is not interested in farming. This, I don't think is true just in India. I had attended a round table conference in Mexico where 26 farmers met from 20 countries. From that meeting I understand that this is the condition all over the world. The youth is not interested in farming. The answer to this is agro-tourism because the youth feels this work does not hold dignity. They see it as a hard, non-rewarding career which lacks lustre. Also, they see farmers being looked down upon. Agro-tourism helps solve that. It is a dignifying feeling when people from different parts of the world come to the farm and spend time with you. In the process they appreciate what you do and your products. So, agro-tourism is very close to my heart.

Another area of interest is that we have found a technique to prevent forest fires. We have come up with a solution to prevent forest fires in the country. (https://www.youtube.com/channel/UCwroahto39Tx1tB00Z3bJGw)

Another interest is to prevent - water hyacinth. Water hyacinth grows on water bodies like lakes, etc. It covers the surface of the water bodies. We have found a way to overcome the water hyacinth also.

Is this a government recognised model?

It has been recognised by the State Agricultural department of Maharashtra. At the Government of India level, the Indian Social Responsibility Network (ISRN) has also validated the technique. They have printed these projects in 4 volumes called The Vision of Antyodaya. SRT is printed in Vol 2 on page 270.

What is your advice to new farmers?

The most important thing if they wish to start SRT model is to get in touch with us. People today try to encash the knowledge and experience they have but we want to share it free of cost. People can come over to our farm or get in touch with us through phone, email or WhatsApp. We are most eager to help. People can visit our website (www.srt-zerotill.com) and youtube channel (https://www.youtube.com/channel/UC6s6gr6kNlpAzmcon_uOQEQ) also for more information.

Before passing away Stephen Hawking said, "The world is coming to a catastrophic end because of food shortage and global warming." SRT is an answer to both these issues.

Warren Buffet once said that very soon farmers will drive a Ferrari and IT experts will drive their tractor.

Farmers should adopt SRT, the easiest tool available free of cost. Farmers living a positive life ensures positive impact all over the globe.

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Mr Kenath B Menon

CONSULTANT - FARM MANAGEMENT

After a 20-year Industrial stint & Export Business in the USA & Middle East Mr.Kenath Balakrishna Menon is now in India. He has passion to be part of Agriculture & Horticulture because life isn't just about making money, It is also about doing something worthwhile for the Humanity.

"I was in my own business in the Middle East and United States. Now,back in India and have three entities - Green Planet Agri, Green and Brown Industries in Bangalore & Yosan Foods Pvt Ltd Mumbai. We are basically into farm management, organic cultivation of chosen medicinal herbs particularly Moringa Oleifera ,Tumeric, Tulasi etc. We cultivate in about 200 acres in Karnataka, 100 acres in Madhya Pradesh & 80 acres in Tamil Nadu. Also have cultivation in Maharashtra. We do buy back & cater to domestic market plus Exports to USA, Europe & China etc

Kenath follows dense cultivation, i.e.they grow about 20,000 plants in one acre for Moringa leaves and they get a reasonably good produce every year. They do about 6 times harvest of leaves. He sees a bright future for Moringa. World market projection for Moringa products from 2020 is about US DOLLAR Seven Billion per year. 80% of above Exports from India.

" Moringa leaves powder has 28-29% plant protein, 9 essential Amino acids, all essential vitamins, 46 anti oxidants with Minerals Iron,Calcium,Magnesium,Manganese,Phosphorus,Potassium & Zinc. Instead of all the synthetic stuff we get from pharmacies, Moringa leaves powder being plant origin is absorbed into body tissues in full quantum. Moringa proves to be very beneficial for the human body. It is also said to prevent various types of cancer because of Apoptosis-that is Programmed Progressive Cancer cell death. Regulates Hypertension & blood sugar too. All of this has been Researched out by Reputed Medical Groups in USA - NIH - National Institute of Health Baltimore & Johns Hopkins group of Hospitals & Medical college.

Also according to R & D they have conclusive evidence that Moringa powder produces Androgenic effect by enhancing sexual drive through increased serum & Testicular Testosterone levels,increased blood flow to the Male reproductive organs & stimulating Nervous system to enhance the sexual desire - Libido. Moringa has no adverse cardio vascular effects for men.

We add value to Organic Moringa dry leaves to produce Powder,Capsules and Tablets.Moringa seed oil - BEN OIL is a very versatile product which is highly effective for skin.Ben Oil works wonders in removing black heads, blemishes,pimples, Acne, black lining below eyes, stretch marks etc.

Are the leaves of the Moringa better than the pods?

Absolutely! Compared to the pods, the leaves are ingrained with large quantities of protein, vitamins, minerals and antioxidants. The harvesting and hygienic drying is very important. It should not be exposed to larger temperatures. It should be at about 30 degree centigrade. This is highly important for it to retain all its richness. We use our technical expertise to process moringa.

Is Tamil Nadu a suitable place for Moringa cultivation?

Tamil Nadu is extremely good. Both Karnataka and Maharashtra are good for Moringa cultivation. Also cultivate Moringa in Sohagpur, Madhya Pradesh on 100 acres which is absolutely fabulous.

Many people grow Moringa but seldom use most modern techniques. I have been growing 20,000 plants in an acre without hassles. The speciality is taking care of them well. The more care and attention you give to your plants the better will be the output and quality.

Can you tell us about your Buy back arrangements?

In the month of February this year I was invited by a European group in Sweden & Prague to sign a contract for Moringa. A few months prior to this a group of Chinese visited my farm; they gave me an order for 96 Lac Moringa Tablets. First batch was despatched. By then CORONA VIRUS hence One full container of Moringa dry leaves was shipped to Shanghai Port. We have direct exports and contractual agreements with many buyers hence we do Buy back.

My forecast is there is a huge requirement provided we cultivate organically. Moringa exports can happen to countries like USA, Europe, Japan, China, etc. All these countries emphasize greatly on Organic quality.

I have an advantage. I was dealing with US FDA 1:1 for about 15 years. I know their standard norms of quality and I always adhere to it 100%.So we see to it that all our products conform to International quality standards.

I do buy back. But, only for high quality produce.

Do you help farmers practice cultivation so as to reach this kind of Organic quality produce?

Yes, I help crop selection,land preparation, cultivation, harvest and post harvest support and buy back. I am very choosy I pick farms & farming community who are very sincere and passionate doing agriculture.

Consultant

Is there a minimum acreage required for you to support the cultivation?

You should have at least 10-15 acres for things to be feasible for farming community and me. Also, I have to visit occasionally because there are blind spots which may escape other's perception.. here lies expertise.

Can Intercropping be done with Moringa cultivation?

Intercropping can be done. But, when you are doing organic cultivation and if you are using some chemicals for any of the other crops, then it becomes a problem. But, otherwise fine. I have a unit producing Bio Nitrogen,Bio Phosphorus and Potash liquids-all Micro Biologically live organisms & culture which are organic really effective Microorganisms to improve quality and increase quantum yield.I have been doing this for several years now because I don't believe many to give me 100% genuine organic inputs.

We also introduced two organic preventive sprays. One is for Moringa and vegetables & all crops and a little more stronger one for black pepper, tea, cardamom etc.These products give 100% results.They are organic as they are plant based in origin.

Is the harvest / plucking of the leaves automated?

No. Such things happen abroad. Right now, we are dependant on trained manual labor in India. Harvest and post harvest activities must be done with high diligence. I have used solar dryers and all but it is not a practical option. We have drying shed with shade net with 50% UV-treated HDPE on the roof and it is very effective.The temperature is within control limits.

Do you know of people who would offer this kind of assistance to someone who intends to start small in about 1-2 acres of land?

If you are doing it on smaller plots of land, sufficient quantity yield will not be possible & logistical feasibility is limited, hence we suggest to do a minimum of 10 acres. In that case, I would strongly recommend to focus on the drumsticks itself. You can then sell it in the market or the nearest town. You get about 15k - 16k kilos per acre if you cultivate as per my consultancy. Last year Drumsticks were sold at the rate of Rs 300 - Rs 400 per kilo. Moringa for leaves and Drumsticks farming when done methodically will be lucrative at all times.

Tell us about organic method of cultivation.

Many people have the wrong impression and are misinformed about organic cultivation. I will give you the authentic and most pragmatic mode of organic cultivation, which gives you 100% results with less expense & more margins of profit, when done with proper know how.

The most important thing is to use farmyard manure or chicken litter etc. You will need 2-3 tons of this per acre, culture it and then keep mixing with sufficient moisture. Within 30 days it becomes powdery. This holds high amount of fertility because the bacteria multiplies rampantly and it is going to be spread on the land where you are going to cultivate your crop organically. This is a highly important step. This is also a very effective method to slowly convert the soil into organic mode where previously chemical cultivation was being done.

Plough your land twice with a tractor before you begin sowing.

Organic Agriculture

Organic Agriculture is a production system that sustains the health of soils, Ecosystems and People. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.Organic Agriculture combines tradition, innovation & science to benefit the shared environment & promote fair relationships & a good quality of life for all involved.

We use Organic farming methods which combine Scientific knowledge of ecology & modern technology with traditional farming practices based on naturally occurring Biological process.

While conventional Agriculture uses synthetic pesticides & chemical fertilizers, Organic farmers are restricted by regulations to using Natural plant based, Bio & organic pesticides & fertilizers.

Of course, you can use Bio Nitrogen,Bio Phosphorus,Bio Potash, etc to ramp up the fertility of your plot. The plants thereby get whatever they need. Once in 2 and half months, supply the plants with nutrients. Give a preventive organic pesticide spray once in 45-50 days to ensure that the plants are kept away from diseases. We manufacture our organic preventive spray using plant extract, etc. This is a highly researched product and the outcome is excellent. I have observed that there are many who do organic cultivation. But when their plants face some diseases, they spray the plants with some chemical spray sourced from one of the local stores. Their entire organic cultivation efforts gets washed away with that one step because the produce will contain chemical & pesticide residues.

What kind of irrigation methodology do you suggest for high density cultivation?

The irrigation system best suited would be either sprinkler or drip irrigation. The government gives subsidy for all this. Even if you think you cannot get subsidy, flood irrigation will also do. But,the irrigation should be done religiously. The timely application of nutrients & water for maintaining the soil moisture is very important.So do not over irrigate your plants but maintain the soil with sufficient moisture.

For Moringa,it is best to have a drip irrigation system in place.

Have you tried extraction of the powder?

Many people ask this and they try doing it. But, the answer is a big No.

1. Water extraction is not permissible because post extraction, you are going to dry the produce and then subject it to higher temperatures.

2. The other extraction methodology involves Ethyl alcohol usage. Here again, you are meddling with the product. You will not get the quantum of nutrients ingrained in Moringa and the entire philosophy of using Moringa powder for its benefits to the human body gets lost. In fact I would recommend to take Moringa leaves powder as no heat is treated in the process hence all the nutrients are present in full quantum.So Extracts of Moringa is not pragmatic at all.

Tell us about the products that you develop.

We are the first to introduce a few products. For instance, the taste of Moringa powder is to be made palatable. we use a special method and so it is sweetened with Stevia or other sweetening agents and use a few other items so that it fizzes out in water. This makes it more palatable. We also produce Moringa leaves powder, Moringa tablets, Moringa capsules all organic quality.

We market Turmeric with Curcumin. In 1990 when I was in the US, research was going on in a very big way. They have now established that it treats cancer. Oncologists over there have started prescribing it for cancer patients. It kills cancer cells. The main drawback of curcumin is its slow absorption into the blood stream because curcumin is an oil-soluble product. Oil cannot dissolve in water. We are doing a lot of R&D to counter this and very soon we will be coming up with a new product.

We produce Moringa seeds oil- BEN OIL which is 100% pure Natural plant origin highly effective for application in human skin especially on the face. For men & women all skin types benefit from using Ben oil.Apply few drops on the face and nicely massage, in few minutes the oil gets absorbed in the facial skin through the skin pores. This is amazing-the only oil which acts so fast & removes fine lines,wrinkles, improves the overall appearance of the facial skin & also an effective skin moisturizer.Facial skin texture improves a lot.

These are products that are essentially required in the market for all people. Today all of us are talking about is COVID. But cancer is still a huge evil,affected by a large percentage of people all over the globe.

We have more products being researched on. For me, it is not just the profit or the business, I want to do things that are beneficial for the human kind.

One of my friends, last year, went to participate in an Exhibition in Geneva. She took with her 10 kgs of Moringa powder. She was showing this at the customs in the Airport and she had all the certifications with her. Even then the customs people wouldn't allow it to pass. She said she had put in so much of money and effort plus all the certification was in place. The negotiation went on for half an hour to 45 minutes. One Customs Inspector, explained to her kindly that they have strict instructions from the Government and Pharma companies that no food supplements should be allowed because the sale of pharma products will then be affected. This is a sad scenario. But even then it is yet another stamp to show how effective & beneficial these products like Moringa oleifera is to your health,hence such restrictions.

Indian Ayurveda is an ancient Science and we in India are blessed immensely. The World Health Organization - WHO recently defined Herbal Medicine which is traditional medicine comprises many Therapeutic effects that have been in existence, since thousands of years even before the development of modern medicine & are still in use today.

India is sitting on a gold mine of well recorded & well practiced knowledge of traditional herbal medicines.we should take immense initiative to do following...

Document traditional uses of - single plant herbs ,cultivate medicinal plants free from pesticides & heavy metals, try to standardize molecule activity profile using modern techniques and safety and stability. Also mode of action in animals & efficiency in humans will also be supportive.Such scientifically generated data will project Herbal medicines in a proper perspective & help in sustained global market.

India can enter strategically with our time tested plant based herbs & medicines & Export, which are already accepted in Europe, USA and Japan & South America.Of course this novel methodology will increase our market share in the whole universe.

Moringa leaves powder could be consumed by all for IMMUNITY BOOST & PREVENTION OF MANY AILMENTS.The source of Moringa plant has been from the foot hills of Himalayas - says ZEICHNER.Many people in the Western World have been consuming Moringa products in order to prevent diseases & create Immunity. So why not us from India who have been using Moringa since about 4000 year long ?

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Mr Ishwar Pindoria

Date Palm Farmer
Hemkund Horticulture

It is one thing to understand agriculture and another to understand and strategize agricultural plans so that you do a larger good for yourself, everyone you meet and the environment in total. Mr Ishwar Pindoria has always been interested in nature and its goodness.

"Since childhood I was very much interested in gardening, pets etc. I have always been very close to nature. I always dreamt of building a very good farm. After finishing my higher secondary studies, I aimed at becoming a pilot and went for my training to Baroda for one and half years. Unfortunately, I had to come down and join my father's business due to personal reasons. I then started off with the business, changed a lot of stuff and increased production. After I settled down with my business, I still wanted to pursue my dream of farming.

We started farming in 2003. I didn't want a traditional farm. I wanted it to be something unique and so I visited Israel. I did a lot of farm visits over there to understand their technology. After I got back I started building my farm. The soil of the land which I had brought was very barren. We did all the cleaning etc. and planned to do date plant cultivation which was very suitable for the weather here. In 2003 we did a plantation of mangoes. It was in 2006 that we imported date plants and worked towards this plantation. Gradually we did a lot of studies too. Slowly we graduated into high-tech farming. Lot of activities are included in high-tech farming. In 2018, I realized my plantation wasn't really up for the weather conditions of Kutch. So we replaced the mango plantation with pomegranate. It is almost a year now and very soon our pomegranate trees also will bear fruit."

Today, the date palm from Mr Ishwar's palm fields is recognized as a brand in India and has been gaining popularity in the international market.

What were your initial costs and how did you manage to acquire export licenses?

We initially started off with the domestic market and it took a long time getting recognized in the domestic market. We know that the perishable market is completely different in comparison with the rest of the world. But still we did our post harvest grading, packing etc. in good standards as per Indian market. There were around 15-20% customers who wanted good quality which had good shelf life. Fortunately, these people were happy with what we were doing. When we introduced a premium amount, they were ready to pay. Slowly, we got recognized in the international market as well.

Which countries do you export to?

Initially we started exporting to Germany. We did all the certifications and formalities specified by our Government and customers and exported 5 tons to Germany. In the subsequent years we exported to other countries like UK, Malaysia, Bangladesh etc. We are getting enquiries from other countries as well. The issue that we are facing currently is logistics. Once we precool our product and send it to the international market, it needs to be taken care of well so that the cold chain isn't broken. This is very difficult because we send our products from here to Ahmedabad, from where it can be taken to other countries. But there aren't many flights from Ahmedabad.

Is your plant a tissue-culture plant or the regular plant?

We have two kinds of plantations. I had 20-22 acres. So, I thought I should also preserve our local varieties. These plants had been grown traditionally. They had huge thorns. Farmers never grew it commercially but they did grow it for home consumption in the periphery of the farms. There are a few varieties about which I had studied and was looking into. I wanted some good variety so I studied the plants starting from pollination. For two years I studied and according to the little knowledge I had at that time, I asked farmers to do some kind of pollination for me. I selected 3 varieties from different places in Kutch. I then did the nursery at my factory and raised these plants. In 10 acres I planted 1200 saplings, considering that 50% would be male and 50% female. In another 10 acres, I grew imported tissue culture plants. We imported it from Dubai. It was the Mari variety.

How many plants should be planted in 1 acre?

That depends on how you are going to manage the canopy and the plantations. A lot of things are to be considered before you plant - how much yield are you going to take from your plantation, how will the canopy management be done, etc. There are different concepts of plantation so one must plan. Even the Reliance folks have done ultra high density plantation for an experiment and it works very well.

You have to study the geological and climatic condition of the farm where you would like to cultivate. If somebody in Maharashtra says that they get x yield in high density plantation, the same rule may not apply for a different place. Tamil Nadu Agricultural University pioneers in ultra high density plantation.

Do you think they will get good rates in the domestic market as well or should they go for export market alone?

It has been almost 15 years now since we have been marketing dates. The first 3-7 years the prices we got was very good. But a very big plantation came up in my area and not just that people have started trying to grow dates in different parts of the country. This caused a dip in the demand and supply chain. The demand wasn't two high and the supply was huge. That is how we started focusing on the international market. People who focus on quality products definitely aim at getting the premium product. Even in the export market target the market where there is demand. We do not have the technology of exporting by sea because it takes a week for the nearest destination and these are perishable goods we are talking about. So, our choice is do it by air. By air, it is unfortunate that it is about Rs 70-80 a kg from here to UK and in the domestic market as well it is Rs 60/-. Hence, it is very difficult to focus on domestic market and that's why we are keen on the international market.

What kind of agricultural practices do you follow to ensure that yours is superior quality dates?

If you keep 2 products of the same variety in front of you, the first factor is the visual factor and the presentation. Then comes the taste. The first time a person buys at a premium price and puts it into his mouth there should be a wow factor for him to pick the same brand again.

To get that kind of output you should

study right from brewing to harvesting to grading, packing cleaning and the logistics, etc. Of course the seed to flesh ratio is very important and the look is also very important. There are so many factors. The most important for distance marketing is the shelf life.

I use maximum organic matter for my plants and I recycle all my organic waste into compost. We use cow dung manure etc. as well. The only addition we do although only about 10-15% is a binder for this farm waste so that it decomposes quickly. For decomposition, we use decomposition culture.

But those are not the only reasons. All your farm practices, irrigation scheduling, fruit development management, canopy management, bunch management, harvesting etc must be done to perfection. We have to be careful at every aspect. Also, our farm is Global G.A.P certified since the last 5 years.

Also, I have seen people taking the certificate just for the sake of it. It is one thing to do that and another to genuine-

ly follow the rules. As a farmer, from the bottom of our hearts we should know and be very much aware that we are not serving people with poison through our food material.

How expensive is the subsurface irrigation as compared to the typical system?

Whatever irrigation method we had, the in-line drip, we are using the pressure compensated drip line for the netafim irrigation. This was around Rs 6-8 a meter. We use the 16-18 Rs a meter. We did a trial. We thought that it was doing great but then gradually over a period of 3 years the entire farm was con-

vertedtosubsurface irrigation, that is around 10-12 inches because the soil in our area is literally sand. So, it was easy for us to manage. Even the river suction was very important for us to understand that there is no blockage. When the irrigation is stopped, there is a vacuum created inside the dripline so that it doesn't suck any sand particles inside.

Do yo use any liquid fertilizer?

Yes, we use water soluble fertilizers. We keep record of all day to day farm activities as per Global G.A.P requirements. We have farm records for the last 10-12 years. For mango we only use pesticides in severe conditions, we don't do it otherwise. Now, for example fruit flies, they can be controlled without any pesticides. There are so many other ways of keeping them away. For date palm there is no need to use any chemicals.

What is the difference in premium price between domestic and export market?

In my experience of marketing perishable goods, there is so much uncertainty. The returns we get is completely unpredictable. For example, in the last few weeks, a friend of mine had pomegranate worth 2 crore ready to be sold. He also finished making his deal. 2 trucks were loaded and shipment was done. Due to COVID-19 lockdown, he was ruined because of this crop. Similarly, even international factors keep dynamically changing.

From country to country things change. It is difficult to tell you what exactly is the premium price. All I can say is just do your best and what needs to come to you will come.

On an average, I can perhaps say that one can make about 1.5 times more in the international market when compared to the domestic market. From season to season and week to week this can change.

Dates come in from so many countries these days isn't it?

1. That's different; it is the dried variety. The ones we deal with is the fresh dates. Varieties which grow in India are fresh dates.

Recently in Rajasthan they are trying to grow the dry date variety and they are still learning. In my region it is not possible because the maturity of the fruit is towards monsoon when the humidity is really high and it gets contaminated. So, we cannot do dry dates here. There are different varieties of dry and fresh dates.

What is the shelf life of fresh date?

That depends on the variety. The variety which we import has a shelf life of 4-5 days max. If you handle it very well, it may go up by 2-3 days more. Not more than that. The life of dates cannot be extended. There are lots of trials being carried out. Till date there has been no solution achieved to increase the shelf life of dates.

How long does it take for the first harvest?

In my farm, I got my first harvest in the 18th month. It wasn't commercial. This was the sample fruits. Depending on the climate and how well you take care of your plants this varies. In a commercial set up usually you get your first harvest by the 3rd or 4th year. Our first harvest was splendid, the fruits were touching the ground. This plant normally grows 12-15 inches every year. It gives you fruits commercially for 50-60 years.

There are other constraints. As the height of the plant grows, you cannot work easily on reaping your harvest because you will need to climb the trees almost everyday. These are things farmers will not know or give heed to. After 10 -15 years you realize that you need to hire a lot of skilled labor to do all the work.

What should be the minimum area from a commercial stand point?

At least 1 acre - that is 50 plants. The maturity of these dates is July. First thing to understand is that you shouldn't have monsoon or even 90% humidity during that time or else the crop will be destroyed. There has been 2-3 years when we lost almost 50-60% of our crops. This is with a minimum of 5-7 inches rain.

Remember that date palm is a crop of the desert. All desert conditions will suit the crop beautifully. The hat in fire and foot in water. It is such a hardy plant that it can survive even in the saltiest of waters. It will give you good crops. The date palm grows 23 degrees north and 23 degrees south of the equator. It is not a perennial crop. You get a harvest once in 12 months. If the rain takes that away, your 12 months of toil is gone.

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Mr Abhiram Seth

Founder, AquAgri Processing Pvt Ltd.

We talk of agriculture, sustainability, environment protection, etc.with Mr.Abhiram Seth who who works in a less crowded space of seaweed cultivation. When most people focussed on land cultivation, his destination was the sea. The story begins with Pepsi.

In the intial days of Pepsi coming to India, the company was bound to fulfil certain obligations – Exports and working with farmers being some of them. To meet the requirements of companys Frito Lays business and the export oriented tomato paste plant PepsiCo needed to have a robust agriculture and supply chain to sustain it. This lead to a very productive engagement with the farmers and setting up of one of the first successful contract farming arrangements with the farmers.

Mr. Abiram Seth joined PepsiCo after two decades into his career. "I joined PepsiCo and was with them for 15 years looking after Agriculture Exports, Corporate Affairs and Communications."

Seaweed cultivation idea was introduced by one of Pepsi's export customers who suggested that given our contract farming experience why don't we explore seaweed cultivation for which they could provide buying commitment and this inititive would also fit in with the mandate of farmer engagement of the company.

How did you go about it before plunging into this venture?

We thought it to be an interesting concept and not knowing anything about seaweed cultivation, I wrote to the National Institute of Oceanography. They very promptly responded asking us to contact CSIR (Council of Scientific and Industrial Research) Headquarters.

CSIR directed us to Central Salt and Marine Chemical Research Institute (CSMCRI). Having reached them we began a dialogue and a long enduring relationship was forged. This was the genesis and we started the trials on seaweed cultivation. Initially, we got about 20-30 kg of planting material from CSMCRI for starting the cultivation. But, before this there was an interesting period - we had to crack to whom does the sea coast belong to. This took a long time and huge effort to crack. Just like the seafront is used for ports and jettys, we got a 1000mt area on the coastline from the Tamil Nadu Maritime Board at the prices that they charged from institutions running a port or a jetty. It took us almost 2 years to multiply the planting material by employing people in coastal regions on daily wages to produce adequate bio mass, which could then be given out to cultivators for cultivation.

What were the hurdles?

However, we realised that we could pay the lease rent to the Martime Board for the seed multiplication on a project mode. But that was not the kind of price that cultivators could pay and still make it a viable vocation.

Around this time in a meeting with Chief Minister of Tamil Nadu Late Dr.J.Jayalalitha and Former Chairman and CEO of Pepsi Co. Indra Nooyi, in which I was also present, this came up as a point of discussion. Dr.Jayalalitha liked the idea and immediately decided to support the initiative and so the gov-

Seaweed Cultivation

ernment order was issued by the Tamil Nadu Government permitting the cultivation to the coastal communities and women self help groups in the Palk Bay area.

That brings me to the next part of it. When Pepsi's cultivation efforts began and they became a news-worthy item, we realised a lot of institutions had received large amounts of funding from the government of India for promoting seaweed cultivation, but had failed to demonstrate any tangible results and they became insecure. They felt threatened that the questions would now be asked to account for all that money they had received. Their instinctive reaction was to say that they could have also cultivated the Kappaphycus species which we had started cultivating sourcing it from the CSIR system. But they positioned themselves to say that they had not gone into Kappaphycus cultivation, as it is an invasive species which is not environmentally friendly and it will proliferate and take over the entire ecosystem. This saved them from accounting for their failures to cultivate any seaweeds.

Ironically, 20 years since the cultivation began and still there is a shortage of planting material and this species of seaweed commands a very high global price. However, this argument still continues to plaque the whole initiative. Nobody is willing to look at the objective reality that if something has not proliferated and is in short supply even at the end of 20 years with continious increase in price year on year, to reach a level of being purchased at Rs.45- Rs.50 per kg, how can it be invasive? Normally, invasive species are the type which proliferates, have no value, no utilization and becomes a menace such as water hycainth.

Thanks to these unsustantiated allegations in the gulf areas cultivation is not permitted even though in these areas cultivation can take place for 12 months and also the growth is faster. This issue remains unresolved till date.

Formation of Aquagri

When Mr.Abhiram was leaving PepsiCo in 2008, they were clear about not continuing with the seaweed cultivation programme as Pepsico believed that the commercial viability had been established and as it is not part of its core business it should be run by other interested parties. Hence, Abhiram decided to take over the business along with the complete team and founded Aquagri Processing Pvt Ltd which took over the inititative and built on it and scaled it up over the last 12 years.

Honourable Prime Minister of India Shri Narendra Modi has spoken about the importance of seaweed cultivation and how it should be promoted on mission mode to help the coastal communities as a viable alternative income source and that it has a huge potential to involve Female Self Helf Groups. He also explains in his speeches the wide areas of utilisation of seaweed in various sectors such as Agricluture, Pharmaceuitcal, Neutraceuitcal, Animal Feed etc.

Seaweed cultivation has multiple benefits including providing sustainable livelihood for people. With an investment of under a lakh of Rupees for the infrastructure and the planting material it can deliver an income of Rs 20,000 to 30,000 a month to an individual for at least 8 months of the year.

Seaweed cultivation apart from livelihood creation has many other positive environmental impacts.

Seaweed cultivation sequesters Carbon dioxide which is dissolved in water. It is like a carbon sink. Even if you don't have any utilisation of the seaweeed, allowing it to proliferate helps in carbon sequestration and help prevent oceans from acidification and deoxygenation and mainatians ecological balance creating a more conducive environment for fish population to thrive. If you co-cultivate seaweed and fish together, you can maintain the oxygen level in water which is necessary for fish culture.

Uses of Seaweeds

There are multiple applications from seaweed. They are used for making hydrocolloid for the food processing industries with applications as a thickener, gelling agent etc. Seaweeds have very large agronomic use as a biostimulants which help improve fertilizer use efficiency and helps crops combat abiotic & biotic stress and help in soil conditioning by positively impacting the soil microbial population.

After a 3 years study at 43 locations across 20 States of India with State Agriculture Universities and ICAR Research Stations it has clearly been demonstarted that seaweed based bio-stimulants can reduce use of Chemical Fertiliser by 25%, which is one of the key goals of the present government.

Seaweeds used as an animal feed supplement are proven to be very beneficial because of their anti-oxidant properties and it improves their immune-modulation response significant-

ly. Detailed studies conducted by renowned Institutes like NDRI, IVRI and CARI under a NIMITLI project sanctioned by CSIR where Aquagri was the industry partner prove the role seaweed supplements can play for animal health, immunity and producivity.

Is aqua culture and seaweed cultivation the same?

Aqua culture is wider. Aqua culture could also mean fish culture. But seaweed cultivation is part of aqua culture. Anything you cultivate in the sea or in water is aqua culture. When you do it in sea it is called marine aqua culture. Aqua culture can be cultivation done in ponds as well.

Where is seaweed grown in India?

Initially, before this project began there was only collection of naturally occurring seaweeds , which drifts near the shore during certain seasons. Mostly in Gulf of Mannar and Palk Bay and some parts of Gulf of Kutch.

There are 30 species of seaweed having commercial value, but only 6 species are cultivated commercially across the globe. The only species which has shown commercial success in India is Kappaphycus alvarezii which was started by Pepsi Co. and continued by Aquagri Processing Private Ltd.

The cultivation is done by raft culture or by using the monoline method. In the raft method a 3m x 3m bamboo raft is constructed on which the rope is tied with small bits of the seaweed are strung in loops. 60Kg is planted per raft and in a 45 days cycle it grows to around 300Kg. It can be continuously cultivated because you can plant one raft a day and harvest one raft a day. So, it is a continuous process unlike normal crop cultivation where you harvest perhaps 120 days later at the least.

In India seaweed cultivation is taking place in Palk Bay area and in a few other districts of Tamil Nadue.e.g. Ramnathpuram, Tuticorin and Puthukottai. Globally, the largest producer of seaweed is Indonesia. They produce over 11 million tons, in our best year we have produced a meager 2000MT.

However, the cultivation though best suited to be undertaken in the Gulf areas is still not permitted due to false invasion concerns. These concerns have been contradicted both by the CSIR and the ICAR system scientists based on multiple objective surveys carried out by them over the past years. National Academy of Agriculture Sciences had produced a policy paper as early as 2003,recommending that seaweed cultivation should be taken up on a mission mode. As a consequence of fale invasion concenrns the cultivation is largely limited in Palk Bay area which is not a Gulf area but it is under the shadow of Sri Lanka island. That is the only area where cultivation in a commercial format is still thriving.

However due to the efforts of the Niti Aayog and the Fisheries Ministry a comprehensive review has been launched and this unnecessary controversy should soon be put to rest ushering in the era of high growth in a few months time.

Farmer take up seaweed cultivation or is it suitable only for a large scale corporate operation?

Currently local coastal communities undertake seaweed cultivation in India and the best model is to work along with them and by making them partners.

The motto of our company Aquagri Processing which is founded on a bed rock of knowledge and is driven by the need to constantly find innovative solutions that improve the livelihood opportunities of the growers while having a positive impact on the environment and enhancing the lives of the communities within which we operate.

All our worth is with our group of cultivators to whom we support by helping them source the necessary infrastructure, this is supported by the company and also by institutional funds from the government. It is a contract farming model with assured price buy-back for the entire quantity of seaweed cultivated irrespective of the market conditions.

It is also important to note that cultivation in Indonesia and Philippines is also largely undertaken by small family owned farms.

If someone is interested in exploring seaweed cultivation, what is the first step they need to take?

The first step is to identify a suitable location. A suitable location is where tidal amplitude is low, sea water is not polluted, has a community of people around that area who are willing to work on it. Once you identify such a spot, pilot cultivation can be done in that area., If that proves to be successful, then it can be promoted by giving extensive support to the farmers.

What are the challenges of seaweed cultivation and what are the challenges you have faced?

The biggest challenge is regulation. Everybody says that it should be promoted but our regulation actually prohibits it. As I mentioned, the cultivation is most suitable in gulf areas.

In Indonesia and Philippines, who are the major producers, it takes place only in the gulf areas - around islands that they have. However these concermns are now being addressed at the highest level in the Government and should be resolved soon.

Are there countries other than India, Philippines and Indonesia cultivating seaweed?

It is largely cultivated in China, Malaysia, Indonesia, Philippines and in the Indian Ocean belt. We are not even competing as we produce around 2000MT when Indonesia alone produces around 11 Million Tons.

Is seaweed important?

Seaweed is extremely important. Apart from the known areas of hydrocolloid and bio stimulants(the food thickening agents) it has very interesting compounds. Reliance has issued an advisory that they believe because of the high antioxidant properties it could have some very strong antiviral properties as well. Our studies with Indian Veterinary Research Institute (IVRI) as well as Central Avian Research Institute (CARI) have shown very strong antioxidant properties which actually lead to very significant improvement in immune modulation response in cattle and poultry. Globally a lot of Aquafeed supplements are also being made from seaweed.

What would your advice be to some one who is keen on venturing into this space?

It is best to focus on one part. Dont focus on becoming an integrated player because even if you do integrated production, marketing it is a big challenge. The only people who should get into it, should be people who believe in it and who really want to focus on it because it won't give quick return on investment. In any geography, you will only bring planting materials of 100kg or 200kg from which it has to be multiplied. Then you will increase the number of cultivators by providing them the planting material. That is when the commercial quantities will begin to come in. Each raft to be planted needs 60kg which gives an output of 300kg. You need at least 200 raft to get any significant production for you in the long run. We currently have close to 10,000 rafts, which is down from about 20,000 that we had at one point in time.

In 2017 the Indian Farmers' Fertilizer Cooperative became joint venture partner with us. They took 50% equity of the company and they market our biostimulant under the brand name of 'Sagarika', It is one of the fastest growing products on their portfolio.

Our business model stabilized only when we got a strong partner like IFFCO who had the ability to market the bio-stimulant product for agriculture and had the last mile distribution set-up. Now with multiple success stories shared by the farmers we get much greater confidence to target high growth as we can see our seaweed products making a huge impact on both the seaweed cultivators and the Indian farmers. We now make biostimulant and hydrocolloid and will soon be introducing animal nutrition products.

Anything else you would like to share before we wrap up?

It is a very interesting domain and for it to become an industry, many more people need to come in. Right now given the focus this domain is being assigned by the Government of India it is bound to peak in the coming years and its an idea whose time has come. We would be happy to support any of the entrepreneurs who would like to venture into this space

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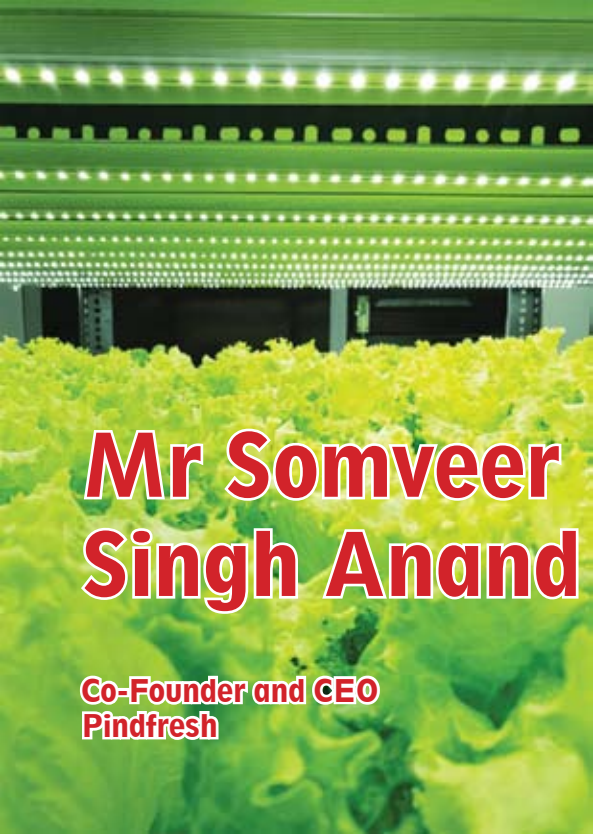


Mr Somveer Singh Anand

Co-Founder and CEO Pindfresh

The shift from being a banker and then heading a venture capitalist company in the US for about 5 years to plunging into agriculture took birth on personal grounds. During his life journey, Mr. Somveer Singh Anand realised something rather important.

"Our food chain is extremely polluted. Even most people selling organic food is, in reality, selling slightly polished yet polluted food. This is true at least in North India - Punjab, Haryana region where I am from. It was the food bowl of India at one point in time. The amount of insecticide in our food is huge. This coupled with our falling water and contaminated water tables, etc. led us to the decision that we need to work in the health space and food makes a unique place to start. So, I thought I will do a start up venture in which everything will be in an online tech-like model. Thinking of clean food, we thought we would opt for hydroponics and this was about 8 years ago.

From those 8 years to now, there have been 50 odd hydroponic farms that have been around. About 45 of these are shut down currently and the 5-6 of them that are still available are run by very large industrialists like Dabur, DS Group etc."

If hydroponics is promising, why is it that many of these farm concepts fail?

The reason why lot of these hydroponic farms failed was because of two main reasons:

1. Very less know much about Hydroponics. Everyone sees Youtube videos and think they can fix it. The biggest problem in growing Hydroponics in India is that above 28 degrees Celsius, the whole technology fails. If you cultivate anything say in summer in Delhi, it is bound to fail.

2. The produce that comes from the hydroponics system is slightly more expensive than the produce cultivated using the traditional methods. The moment you try marketing quality, the amount of money that goes in is not justified by the return you get.

To mitigate this lot of innovation began:

1. People started doing cocoa peat gardening. You use cocoa peat instead of clay ball substrate and lights etc to ensure a sterile medium to grow the plants.

2. Vertical indoor hydroponics. This is a huge rage and the reason is that 80% of indoor hydroponics is used to grow one particular drug called mariguana in the US. That is why the interest in that is huge. It is legal in the US and people have the ability to grow it. We took the same technology and thought we can use it to grow food in a vertical and economic manner.

Tell us how you went about setting up your farm.

We got our kits from the US and started reverse engineering. We reverse engineered everything. We experimented with rich men's vegetables - kale, lettuce etc. We started off our farm about 3 years ago and there was this guy in Goa called Nayak who did the exact same thing.

How much minimum space would one need to set up a hydroponic farm?

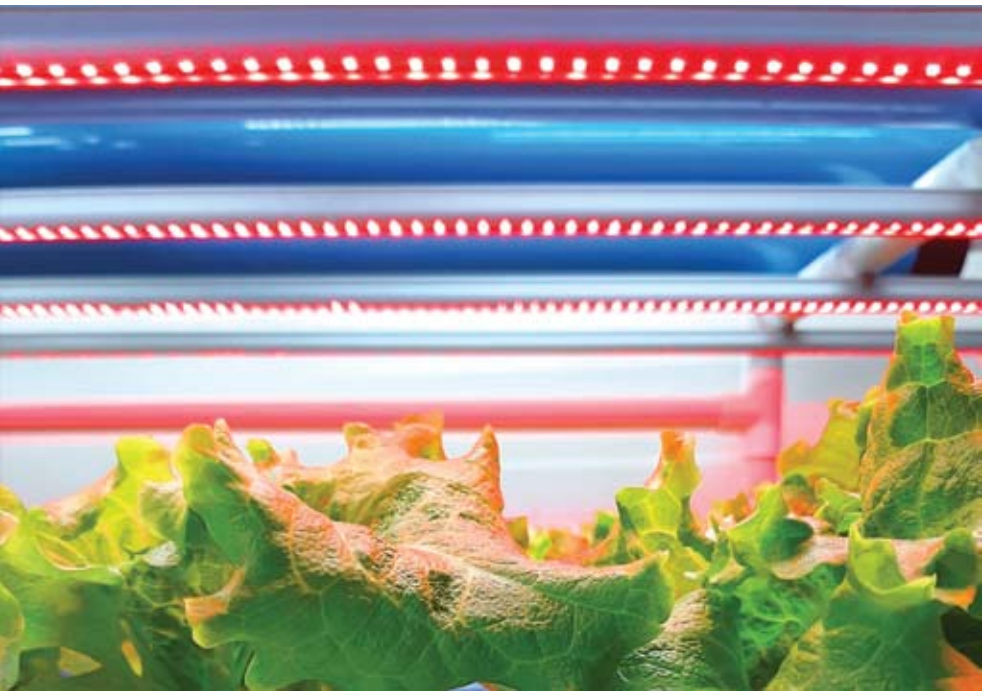
For vertical indoor hydroponics you need a room which has no natural light or aeration. Think of dead spaces in the city - a basement, abandoned buildings, under construction buildings, under flyovers etc. We convert such spaces into rooms and we take up pipes and layer them one on top of the other. We advise having upto four storeys. We advise 4 storeys because that is manageable. The great thing about doing it this way is not farming anymore - it is a factory. You basically have a food factory in the middle of the city, where you grow and sell to provide for the city. The only thing you can grow this way is green leafy vegetables because they have the shortest shelf life and they are usually grown closest to the city. If they are grown closest to the city they are usually the most polluted. For instance, In Delhi, the leafy vegetables are grown on the banks of the Yamuna, in Mumbai, it is grown on the railway tracks. So, if you are growing leafy vegetables in your factory, you are indeed cleansing a lot that is on the food chain.

This technology works unbelievably well if you have a small space in the city provided you have no great ambition to scale.

The other space where this makes sense is if you are growing for personal use. You can set up this system within your living space and grow your own plants.

A few aspects about growing plants this way:

This way of growing is roughly about 200% more expensive than the traditional cultivation. Take for instance, lettuce. It will grow in the dead of winter. The market rate would be about Rs 50-60 a kg of pesticide-soaked lettuce. Whereas your growing cost would be Rs 100 a kg. If you are growing lettuce in winter and competing with a normal farmer, you stand to lose out. The flip side to this in summer when the market rate is Rs 300/- a kg, your growing cost still remains the same. So, you have the ability to sell cheaper than a normal farmer. You tend to do well if you grow plants off season. The only thing in this country that is used off season are again, green leafy vegetables. Otherwise, we don't really want to eat non seasonal foods.



As far as the components are concerned, you can make it on your own, buy them off someone, train yourself using online training videos etc. We are also happy to help or offer information. We do not charge anything.

The easiest way is to buy a system and start growing. The most critical part of the system is the light. These are color coded lights. Not every frequency in the color spectrum is required to grow a plant.

There are specific things for specific plant requirements. There are red lights and blue lights and each are intended for different uses. If you want to grow green, leafy vegetables, you must use 6300 Kelvin Light. It will take you some time to find it in the market because it is not very popular and they all look white in color. This is white on the outside but it belongs to the blue spectrum. It is the best thing to grow green leafy vegetables. For other crops the light spectrum would vary. For example, strawberries, cherry tomatoes etc. it is red light. The difference between red and blue light is that red light is that which refracts the most. So, every time a plant gets red light, the plant gets a signal that it is now time to start growing very tall. So plants that get red light grows tall and those that get blue light makes plants fatter and thicker.

Indoor farms in cities doesn't make economic sense when done on a commercial scale. What are your thoughts?

To take a few examples at Bombay, there was a venture called Herbivore Farms who used to sell lettuce at Rs 100-150 a kg. One aspect that increases cost of production is growing crops on a A frame. This provides only half the growing space. So, when you grow using air condition and light, the total cost minus the rent will call for selling the produce at Rs 100 a kg at least.

My recommendation is not to start that way. You should start small like in a pooja room or abandoned shed perhaps at 50 sq ft area. If this is specifically placed in an area where the air-condition is normally on all the time, it reduces your cost by half. Starting small helps you determine your cost and also for venturing if you have a market for it or no. After that you can look for a suitable place to rent and build the venture.

In a place like Mumbai, you can sell whatever you grow at the price that you fix. The flip side is finding space to work. So from an entrepreneur point of view one should look for an under developed building or something. To set things up is a two-week job. Now, even in the event that you need to shut the place and move your farm to another location, it would take you two week's to do that. It is pretty easy that way.

In crammed cities, it is easy to sell hydroponic produce when compared to places where people live in sufficient place and perhaps have a garden/farm for personal use.

Growing in grow bags is yet another brilliant idea. I would recommend that highly. Along with that I would suggest an automatic drip irrigation system. When you employ drip irrigation, you have to consider the material used inside the grow bags. If you use cocoa peat there are two kinds of watering tanks:

1.Fertigation tanks

2. Non-Fertigation Tank

Having said that the trick is to employ the easiest way to grow plants in a particular situation. Easiest should also cater to the most economical of solutions.

Also when you use grow bags, I would recommend against using plastic bags. It may turn out cheaper initially. I would vouch for cloth bags. Cloth bags are very sturdy, last longer and keep

the plants healthier. When I say cloth, I mean non-woven compressed fiber bags. They are flood-control bags and there are lot of companies that make it.

There is a certain amount of air that needs to hit the roots or else there are chances for the roots to get suffocated. All roots need to breathe air. In a compressed fabric grow bag, the moment you water it, the air is allowed to pass through the grow bag and this keeps the air well aerated. It you have ever grown a plant in a terracotta pot, the pot has to be broken down in about 3-4 years and the plant needs to be shifted to another pot. While transferring you will notice the roots to have turned round. In bags however, the roots never turn round that way.

The reason is the moment it reaches the edge of the bag, it slightly pokes out. The moment it pokes out, the root thinks it has come out of the soil and starts air proving itself. In a bag you have 1 litre tap roots which is giving the plants its nutrition and then there are all the other roots on the side that keeps the plant together.

So, growing in a bag results in lower nutrient uptake per plant and much healthier plant. Every kind of nutrient that you give the plant is easily absorbed. There is very visible change in the growth of the plant - the way the plant looks and stands, etc.

Can we not use clay pebbles inside the HTPE woven bags for the same reason?

Clay pebbles have their own properties and you can use it but why would you want to use clay balls. They are there in a hydroponic system because water goes through it and then it flows out into another tank which is then recirculated. During this process, you do not want any cocoa peat, etc. going into that water and so the use of clay balls. In a drip irrigation system, the only time we should ever use clay balls is on top as a mulch. Cocoa peat is way better than clay and India is blessed with so much of cocoa peat.

Is there any way to save on nutrient cost?

Don't use lab grade nutrients, go for industrial grade. Lab grade nutrients are super pure and so they are super expensive. Lab grade nutrient is very fine and dissolves very well in water. This way it doesn't clog the drippers. So it is highly recommended for aeroponic systems. In normal hydroponic farms, use of industrial grade is advisable.

My recommendation for nutrition formula is the Sundstrom formula. It is available online or in the market. You can also make it on your own which will make it 1/3rd times cheaper.

What crops do you grow?

We grow lettuce, kale, swiss chard and rocket in the summer and we grow only basil in winter. After this shutdown, we will again try growing lettuce, Kale, etc. When I say lettuce, we grow all kinds of lettuce.

We usually do grand rapid and Romaine. The only lettuce we don't grow is Iceberg lettuce because it has its own peculiarities. Having said that, Iceberg is a great crop to grow in India because it grows wild in the field, it looks nice, and is totally nutritious.

How much does your unit cost?

Whenever you look at a hydroponic unit, you have to take the cost per plant into consideration.

If you are growing 10 plants and the unit cost is Rs 1000/- then cost per plant is Rs 100/-. Our largest unit costs about Rs.350 a plant, the smallest one costs about Rs.500 a plant. The moment we take this to a commercial level, the cost drops to about Rs.200-220 a plant. At no scale does the cost come down below Rs.200/-.

From our system point of view, we have a 54 plant system that would cost you Rs.25,000/-, 81 plant system costs Rs.30,000 and a 120 plant system costs Rs.49,000/- a 250 plant system costs about Rs.80,000/-.

Do you know of any successful commercial hydroponic growers in and around Mumbai?

There are lot of companies opening up aiming at people who can pay good money for the produce. All these people target 1% of the population who can pay high.

After COVID most likely that 1% also will not spend that kind of money. If all of us target the same bunch of people who eat salad, those people will have 15 people ready to supply them with salad. Now the question is why would they buy from you and not the others? Your cost has to be low.

From a sale perspective, my strategy in hydroponics would always be to get into the clients' door. If I can do that with my green leafy vegetable produce, I have the leeway of selling other vegetables when I decide to expand. The value of the contact is very high. The business itself may be only breaking even or making only 10-15% returns but the value of your contacts will be very huge.

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Mr Sandeep Bhatia

Founder
VAS Agri Pvt.Ltd. /
Junga FreshnGreen Pvt.Ltd.

What are the main crops that you deal with?

Let us talk of backward integration. Today farmers are growing crops but they aren't getting money because they are growing what they want to grow rather than what the customer wants them to grow. When we plan our things, we do a backward integration. We first decide who the customer is then decide what the customer wants and grow what the customer requires. To yield profits, we need to grow what the customer requires, i,e the product that is in demand. I have been growing tomatoes, capsicum, green peas, snow peas, pak-choy, lettuce, etc. Agriculture is not just about growing; it is also about doing things commercially viable.

What is the concept of hydroponics?

Hydroponics is basically growing crops without soil being the medium of growing. It is one of the oldest technologies in the world. The hanging gardens of Babylon is based on the hydroponics technology. It is one of the most efficient ways to grow plants.

Hydroponics in Europe is also been done in open. Hydroponics when done in protective environment, without the influence of weather, means that you can grow your crops throughout the year. Since the method is soil-less you are protected from soil borne diseases. Since it is grown on green houses the crop is protected form air-based diseases. Also when you grow crops throughout the year, you get a much better yield. Since you grow in an ideal environment, the yield increases by multifold depending on the crop. It can go up by 5-10 times.

For example, I grow iceberg lettuce a lot for HORECA segment. I produce 200-220 tons per acre. That is the kind of benefit you have and the produce is all pesticide free and a better shelf life.

You can give an entire traceability to your customer from seed level to end product at the retail level. This is not possible in the traditional method of cultivation. Recently in North India there has been a lot of hailstorms, which is very new to the area. As a result lot of crops get destroyed. But with protective cultivation & hydroponics, your crops can be protected from the whims and fancies of nature.

Mr Sandeep Bhatia has been practising Hydroponics since 2011 - a time when hydroponics was hardly heard of.

"I signed up for a joint venture with a Netherlands based company, who was into setting up protective cultivation and hydroponics projects throughout the world for the last 40 years. The company is called the VEK Group. We went ahead and finalized on a couple of projects. We got funded in 2017 by a Singapore based fund. They have mandated us to set up India's largest Hydroponics farm."

Mr Sandeep is based out of Delhi and his farms are in Himachal. He does a lot of turnkey projects, consultancy projects and also works a lot with FPOs and farmers.

"From last two years I have started exports as well. I export vegetables to the UAE market. Also in the present COVID scenario, I see a huge opportunity for India because lot of the produce reaching the Middle East goes from Europe and China. That is going to be obsolete for a long time. India has a large potential for ginger, turmeric, garlic etc."

Does it call for a bigger investment?

Yes, it does. That is why when you talk hydroponics people talk about high end produce. The main purpose of growing exotic crops is so that the investor can break-even as soon as possible. I get a lot of hydroponic queries day in and day out because I am also into hydroponic feasibility studies and turnkey projects. I get lot of enquiries from prospective customers seeking assistance in setting up hydroponic farms. Hydroponics is a very loose term in India. People come to me claiming that they wish to do hydroponics in half or quarter of an acre. Unless you do it in 3-4 acres it is not commercially viable. You can do on half an acre but you cannot make it a commercial success. The ultimate aim of an entrepreneur is to make money. If you do not make money, it is a failed venture no matter what you grow. The investment involved is high and so I advice people to go for premium crops. This helps reduce your break even period.

What are the things to keep in mind before opting for hydroponics?

Hydroponics is all about technology and green house is all about temperature control. Hydroponics technology is all about automation. Green house design is location based. Green house designed for Bangalore will not be suitable for the one in Haryana. The issue I have seen is that companies install same type of design no matter where the location is and this is wrong. That is one reason why this technology fails for many. The cost is very important and it is dependent on the crop and the level of technology that is adopted.

One can choose the level of technology one needs to use depending on how much one is willing to spend. Also, 24x7 power supply is a must for hydroponics.

I am based out of Delhi and I have my farms near Shimla. There are only three reasons why I opted my farms to be in Himachal:

1. The peak temperature where my farms is located is less than 30 degrees in peak summer, which is not very hot.
2. Himachal is the only state in India which has surplus availablility of electricity as well as cheap electricity.
3. Proximity to Delhi & Chandigarh/ Punjab markets.

This is a 7 hour drive from Delhi which is a main market other than Chandigarh. When you consider hydroponics, these things should be kept in mind. Water dependency is less, electricity is highly important. If you are thinking of providing back up (gensets), it is not a viable option and will eat into your profits. Land quality is not a requirement.

How can we establish a good supply chain from the rural villages to nearby cities?

Backward integration is very important. You have to start by identifying customers. In one of my companies, I procure fresh fruits and vegetables from whole of India and I have customers based in pan-India network. So, it is important to first target your customers, then identify customer requirements and then likewise, work backwards.

When it comes to spices like turmeric, how do we first identify customers?

For spices, you must first approach spice companies and then offer them a value addition. You must aim for backward integration, protective cultivation and value addition. Value addition is of high importance in today's world. The more value you add to your products, the more money you make. In today's scenario, the farmer grows something, say turmeric. Today farmers approach a mandi as soon as he harvests because that is the only option he has in his head. But when it goes to the mandi, the middle men there know that once the produce gets to the mandi, it won't go back. So, the farmer is forced to sell at any price offered by the middle men at the mandi.

This happens to everybody. Even I used to operate at this level when I started. I started with flowers and eventually left it only because the flower market in India is very unorganized. However for vegetables you have a lot of organized players like Zomato, Burger King, More, Spencers, Big Basket etc. where you can approach them and grow as per their requirement.

There is another aspect to this. I have with me many farmers and FPOs. I don't grow everything on my own which is not a possible. So, I rope in farmers who grow for me and I get into a contract with them. I take their entire produce and sell it for them. We recently started selling to Hyperpure (Zomato). Hyperpure supplies to resturants, hotels, etc. Currently they are operating only in Bangalore, Chandigarh and Delhi. So, in short, you will have to find your customers. If you don't have a customer don't grow anything.

Can you elaborate on value additions?

Value addition can be in different forms. It can be in processing fruits and vegetables. Suppose you have Big Bazar as your customer. You can always opt to sell to Big Bazaar in wholesale and retail packs. That is also value addition. Any value addition always fetches you

extra money. Value addition can be dehydrated/frozen vegetables etc. A normal hydroponic unit would break even in 4 years if everything goes well. It can take more time than this or less; it all depends on what you grow and where you grow.

What is Nutrient Film Technique (NFT) teachnology?

In NFT only water and nutrients are used to grow, mainly leafy vegetables. NFT produces very high quality pesticide free leafy veggies. Nutrient Film Technology setup requires more capital investment.

Is the produce grown using hydroponic technology organic?

No, it isn't organic; it is pesticide free. Hydroponically grown vegetables can never be certified organic because organic certification is given only to crops grown in soil.

In essence it is organic in nature because it is pesticide free. Using hydroponics you get produce that is of uniform size and quality. This is because the plants are given water and nutrients in a very unique way, the temperature control is also maintained in a unique way and it is kept uniform.

Have you tried growing grains using hydroponics?

No, I haven't gone into that. I have heard that in Israel they also cultivate rice using hydroponics. In Spain, they grow saffron using hydroponics. Hydroponics has no limitations, the only limitation is money.

How do you mitigate the export risks?

I have a strategic tie up with a leading airline company. So, I can easily export. If I harvest today, tomorrow afternoon it is with my customer in the wholesale market of Dubai. That is how efficient my company is in exporting. I export lady's finger, drumsticks, shallots, baby corn, sweet corn, etc.

The opportunity now is very good in terms of export because China generally gives you ginger and garlic which is now closed. We can also replace exotic produce from Europe because of our proximity to the UAE market. This is a big opportunity to make inroads in this market.

But then shouldn't one have the production by now?

That is where hydroponics has a role to play. Because hydroponically grown produce is pesticide free as well as of high quality, its has more acceptability. You need to have a MRL certificate with every consignment, stating that it is pesticide free. One should keep in mind that if a consignment gets rejected at Dubai airport due to high pesticide levels, the penaly is very high and can also lead to blacklisting of the company.

What are your future plans?

I am setting up a farm stay in Himachal, for people who want to learn. People can come and stay and see how we do hydroponics and protective cultivation. It was supposed to start in April but now, because of the current scenario, it has been delayed.

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Dr Sairam Reddy

Vertical Farm Specialist
UrbanKissan

Which greens do you cultivate?

Currently we are growing 80% farm capacity with Indian greens and 20% are kept for exotics like Lettuce, Kale, Bok Choy etc. 80% is our core area where we invest more time and effort. We have amaranth, spinach, coriander, mint, methi, gongura, malabar spinach etc.

How do you price your produce?

At this juncture we sell at the price that is equivalent to organic produce. A kilo of Indian greens would cost Rs.150 on an average.

Do you train other farmers too?

We have realized that the technology is still premature for making it universal. We have been researching quite a bit. Currently, we are building farms on our own and we are building franchisee farms as well. We do not want to just give away the tools and let people drive it because that is where most failures occur. It is very important to be around and mentor the farmer so that the training gets completed.

On one side we are researching on approaches, methodologies, agronomy of vertical farm to make it more simple for farmers. To just give away a "plug and play" product may take another year to come up to that stage.

Please give us a range of how much your farms would cost?

The smallest unit is one for domestic home use. That goes with 24 plants. It only takes 2ft by 3ft floor space and if it gets 3-4 hours of direct sunlight it will grow comfortably. This unit costs around Rs.12,000/-. This is a one-time cost that includes everything the plant needs. It is basically a plug and play solution.

We also have mid-size versions which costs around Rs.50,000/-. This unit can host around 216 plants in that. It is suitable for roof tops and we are currently selling it to the small hotel businesses where they can grow their exotic crops etc and harvest fresh produce for their dishes. The biggest we currently have is a 3000 sq ft built up area. That is a poly house on the roof top. That would cost around R. 65L to 70L. This will help you harvest around 4 tons of greens every month.

Would you call this organic produce?

Classificationscan be tricky. So, no I dont call it organic but it is completely free from traces of any chemcials. It is 100% free of any metals or toxins.

With a Ph.D in Agriculture Biotechnology to his credit and varied, rich experience to back him up, the decision towards building his own entrepreneurial space, UrbanKissan was just a dream away.

"Initially, , I joined one of the leading seed companies in India. I was part of their bio tech team primarily handling molecular breeding aspects to develop disease resistant crops. I was highly successful in that field. Couple of hybrids which I had developed are now being grown in more than 5 L hectares in different parts of India. While going through some news articles, I realized that there is a bigger problem taking shape in agriculture. This is primarily the contamination happening with agricultural produce. This is especially true with respect to leafy greens.

I then started searching for a solution and realised that agroponics has a solution that can help resolve this. I focused more on this and tried developing kits that fits into Indian balconies and suitable for Indian greens. I developed nutrient formulae apt for our greens. That is where I started my journey with hydroponics.

Another friend also joined me in time and we started this company called UrbanKissan with a view to building vertical farms right inside the cities and then deliver it to the market."

Do you use seaweed extract?

Yes, we do in our farms as part of our nutrient substitute. But we don't depend solely on seaweed extract alone. It may not be sufficient as a nutrient substitute for all plants.

Which is the ideal nutrient to be used?

There are 16 different minerals that a plant needs. 14 are mandatory and 2 are needed for human consumption. Unless supplied to plants we don't get to consume it. Out of these 16 there are micro and macro minerals. Micro minerals are extremely low in volume than the macro minerals. The productivity, quality and everything depends on how we prepare this nutrient substitute. Additionally, if we use seaweed extract, it gives enhanced quality and good productivity.

Where are you located and do you plan to extend services across cities?

Currently we are in Hyderabad. We have about 2 farms that are fully functional and we are building 3 more in Hyderabad. We are also in discussion with someone to build franchisee farms in Bangalore. It is in the advanced stage and it may take effect in the next month or so. We want to focus on the entire of South India. We are also building farms in Dubai and Bahrain. By January we will have completed the execution of farms in Dubai and Bahrain. We are still working on lowering our cost of produce from Rs.100-150 a kilo of greens to Rs.70-75. We have been researching on this bit a lot on how to maximize the unit area of productivity by making them truly vertical in nature and reducing a lot more other overhead expenditure.

We believe that it is extremely important to promote this agriculture, the trends like less amount of water and land availability and the demand on production requirement. All these factors reduces the load on farmers. Each of us can grow our own food in smaller quantities and that practically reduces the load on farmers. Adopting techniques like hydroponics reduces the water consumption levels too. This only demands 5% water usage. People try to promote RO water through hydroponics. But we have formulated things around our regular drinking water. In Hyderabad we use manjira water. For someone to grow those 24 plants, they would need only 20 litres of water for one month.

Also, it doesn't matter that you have gone for a function, for example or you are out of station for a week also is ok. Your plants are taken care of during such phases. These are some of ease factors we have tried building into the system. We recognize that these days people are interested in growing their food but are unable to spare time. People start gardening with a lot of enthusiasm but then it goes down within a month or two after their first harvest. They will not go for the 2nd crop. If we can help such people to not drip out of their agricultural activities, I believe that is a huge contribution to this world.

Do you also supply the seeds/seedlings?

We do supply the seeds along with our kit during our first time sale. For repeated sale, we will need seed licenses etc which we do not have. But we recommend the right seed to our customers so that they can buy it online etc. We do a lot of activities as part of R&D. We screen so many different varieties of the same crop and identify the suitability.

Is it possible for you to go for local naati seeds?

We are working on that as well. we do not focus on working with hybrids. Seed companies are breeding varieties. I have been part of it. I have also done it. It is suitable for transportation. But, that is unnecessary. Today farmers are left with no option. Tomatoes, for example, are grown in Narayanagaon, Pune area and supplied across the country. Those tomatoes are very hard. They are too firm. If you grow tomatoes in your background even if it is in our hydroponic farm, we don't need that. We go back to the traditional juicy and fleshy varieties, which are higher in nutritional value. We harvest these crops we grow and supply it the same day to our consumers who will not need a shelf life of more than a week.

Our core focus is go back to the traditional variety crops. We are trying to team with National Bureau of Plant Genetic Resources (NBPGR) to strike a deal to gain access to their Germplasm to screen and identify the best varieties which are rejected by many companies which are not suitable for their breeding agendas. These can be reintroduced through this vertical farming.

Which are the other vegetables that you are experimenting with?

Tomatoes, cucumber, chilly, ginger, brinjal and lady's finger.

What is the loss in nutrient value when we use hydroponics?

It is in all honesty, zero loss in terms of nutrient value. The mineral supplementation, vitamins are the primary input nutrition that we expect from vegetables apart from antioxidants. Plant can manufacture all these vitamins. We actually do not need to give any inputs to the plants. It has the built in genetics to produce vitamins. The plants takes minerals from the soil and converts it into a form that we can consume and absorb. When the plants are grown in the open, this nutrient value is dependent on the mineral value of the soil. Sometimes, plants may be growing in iron or zinc deficit soil, for instance. Whereas in hydroponics, we supply the plant with these minerals in a very balanced manner. There is no chance of depletion of nutrition. We have conducted studies with our hydroponic produce. The data shows that whatever is the potential published by institutes like NIN we have such accurate values coming into the plants grown using hydroponics. Hence, there is no loss of nutrient value.

How do you sell your product?

Currently we have primarily two different types of supply:

1. In-store delivery: Lot of consumers walk into our farm and buy our produce. We harvest what they need right in front of them, pack it in biodegradable plastic bags.

2. Monthly subscriptions: Once a week we deliver the required produce to the consumer's doorstep as per their subscription. This is delivered to customers in about one and half hours after harvest. Hence there is no storage or anything that is required. We use bio degradable bags to maintain the moisture inside the produce so that it doesn't wear off its freshness.

What are your views regarding indoor farms vs outdoor farms?

We are building our first indoor farm in Hyderabad which will be ready by the end of December. That is also with the same about 4 times a month production capacity. Yes, it is slightly tricky. Most of the agricultural lights which is lieu of sunlight is a very tricky thing. There is a lot of research that needs to go into it. We have been researching quite a bit about this lighting. This lighting is something which is absolutely necessary. If we don't provide sufficient lighting that may alter the metabolism of the plant and may lead to some alteration in the nutrition. I don't want to say there is going to be a major challenge with the nutrition but some nutritional component may alter. Some report says that maybe a 5-10% reduction in antioxidants is possible if ample supply of light is not provided. We are trying to build a perfect spectrum to strike the balance. We are hoping that it is going to 100% same as our outdoor unit.

Is it right in assuming that indoor production cost is bound to be higher?

This is another point of wonder that we did have before we started building our indoor unit. Our final unit economics show that our working cost is going to be lesser than our outdoor farm despite usage of lights. It shows that we will be able to sell the same produce at a lesser rate. This is one component. Another aspect is that if we have to build a vertical roof top farm, we have to add this green house which is not there in case of indoor. Then there are many other components that are extra with respect to outdoor when compared to indoor. So we have developed some technologies which maximizes the power saving so that makes the light component less power consuming.

What is the main challenge you are dealing with as of now?

So far the professional or commercial technology is perfected only for temperate crops not for tropical crops. I don't see it as a far away milestone. But we are working towards it so that it can be replicated anywhere we build farms.

Another challenge is the questions faced in the market. There are these myths about soil-less cultivation and nutritional value. We are trying to address this by getting reports from laboratories like CFTRI etc. so that we can convince consumers about nutritional values and assure them how the environment benefits through this agricultural approach.

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Mr Harsh Agrawal & Ms Nikita Tiwari

Agriculturists
NEERx Technovation Pvt.Ltd.

Harsh Agrawal and Nikita have based their research on how to help farmers with climate, water and soil quality tips with a deeper understanding of it all.

"Our venture is called NEERx Technovation Pvt Ltd. We focus on climate risk mitigation for agriculture. We focus on sensing micro climate and provide advisories for preventing pest infestation, fertigation management, water management etc.

We build hardware and software platforms that can be socially implemented onto farm fields. This helps reduce agri-input cost and increase productivity."

What exactly is micro climate sensing IOT based sensor network?

Micro climate sensor is a set of IoT tools that needs to be on a farm field. It continuously gathers soil and climate data around that field. This helps in determining the real time condition of the field in terms of soil quality - moisture, nutrientcontent etc. Also, climate data is secured like humidity, temperature pressure, etc. These are the parameters that is collected and it is combined with data analytics to further implement advisories.

Who would be your target customers?

There are various segments that we operate into. When we started off we were only into soil sensors and we got in touch with ISRO. ISRO was having an issue that needed potential help from a soil sensor. They map entire India for various agriculture related parameters. That is how our work started maturing. We supply to remote sensing institutes, forecasting centers, agri institutes and universities. Also we focus in B2B for corporate farmers and medium and large scale farmers.

Please cite an example where your product was installed and the benefits the site saw?

Decision support system solutions available in India is only focused on the threshold level management. You can only add the maximum and minimum level of input that you need. But we have a more systematic approach. We have a systematic framework of each crop like which is the season they grow in, what is the water requirement, how the crop grows in a period of time, etc. Depending on this data and real time climatic condition we provide advisories for water management and alsoto predict the lifecylce of the pest that is prevalent in any region. We combine agronomy and software and hardware to come up with an end to end solution.

Do you have anything specific for organic and chemical free farming?

Yes, we do. We have a segment specifically for organic farming. This looks into managing the farm at minimum fertilizer levels. Mostly the crops need to be specific to what we are doing. We have farmers who adopt organic farming for various herbs. In Kerala people try to come up with cardamom farming in an organic manner. In organic farming, per acre the returns are high. They easily adopt these kind of technologies to increase their turnover. It depends on the investment they put into their farms on per acre basis. We are trying to find a mid way between what farmers really want and what actually turns it over as a cost benefit ratio.

For marketing, we have established 10-12 states as primary segments who are majorly into agriculture and specific into our requirements.

Are you also helping with marketing?

In terms of marketing we are putting in a collaborative effort because we see that the market is quite fragmented. To go into deeper zones /regions where the product might work, we need to have collaborative efforts. Being into this field for about 2 and half years, we are trying to create a market for other complimentary start ups as well. The problem and the solution that we are looking at is not to just work for one organization.

What type of broadband type is preferred and a minimum of how many acres are required to avail this service?

That depends on the type of crop, soil and topology. 1-10 acres requires one station according to the farm topology. On an average about 1-3 stations would be required for a varying field.. The type of network connection we take into fields are region specific, it switches between 2G, 3G and 4G depending on the network availability. For customers who are willing to opt for satellite telemetry, we provide that as well. But, it is higher in cost.

How does an end user benefit from your services?

We would require basic information of what crops the farmer has on the farm. We frame a systematic approach on how should the water management be done on the field, the mode of fertigation and pest management etc in the field. These kind of parameters are what we look into before we provide any information. Depending on the information we gather, we can give information of say pesticides that you can save on if you automate that system.

How does it work after a farmer has sought your help?

We first seek the crop information that grows on the farm. Second is the region where one would want to implement the system. Farmers can send us a geo location of the farm based on which we determine the topology of the land. It is a kind of field exercise that we do. We do occasionally visit the place if needed. The third step is the number of sensors that we need on the farm. There are two parameters - crop type and topology and investment.

What will one or two things on the visualization chart be of immediate value to the farmer?

There are 3 major things that we target.

1. Water Management: Depending on the crop type and the crop cycle we provide information regarding how much water should be fed to the crop and at what time. We just don't give the max / min level simply depending on the soil qualities. This is an integrated information taking into account the crop cycle as well.
2. In case of applying pesticides as well, the right time of application is of much importance. That is another information that the farmer gets.
3. Fertigation basically depends on the root zone level, moisture holding capacity. This is another information that will be provided.

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Ms Maithili Appalwar

Water Conservation Solutions
Avana

"I am Maithili Appalwar and am based out of Mumbai. Through my company, Avana, I create affordable water conservation for farmers. We work in Maharashtra, Rajasthan, Madhya Pradesh and Karnataka.
The water conservation product that we create is called Jalasanjaya. They are artificial ponds created on different farms. That helps farmers store and retain water on the their farms and improve their cultivation and hence their income."
There are so many ways to contribute to a larger cause. People like Maithili remind us that agriculture is not just about cultivating. Aiding to cultivate better and improving the lives of many is very much part of this culture too.

What prompted you to start a business in the agricultural sector?
I feel there is a huge gap in terms of conserving water in the agricultural sector. We hear about water crisis constantly and also hear about lot of solutions given to folks in the urban areas like bathe from a bucket rather than from under a shower, don't leave the tap running while you shave or brush, etc. But the reality of the issue is far from the urban areas. About 80% of India's water consumption happens in the rural areas. If we want to break this water crisis we are heading towards, we should target the rural sector.

What makes your water conservation solution affordable and comprehensive?
It is comprehensive because it is an end to end solution. We take care of things from designing of the pond to helping farmers get financial support to constructing the pond and also explaining what they need to do with the rain water. Compared to other solutions in the market, like building a concrete tank, our solution is about 20 times less pricey. The cost of storage breaks down to 1p per liter of water per year.

What is the cost involved in setting up this pond?
That depends on the size of the pond. For an average size pond, it sums up to about 2 lakh and 15 thousand rupees. When I say average size, it is a pond size that will cover half an acre that can facilitate to serve a farm of about 5 acres.

Does the pond require any maintenance?
No, there is no AMC involved. The solution comes with

a 5 year warranty period. Within those 5 years if the farmer counters any issue, the company provides all services that is required.

How is your solution different from the usual system of creating a pond?

Usually the tank used are made of concrete which turns out very expensive. That is not affordable by small or mid-sized farmers. Another difference is usually ponds are not made with a lining. This becomes an issue because lack of lining leads to water percolating underground, which will not be an optimal solution for the framer to use as a water source.

Give us a few instances wherein your solution has helped farmers.

We are active in four states - Maharashtra, Rajasthan, Madhya Pradesh and Karnataka. We have created around 10,000 ponds and have helped save close to 60 billion litres of water. There are lot of instances where our solution has helped. Basically if you have more water you are able to increase your income due to increased agri-output. Besides that you can also have more cropping seasons. People who have been able to take advantage of just 1 or 2 cropping seasons are now being able to take advantage of all three cropping seasons.

Where in Karnataka do you operate from?

We are in the area of Karnataka adjoining Maharashtra. Gulbarga, Bidar, Belgaum, Baagalkot districts etc are places we have our reach. Currently, we are even beginning to start working in districts around Bangalore. Having said that, our solution can be applied anywhere in Karnataka - irrespective of the climatic conditions. For example, in Maharashtra it has been applied in places like Aurangabad where there is drought and also in places close to Jalna where there are huge irrigation projects in place.

For a 10 acre land, what is the recommended pond size?

For a 10 acre land, we would recommend creating a 1 acre pond. The basic calculation is to use 10% of your land size for pond construction. The capacity of a 1 acre pond will be between 80L and 100L litres. The cost of this will come up to Rs. 4,30,000/.

Can the farmers avail any subsidy for using your solution?

There are national as well as state wide subsidies. The National Horticulture Mission has a subsidy reserved for ponds. In addition, there are state wide subsidies also available which differs from state to state. For example, in Karnataka you get some state subsidies but Karnataka is one state where not many farmers opt for subsidies because the wait time is too long. Land sizes in Karnataka are big. Most farmers have 8-10 acres of land. And these farmers just dig out a pong whenever they want. On the other hand in Maharashtra the land parcels have become too small. There we have 2-acre to 5 acre farmers, who are not being able to uphold without subsidies. If you check the sales data, you will realise that the graph peaks when a subsidy is available but not so in Karnataka.

What is the tentative payback period that you offer?

Payback period is usually one year. The revenue increase is about 98%, which almost doubles once the pond is in place. The revenue doubles because of two reasons:

1.Farmers get more cropping seasons

2. Farmers can opt for crops that fetches better revenue.

We worked with close to 100 farmers across India and studied their financials for over a year and we chalked their pay back period to be a year. This was possible only because their income doubled.

If the plot of land is flat, how do we harvest the water?

The water being routed to the pond is dependent on the sources of water you have close by. So, it depends on where your land is situated. Based on how your land is placed we design the pond accordingly. Now, if the task is to harness all the water falling on your land into the pond, it is not something that is practical because the catchment area of the pond is not that huge.

Usually how water is captured in a pond is:

1. when the canal water gets laid out or

2. use any rivers, wells or bores and use the water when it is overflowing

How thick is the pond lining?

It is 550 microns. We also do a 750 microns thick lining if the customer wants it thicker. But 550 microns is what is used across the country. There is a 300 microns one too which is thinner and cheaper but I wouldn't recommend that because:

• It comes with a lower warranty period

• The 550 microns thick lining is a much better product. Although the warranty period is 5 years, it lasts much longer.

• We also have a blue colored fabric for the lining. The 550 microns one is a normal black fabric. In addition this has a blue coating layer. It is better because:

a. it reduces evaporation

b. it is better if you want to do fish farming in your pond because blue is a better color to provide a natural environment and it also promotes algal growth. Many use blue colored PVC lining. This is not safe because PVC is a non-food grade material. Fish consumes part of this lining and so it is highly unsafe.

Who are the investors in your company?

We are a publicly traded company. The parent company is called MD Industries Ltd. It is listed in the National and Bombay stock exchange.

Who pays for your service and what is the cost?

Farmers pay for the service. It is a B2C business; so, we sell directly to consumers through our dealer and distributor channels. On an average they around Rs. 2,15,000/- for a pond.

What are the challenges that you have faced while running this business?

One of the difficulties in running any rural business is in terms of connectivity and delivery.

The distribution and delivery cost are always high and consumers are pretty much scattered. It is always a challenge to be able to match that and generate a volume of sale in every area that you are serving.

How has the feedback for your product been so far?

So far, our customers have been happy. We are conducting a market research survey, at the moment, to estimate what the buy back rate of our customers would be.

About 97% of the 10,000 people we have worked with so far say that they would buy the same product again from us. That said, like all products and companies we too face complaints. It is a manufactured product and tends to have defects. We have had a 1% defect rate in the product.

For any manufacturing defect the product has, we do a full product replacement - no questions asked. We are happy to correct things even if the manufactured defect surfaces after the warranty period.

We aim not just at pleasing the customer and making the money, we aim at a long lasting relationship and making sure that customers benefit from the product.

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Mr Sandeep Raina

Director, Vansun Technologies Pvt Ltd

Holding a degree in Dairy Technology and with Mr Sandeep Raina's involvement with the dairy sector since his college days speaks volumes about his focus and clear cut career choice.

"We are the first company to start the concept of machine milking in India. We started our company in 1999 and the focus was to introduce machine milking as it was conventionally done with hands and we thought that it has good poetential and it will also help farmers and save him from drudgery of manual Milking and save a lot of time for him.

There were other companies in this sector but all of them were importing the machines. Mr Sandeep Raina and his team decided to manufacture them in India. Hence, the birth of Vansun Technologies Pvt Ltd.

How has the ride been so far?

It has been now been 20 years and we have now reached a customer base of almost 20,000 people.

Our customer range is pretty wide in spectrum. We work with large institutions like Amul, Nestle and many such corporates around the country.We also work with individual farmers of all capacities.

We started our journey from 1999 and that is when the Dairy Farming had started taking shape with people increasing the herd size to 10-15 cows. The actual commercialization took place in 2006 when people increased the farm size to more that 10 Cows and some were being set up for 50 animals at this time the farmers felt that they will need a professional Milking Machine to meet there requirements and Vansun offered the solution. For Vansun it It took us 4 - 5 years just to market this concept.

Where are you based out of?

We have a manufacturing base in Noida and distribution all over India. We are now active in almost all the states barring a few.

In 2010 as the commercialization happened on a larger scale i.e farms planning to move to 100 cows and above or even 50-70 cows we were looking for a technological partner and after checking many companies around the world we decided to work with Afimilk, an Israel-based company who is a leader in terms of automation of dairy farms. We tied up with them in 2010.

Since then we have done 100 Hi Tech Commecriacl Dairy Farm projects right from concept stage in the country, the largest being at a farm in Bangalore that hosts 1500 cows.

Our expertise starts right from the conceptual design of the farm. As we move around talking to our customers we realise that many of them lack adequate knowledge to run a dairy farm, etc. If anyone approaches us we start with the design of the farm and suggest the mechanisation they would need to make progress.

With which company did u tie up for automation?

It is an Israel-based company called Afimilk. They are very technlogically driven - they came up with this unique idea of equipping dairy farms with software and sensors which is

unheard of earlier. This company came into existance in late 70s or early 80s and have a reputation of taking the industry by storm. Afimilk is the global leader in dairy software and automation.

How long did your company take to make its presence felt?

It took a lot of time, most people do not have that much patience to start a business which will evolve in 5-6 years of time. I would say even now we have not covered even 1% of the Indian market. The total farmer population of India would be around 10 crore of dairy farmers. Only a small sector or them uses milking machine - not even 50,000 people use it. So we feel we are on right track and there is tremendous potential but it will take time.

What would be the minimum investment to set up a Dairy farm?

There are multiple approaches and also the size of the farm is vast and varied some start with 5-10 cows and some want larger Hi tech set up. The average farm size will be 10 cows and for them the investement will be maybe 20-25 Lakhs

But anyone who wants to set up a modern Hi Tech Dairy Farm of minimum 100 Cows the investment again will depend upon type of infrastructure, Milk Processing, Future Expansion, Land Development and accordingly the investment can be in that range of 3-4.5 Lakh per cow including the cost of Cow and all modern equipments and sheds for housing along with Feed Prepration room and silage bunkers

A lot of such farms have mushroomed across India aiming to distribute fresh pure unadulterated farm milk. This concept took shape in 2013 - 2014.

We are talking of good quality cows. Everything depends on the Quality of the cow. If you bring Low genetics it will take a lot of time to improvise your farm. Ideally, for a profitable dairy farming the minimum milk production per cow should be 25-30 litres per day. The cost of cows depends on their genetic characteristics, their milk production capabilities.

If you were to go for a full integrated daily farm heighted capabilities and milk processing set up then the cost would be 3.5-4.5 lakh rupees per cow. This includes the cost of the cow, infrastructure etc. except the land price.

What variety are we talking about?

Daily farming is only successful with any cow that can have a minimum of Lactation Yield of 4500-5000 to start with and eventually the yield should touch 8500-9000 kg per lactation this helpd you to fivide the average cost by the quantity of the milk you produce. Globally,

The most suitable cow for daily farming generally World over is is Holestein Friesian, also known as HF or the black and white cow.There are other breeds as well like Jersey, Indigenous Breed like GIR, Sahiwal.

Regarding HF, Research says that this is the best breed. The more it eats, the more milk it produces. Other breeds may gain body weight but may not convert that into milk production. In the last 3-4 years there was much talk about desi cows but they also don't match the HF poetential and a lot of Genetic imnprovement needs to be done.

What is your opinion on organic milk?

Unfortunately in this sector lot of people who claim to be producing organic milk. But there is no certifying body for organic milk. It takes lot of time to produce organic milk. To produce organic milk a dairy farmer may keep his land free of pesticides, but he may have to buy many other products like maize corn etc. He has to to buy de-oiled mustard or sunflower cakes, wheat bran, rice bran, soya etc.

Cows need these agricultural inputs for improved milk production. Since there is no guarantee that these products have an organic origin, I am of the opinion that organic milk does not really exist as of now, however in future it might be and there are genuine certification bodies that will certify whether the product is Organic or not.

Is hi-tech farming feasible alongside dairy farming?

Though Possible but there is limitation for Farmers, they cannot do hi tech in terms of milk processing because they do not have those marketing experience, They will be good in Production but when it comes to selling they may lack the vision and resources because of lack of experience, However there are some farmers who have done good also. Or there should be FPO that might look after the marketing of the prodce, while the farmer or producer ficuses mainly on Production and Quality. For example, in Punjab, lot of our customers have gone for automation.

The purpose is to improve the yield of the cow and to control the expenditure on disease of the cows.

Dairy farm can be suucessful when you have high Milk production of 30-35 kg per day in the lactation whether it is small or large farm, it will not happen immediate but that should be the goal of every dairy farmer A farmer with 20 cows will make more money than a farmer with 30 cows if his productivity per animal is high, so he can focus on keeping High Producing cows and culling the unwanted cows by creating a bench mark for his dairy farm in terms of yield. In Early Days Most of the dairy Farmers had Cows with lactation of 3500-4000 litres. This was the scenario in 2000. Slowly people realized if they take care of the animal and breed-

ing then he has to go for better quality of cow followed by mechanization.
So in my opinion ideally the real profitable farm sizes will be anything between 25-50 depending upon the financial capability of the farmer and how much he can invest. If it is less than 5-10 cows, we would be talking about backyard farming. In north India especially in Punjab there might be around 4000 farms that has a size of 50-100 cows. This is not the case with Gujarat or Karnataka. There they have more backyard farms with 5-10 cows only.
So if a farmer has to start in Dairy Farming he can start with 5-10 cows but his aim should be to have 50 to 100 Milking Cows and he can decide upon his investment which can vary from 1.5 to 3.5 Lakh depending upon the level of Automation, Milk Processing and other factors as explained earlier.
The milk production depends a lot upon her welfare condition. The welfare condition is defined by the shed for example. I am talking of a shed that is 30 feet high and almost 100 ft as a bare minimum in width, but ideally it should go to 150-160 ft in width. I mean a modern shed that has good ventilation - a fan and fogging system to reduce the heat stress.

What issues can be anticipated regarding feed, disease etc.?

With respect to feed the biggest problem is the green fodder which people underestimate. Then, concentrates like soya de-oiled cakes etc. are seasonal. One should cater sufficient money to buy such things.
Green fodder is a challenge which has been largely mitigated in Punjab by adopting to silage. You cannot cut green fodder every day due to lack of labour. So the best way is to grow corn, silage it and use it for the rest of the year. It has a shelf life of 1-2 years. By silage I mean to cut the plant at a certain age, put it in a pit, subject it to be rolled under a tractor and keep it covered for 60 days to ferment. When the pH goes down close to 5, it stays in good condition without deteriorating. The farms that use silage are doing better and surviving. The farms that do not plan for silage tends to have a many problems, like low yield, poor health and mismanagement . Feed cost is importanmt to monitor as it is 60-70% of your operational cost.

In large farms, we see people coming from different sectors like Real State, IT, and other Industries, who do not have much idea about Dairy Farming. They suffer because of lack of knowledge and lack of guidance from right people and hence we see a 80-90% failure.

How important is it to have hospitals and medicines available nearby?

Good to have some Basic Medicines, generally Cows do not fall sick if you feed them properly and give them balanced food.

Is it easy to secure loans for dairy farming in our country?

That is a challenge. Farmers with 5-10 cows would have migrated to larger farms if they had easier access to loans preferably at a subsidized rate. We should not be treating Dairy Farm at par with any business activity. So if they are getting loan at 10-11% I feel it is high.
They should be getting loan at maybe 4-5 interest on mechanization or improving the farm size.

Has COVID-19 caused any problems?

We are a machine manufacturer, we do not run a Dairy Farm. But as we are associated with Dairy farmers we understand the problems they face. Currently, the problem dairy farmers are facing because of COVID-19 are in terms of milk prices. It has gone down by almost 25-35%.
Dairy like many other business is a cyclic one. You peak at a certain level before you start dropping and then this cycle typically changes after every 4-5 years. If global milk production goes up the prices crash till a point that there is less availability. Then the prices start picking up again. We have witnessed this happening every 3-4 years. We had just finished a lean phase of dairy farming production before COVID happened and things were xepcetd to improve but COVID has derailed everything and has affected Dairy Farmers and all the industries associated with it. We hope it is a temporary phase. The next 2-3 months will see a milk price increase. There is bound to be shortage of milk powder in India in near future. I believe milk prices will spiral upwards soon. If things get back to normal then the milk prices will go to an all time high by the end of the year end and will sustain in the same manner for at least 2 years.

Any danger for cows health owing to COVID-19?

Luckily till now WHO has not reported anything about this disease getting transmitted to animals and vice versa. There are no reports of even pets like dogs that live in close proximity getting affected. I hope it remains the same with cows. If it gets affected it would be a very big problem and challenge to overcome.

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Q01 INTEGRATED ORGANIC FARMING

rajakalrrv: *Hi, We have 5 acres of wetlands. My village near Palamaner Andhra Pradesh. Wish to do Integrated organic farming or organic contract farming*
Require able hands to make it possible.

Answer 1 – shajathali : Do organic farming. What ever doubt you have connect with us we will help you .

Answer 2 – garao56 : We land is suitable for paddy crop, please apply 10 Tons of FYM and cultivate green manure crop and plough insitu and start transplantation of paddy crop and then use panchakavaya, neem products for pest control and to improve the growth of the crop and other cultural and mechanical methods for control of pests. If you are able to continue the organic practices your land will be coverted into organic farm and start to yield normally as if chemical fertilizers are used on the farm

rajakalrrv: Thanks shajathali and garao56 for your replies
The wetland is just under a lake, but all its catchment were blocked on karnataka side, hence devoid of water and almost all the farmers left farming leaving the land barren and other work for lively wood. We left our village for studies in 70s. My grandfather continued farming even without returns till midnight 90s and after his demise the land is barren.
I wish to revive into organic farming with some poultry or dairy farming for some earning
Request to suitable suggestions
I passionate about farming and settle in my village. I live in chennai. Can travel and meet you for discussion

Q02 START A NATURAL/ORGANIC/ ZBNF FARMING

setri1: *I am new to agriculture and in plan to start organic farming in the farm land i am planning to buy. So i want to learn the zbnf/organic farming model which gives ample opportunities to safeguard the investment made and also to generate regular income from the farm. As i and my family are new to farming, i wish to get some good guidance from the experienced ZBNF implementing farmers to understand the problems faced and steps to be taken in this regard. if the farmers land nearby hyderabad, it would be more helpful for me to approach and learn in real than just by talking over phone or through messages.*

Answer 1 – garao56 : Farmers here and there are practicing ZBNF/organic farming . Please inform present activity on your farm, as to whether you are taking up seasonal crops or horticultural crops or animal husbandry activities etc.

setri1: Presently in the said farm, the farmer is taking up multiple crop cultivation by making it into plots for cultivation of vegetables, toor and other seasonal crops. But he isnt doing organic farming. so wanted to learn from a farmer who is doing organic farming from atleast two years

thotanagaraju : Hi to All, I am a fresher in Agriculture field , I have a cultivated land of about 5 acres, I would like to develop a organic cultivation in my land , please suggest me what all can I grow in my land

Answer 1 – garao56 : General Principles of Organic Farming to be followed
1,Soil fertility
2.Multi varieties of cropping
3.Mulching
4.Bio-Fertilizers
5.Seeds & Seed Treatment
6,Growth promoters
- Starter solution
- Leaf Extract
- Fermented butter milk and coconut milk solution
- Panchakavya

7.Crop Protection
- Pest repellent
- Management of crop diseases
- Parasites & Predators
- Micro-Oraganisms
- Trap crop
- Light trap
- N.P.Virus spray

8.Water Management
9.Weed Control
10.Poly culture
11.Inter Cropping
Please contact us for further guidance

Answer 2 -- shajathali : Don't afraid about organic farming, it is simple and easy going once you understand the system.
Why do u want to do organic farming,
#want to yield money from this organic trend.
want to give good food to the consumer.
want to live with nature.
Be clear in it. You have to Design the land accordingly.
Don't get in to the hands of organic inputs manufacturers.

Answer 3 -- muraly menon : Sir, This is all depends upon the total investment (in one time or in different intervals within one year) If the investment is big, you can purchase more land for more profit. If you are planing commercial farming, you have to purchase more land (30 to 50 + acres) for unlimited period, which will benefit for next generations. Commercial farming is just like a manufacturing factory which will not provide dividend for first two years and slowly improving their market share and makes profits forever. This system will benefit your family forever for next 3 or 10 generations. Because your productions are essential commodity for human consumer forever up to end of the world.

According to the above status, I had prepared a masterplan and finance budget for Organic farming with ZBNF system. This is 7 lair plantation with 7 different crops which will provide 7 different products in 7 different periods in a year. If one or two products are under-valued in open market, you can compensate with other products.

I am from Kerala and watching the organic farming sector since last 17 years. All my products have buyers whom they will sign an agreement for 100% buy-back for lang terms. before the planting time.

If you are serious, kindly send your profile to get more details

Answer 4 – garao56 : Still hesitating to take up traditional farming (orgainc) what are the other doubts

setri1: nothing is stopping me from taking up organic farming sir, just that the process of purchase in under process.

Q03 MUSHROOMS FARMING TRAINING

shaildhan : *Dear Sir, I am interested in starting up mushroom farming at cottage industry level.*
Kindly provide me how to start it and start earning profit..

Answer 1 – garao56 : Please inform the location of the unit and type of mushrooms to be cultivated. The Indian Institute of Horticulture Research, Hessargatta, Bangalore will be providing training on mushroom cultivation which is authoritative and hence follow the schedule of trainings. Please contact us for guidance

Answer 2 -- jaycbb69 : Type of mushrooms please. I can help you set up button mushrooms farm. If interested contact.

amitrajpurohit :Want to start a button mushroom unit in Jaipur, Rajasthan. How can you help ?

Answer 3 – garao56 : Cultivation of Button Mushrooms require below 25 Degrees Centigrade and involves investment above 5 crores to 10 Crores for commercial viability. Please think over capabalities

jkmushrum: I want to start a Mushroom farm in my terrace with 400sq. ft. Terrace completely covered with Tata steel roof with around 700sq.ft. total area. Pl provide technical details like structure of farm, materials, seeds supply and approximate cost to start the first batch with say 5 kg. I am in Mangalore, age 58 yrs a freelance computer programmer, want to deviate my future terrace agriculture with hydroponics and mushroom. Pl Help

Answer 4 – garao56 : Initially you can get training from any Government Departments/Pathology department in Agricultural University and other farmers. But marketing is important one has to supply super markets like Reliance, Bigbazar etc . Please contact Directorate of Musroom research, Chambaghat, Solan -173213 (HP) for full guidance

Answer 5 -- vijayaagr : Please contact Directorate of Mushroom Research , Solan , HP for guidance

Q04 ORGANIC CONTROL OF TURMERIC SHOOT BORER

infiniteg : Shoot borer of turmeric (Conogethes punctiferalis) - feed on pseudostem and also feed on the leaf very fast and folding the leaves
Sprayed neem oil - 3%, beauveria bassiana - 0.2%, metarhizum anisopole - 0.25%
Followed by NSKE -5%
We are doing organic cultivation in poly house and we are not able to control it. Please help us in controlling this

Answer 1 -- gunda : If you need we can provide you the remedy.

Q05 RESEARCH ON FARMING PRACTICES

nairsudha : Hi All, I am an ethnographer, and have been involved in a lot of anthropological research in the field of Education. Are there similar researches required in the field of agriculture.? How does one go about doing research in agriculture? Which are the institutes involved and how does such research convert to best practices and help the people who are into farming?

Answer 1 – garao56 : All the agricultural universities in India have established specific crop / animal research institutes all over India and the improved practices are popularised trhough KVKs and State Departments of Agriculture

Q06 BIOFLOC FISH PRODUCTION

vermaaditya:Dear Experts, I have seen lots of videos on youtube and even attended training on biofloc fish production.Though there are tall claims but in none of the video I have heard people doing it profitably for many years. Would any of you know the reality of it? and if its really profitable, how much would be the profit per year per tank? Thanks in advance.

Answer 1 – garao56 : Latest method is RAS system of fish cultivation is being implemented by the Department of Fisheries, GOI

Q07 NEED GUIDANCE FOR CLEANING SHRUBS AND TREES

vermaaditya : Dear All, I have around 10 acres of land where there was no cultivation for years and have shrubs and bushes and small trees in that area. I am looking for somebody who can help me clean the land and ready for cultivation or plantation. pls help if anybody knows mechanical way of cleaning the area

Answer 1 -- vmap : Sir, Better you go to uproot all shrubs and other bushes by JCB and later plough it with tractor for removal of cut pieces from inside the ploughed land.same time use labour to clean such land.

Answer 2 – garao56 : You can take a land development loan from bank and provide all infrastructural facilities like , Bore well, pumset , pipeline, godown, and cultivation expenses for planting fruit crops or farm forestry or cultivation of crops etc
Please contact us for project report and guidance

Answer 3 -- jayajency111: Which area you are

vermaaditya:Kolhapur

Answer 4 – garao56 : Please avail any services regarding project report for land development loan to be availed from bank

Q08 HOW TO PREVENT PLANT ROOT FROM TERMITE BY ORGANIC WAY?

poloking:We need guidance for prevention of plant root from termite by organic method

Answer 1 – garao56 : Nature of damage by termites are generally dead wood, some times on the bark of the plants and not live plants. In Integrated pest management along with cultural and other methods chemicals are also used for control in case of severe infestation chemicals are being used.

Organically the following methods can be adopted.
1. Flooding the fields
2.Use of predators such as cocroaches
3,Uses of pheromones
The points 2 and 3 needs guidance from Entomologists , hitherto there are no such practices in the fields.

Answer 2 – garao56 : Further please adopt the following measures to control termites under organic way.
1.Addition of Farm yard manure (Organic matter) into the soil
2. Crop Rotation
3.Application of neem oil

Answer 3 – intertrade: We are promoting a medicinal herbal formulation since 10 years.
100% herbal, so Natural, specific eradication of Termites

Answer 4 -- dhayaagrowers : We are having a marigold spent which can control nematode and termite I have private message for you of my contact or you private message of your contact for detail information

Q09 DATES PROCESSING

vpatel009 : Respected team members I am looking dates processing techniques for Paste and dates powder if any one know then please guide me Thanking you in advance.

Answer 1 -- maitys: Date powder or Date Syrup contains considerable amount of invert sugars especially fructose usually extracted from inferior quality solar dried date fruits and used as a substitute of sweetener .
Crude date fruit powder or Date Fruit can be processed from solar dried ((Solar Driers / solar tunnel drier / Vacuum Drier or Hot Air Oven Drier)
Pitted date fruits are grinded in heavy duty grinder and sieved at finer mesh size and packed but need to be stored at 4-5 deg C .
Refined and free flowing Date Pulp Powder is processed from Drum Drying or Spraying Drying technology .
MD and TCP , Gum Arabic etc. added to extend the shelf life and texture of the product .
Vacuumed packed spray dried date powder can be stored at room temperature for more than 2 yrs.
Date seeds are traditionally used for animal feed.They can also be used as a source of oil (which has antioxidant properties valuable in cosmetics), as a coffee substitute, as a raw material for activated carbon or as an adsorbent for dye-containing waters .

vpatel009:Dear Maitys, Thanks a lot for kind reply,
May I have your contact details?

Answer 2 – garao56 : Any project report is required please approach us

vpatel009:Please send me your complete contact details,

Q10 PLANTING MANGO ON LAND ATOP A HILL IN NANDGAON (40 KMS. FROM ALIBAGH)

rameses:I have approx. 1.5 acres of land atop a small hill in Nandgaon. Have no idea of what to do, and how to go ahead.
purnachan: Is the land sloppy or plain/flat?

Answer 1 – garao56 : First of all see the depth of the soil (dig a man hole up to 6 - 8 feet to know the soil profile. If the land is slopy dig contours horizontally and take up plantation.
Some times on hills plenty of ground water will be available, sink a borewell and install submersible pumpset and drip system.

Q11 WHICH CROP CAN BE CULTIVATED WITH LESS MAINTENANCE ?

kramsami: Hello, I have a land around 4 acres in Kanchipuram, TN but I live in Bangalore. I tried lease with few people but none of them working. Can someone suggest me the better solution. Is there anything I can cultivate without a person or atleast I can use them once or twice a week to maintain the cultivation?

Answer 1 -- snetra1: Sir, You can plant trees and put a small Pump room(Bore well) cum small House and put somebody to work!If approach local Forest Dept.they can help you!

Answer 2 -- maitys : Fodder

Answer 3 -- shersil : Sir if you are interested you can contact me. We can talk about this more.

Answer 4 – jayajency111: You can try aloevera

Answer 5 – garao56 : Dear Sri Kramsami, Best activity with minimum supervision is Farm Forestry like cultivation of Ecalyptus, Casurina, Malabar neem other trees . But now days there is no demand for Eucalyptus and and casurina etc as the one ton of wood will be Rs.2000 or less. (earlier Rs.3500 to 4000/-) . Hence please take custard apple fruit crop which will yield once in a year with good income. The plants generally grow wild under rain fed conditions.
Now a days farmers are taking up pure fruit crop for which very good demand in the market . One dozen of custard apples at Vijayawada (AP) is Rs.600 to 1000 . After planting custard apple please also take up sandal wood as inter crop ,hence you will be getting income up to 15 -20 years on custard apple and after 20 years you will be getting huge income on the sandal wood trees. Infrastructural facilities like bore well, fencing , worker quarter, pumpset, dripsystem are to be arranged. You can avail a term loan from Banks or coopertives for taking up plantation of fruit crops. Please contact us for further details.

2fcindia : Hello, We have about 18 Acre land in Kannur Dist. Kerala and we would like to start a commercially viable farming project. Kindly advise us if you have any creative idea..

Answer 6 -- pavanuas : Hi sir, as per my view it is better to plant Tamarind, it is hardy (less water required), less maintenance, good returns and more than that you will have less chance of theft.

Answer 7 – garao56 : Tamarind can be cultivated which is hardy plant without any care one can get definite yield of tamarind once in a year. Regarding commercially viable project, please inform the location of the land and resources available . Hybrid coconut plantation can be taken up in Kerala

Q12 I WANT TO START DAIRY FARMING, BUT HAVE NO EXPERIENCE.

sylus1:Hello everyone, It has been a dream of mine to have a dairy farm. I want something small scale. I don't plan on ever have a 200 cow farm. I just want maybe 10 to 20 cow. I have never dairy farmed before. I have never even worked on a farm. I read a lot about it and I go to the farm festivals near me to learn more.
How hard is it to get into? Let's pretend money isn't an issue. Just pretend I have a million dollars to spend. Is it hard to learn? I read a lot about how to milk cows and pasteurize them but having never done it, it seems complicated https://trackeasy.fun/usps/ https://showbox.tools/ http://essaywriter.fun/.
Can someone really just "get into" dairy farming? What route would you advise me taking? The only farmers I personally know don't do dairy/ have cattle so I really have no one to show me. I live in rural eastern PA so I am surrounded by dairy farms, but I don't know them and I don't feel comfortable enough to just try and ask them to teach me or something.

Answer 1 – garao56 : Dear Sir, Please inform the following facts:
1. your exact location 2.Land holding particulars (at least 2-3 acres of land is required for raising fodder crops for cows 3.What type of cows you are going to rear (Cross bred cows or Indigenous cows) 4.You can start the dairy farm and take the assistance of workers 5.Milking can be done manually or by using milking machines

Answer 2 -- somkar: Take proper training at proper dairy farm, under suitable expert,depending on your requirements. We will arrange for you

Answer 3 – garao56 : Dairy may be started with expert workers from Bihar who can look after 10 milch animals , along with family they charge Rs.14000/- per month. Hence one need not undergo any training . Practical observation on his own farm for about 1-2 months is enough

Answer 4 -- kottarambiju : I am from Kerala. There are more than five cow farms in my locality. They all started with 2-3 cows and now having more than 100 cows. They all gained experience from their own farms. They get advise from experts also through Milma, a government body.

Answer 5 – yourpunch: We give complete guidance for start to marketing for dairy, please contact .

Answer 6 -- singharry : Can someone really just "get into" dairy farming? What route would you advise me taking? The only farmers I personally know don't do dairy/have cattle so I really have no one to show me.

The three new agriculture-related bills!

India has to change and specifically Indian agriculture sector has to change radically in many ways.

Today the politics in India is so polarised that even if you want to make any honest and even innocent pronunciation it is suspect and mistaken in terms of the highly polarised politics. And let us not forget for a minute that agriculture is very tough subject and very difficult to articulate in any objective manner. Agriculture is also a state subject and it is for the states to draw up and implement any meaningful agriculture policy or policies.

Unfortunately, the politics in the States too is so polarised that those states what are under the Congress party dispensation are asked by Sonia Gandhi not to implement the Centre's new policies. So we have to keep in mind the larger interests of the very entire farming community.

Here we would tackle only a few basic points. One, we have to first of all take a very broad outlook. Agriculture is the least efficiently performing sector also, the allocation in the budget for agri research is near zero do you know? Just one percent !

So, we have to pause and suspect at every stage of policy implementation. The existing and emerging gaps in data pertaining to the dispersal of real potential beneficiaries. You can already see the allegations in the Pradhan Mantri schemes of how the free loans are diverted into hands of corrupt officials. And as we read in Tamil Nadu, the scheme is already in the dumps before it is put into practice! These are the sort of ground level realities we like to highlight and many more such government money-swindling acts are likely to come in the way very soon. So, first of all we have to ensure, the Central Government must first get reliable data is not fudged and the very openness and transparency must be ensured before we start talking about our hapless farmers. We welcome them, the new bills, with certain qualifications and also with a progressive mindset! You see agriculture is a vast area of economic activity.

Yes, agriculture in India has been the subject of much controversy today. In sum, we can say with certain confidence that all who talk of farmers' issues are very superficial and they don't know, we say with some confidence, anything at all about the ground level realities.

The BJP has come out with the three bills, all related to the marketing freedoms for farmers and also with the promise of MSP and much else. The opposition led by the Congress party and in particular by Rahul Gandhi who has lately turned into a full-scale opponent of the BJP and more so directly towards the Prime Minister has turned the whole debate into a partisan politics whose end we don't know yet full impact of the three bills on the future prospects on the Indian agriculture.

The agriculture sector of India is a vast subject of importance. It is a bit ironical that politics in India today also has become so unprincipled that anybody and everybody who speaks on agriculture these days seem to be totally unsuited and unequal to the task! Unfortunately, democratic politics has brought out a sort of rootless people to high offices!

You live all your life in Delhi, you inherit some office or title and you become a leader, even a party functionary is now a leader. In the political parties too most of the persons who appear on the TV screens or get your name inserted in some obscure corner of a newspaper or a TV show is a leader and given the sort of politics we have fashioned in the country with so many of the present or past leaders, the numbers are so significant that there are no resources, we are told to book and carry out court cases against those implicated in criminal cases, the past MPs and MLAs and so on.

The point here is that when we talk of agriculture we seem to speak so superficially and has nothing to do with the actual lives and livelihood realities. We are a small media group and we live and practise farming, you believe?

So we are totally unimpressed by the comments and criticisms of all these politicians, the crorepathis and the corrupt politicians who dare and comment and dare to give such bogus statistics etc. Everyone said without exception, it seems, that the average holds of farm lands has declined and now less than one hectare is hell by the majority of the farmers.

Is this a magic reality? Is this something very unusual?

Only those who live in the villages know well that in every village inequality and inequity is the basic ground level reality. Not every one can hold big land holdings. It is the village reality that only a few, often one or two families can hold large holdings, every past century you can see that farming lands ceasing to remain big holdings, from old jagirdari holdings to progressive fragmentation.

May be if we don't further attend to farming issues, very soon villages would become desolate and the rest of the farming households would see their members further reduced and there could be empty villages without any younger generation continuing the traditional farming operations.

So, it is one more reason why we have to make farming a productive enterprise, we have to make farming change to respond to new scenarios.

Let us welcome all changes with an open hand!

Any change is welcome in farming sector, so too the latest fermium bills. Only sad thing is how the bills were rushed through, may be the government has its own compulsions.

The government needs much sympathy and support, at least they enacted the bills! Of course politics is in reality very controversial politics one, it seems! Where the heads you win and tails you lose! Now, we like to say certain things very clearly and emphatically!

First you have to reconcile with the Indian rural realities.

One, the rural India would have to protect and promote the landless labour. You have to sustain this rural population segment as a permanent feature of Indian countryside, namely, the rural landless population!

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