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Soil Stewardship for High Cotton Yields

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GUEST COLUMN

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Introduction of the high yielding American cotton varieties and the hybrid cotton brought a sizeable yield increase in the 1970's. It caught the imagination of farmers and more than 40% of the cotton cultivated area came under the hybrids. Cotton farmers rapidly adopted and infused modern agronomic and crop protection technologies. The novel pesticides belonging to the pyrethroid group were introduced to control a wide range of pests in cotton. It revolutionised cotton production because of an effective control of the insect pests.

However, the technology was misused with an indiscriminate application of the synthetic pyrethroids. The widespread pest incidence especially of the whiteflies and then the bollworms made the farmers seek desperate measures. Excessive pesticide usage caused further resurgence of whitefly and insects, including the American boll worm, developed resistance to the insecticides used. Cotton farmers experienced widespread crop failures. As a result, there was a lull in the productivity during the late 1980's and the early 1990's.

World over there was research mulling around the development of an insect tolerant crop variety. The genetically modified cotton was the product that came into existence. Monsanto was successful in developing the GM cotton tolerant to the bollworms and this was commercially cultivated first in the USA, Australia, Brazil and China.

India finally took to this innovation much later in 2002. From meagre thousands of hectares, it started occupying millions of hectares and presently occupies more than 95% of the cotton cultivated area. Productivity jumped from ~300 kg lint/ha during 2000-2003 to more than 500 kg lint/ha achieving a high of 570 kg lint/ha in 2007. But in the last decade, it is seen that in spite of growing cotton with the best of the transgenic Bt cotton hybrids having tolerance to the boll worms, cotton productivity is hovering around 500 kg lint/ha. Thus, it appears that there is a technology fatigue.

Taking care of the soil – insures prosperity and productivity

So is it possible to break these yield barriers? Yes, we can, by doing the right things, and the right things in the right manner. One of the most basic of the management strategies is '*soil stewardship*'.

Soil Stewardship means careful and responsible management of the soil entrusted to one's care. Most often, we feel that we own the land, so we are stewards of the land. But this is not the case because we take it for granted. Classical textbooks of Soil Science and Agriculture define soil as '*soil is the unconsolidated inorganic and organic materials on the surface of the earth which support the growth of plants*'. With this approach, it is clear that we consider soil more as a medium of plant growth and nothing more. As a result, farmers used to apply fertilizers to correct any nutrient deficiency and they were rewarded with a bountiful crop. This was not only for cotton but for any crop that was cultivated. The era of the green revolution led to three main changes (i) use of the improved seed, (ii) application of fertilizers and irrigation and (iii) crop protection.

Nothing was wrong with this technology because it resulted in substantial yield gains and the need was to improve the productivity levels apart from improving the livelihoods of the millions tilling the land. But the not so good thing was the over reliance on the external inputs with the assumption that whatever we put into the soil, it would result in better crop yields and bigger profits. This did not happen. Soon it dawned that something was going wrong. A close check pointed out some of the glaring facts such as:

1. Moving away from the application of manure - farmyard manure and composts to the use of mineral fertilizers
2. Excessive use of pesticides
3. Heavy irrigation wherever water was available
4. Herbicide use to control weeds
5. Adopting mono-crop over the diversified cropping systems

Ironically and historically, we worship ***'Mother Earth'***, as is borne out through the several rituals and festivities, we follow traditionally. All these symbolise that we should live in harmony

with nature and the sense of togetherness. Yet, we have brought in discord. Thus, it is this, bond of togetherness and living in harmony that needs to be strengthened and not weakened, if we are to achieve self sufficiency. This is possible if and only if we develop and follow some strong scientific and ecological principles that guide us along the way.

Hardcore proponents of Soil Science and the other branches of Agriculture Science dealing with land management woke up when a staunch Soil Scientist, Daniel Hillel, described soil as a '*living entity*' in the book "*Out of the Earth*". This became one of the turning points in the manner in which we viewed soils from the classical definition itself.

If we consider soil as a living thing, then just like any living being, it can either be healthy or unhealthy. Through a proper soil stewardship (management), we can keep the soil healthy and more importantly create an ideal soil environment for growing a crop. If we do not do this, we are in effect killing our soils by polluting them with an overload of chemicals and fertilizers. This understanding culminated in giving greater importance to the soil and '2015 was the Year of the Soil'.

Soil stewardship aims at a larger picture of feeding the soil and not the plant, because soil is a '***habitat***' comprising of millions of organisms that include bacteria, fungi, nematodes, earthworms and so on. Most of these are beneficial to the ecosystem such as the bacteria fix nitrogen and make it available to the crop; earthworms burrow into the soil and make the soil porous; fungi form a mycelia network and make nutrients available to the plant in a more readily available form.

Arresting soil erosion and degradation

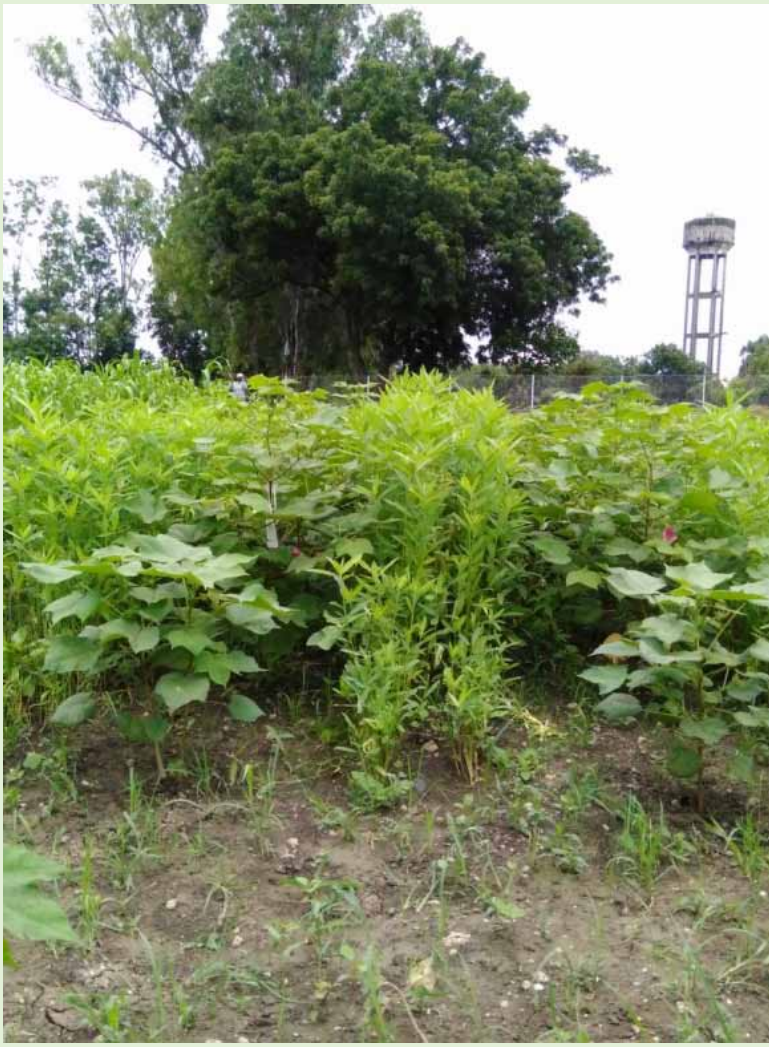
If we have lost the soil, then we have lost it forever because it takes several hundreds of years to build just a few millimetres. Soil erosion and land degradation is one of the main causes of declining crop productivity. Conservation agriculture is now thought of as a panacea for all the ills that modern agriculture has witnessed so far, for the simple reason that it takes a holistic view.

Conservation agriculture is essentially an integration of ecological management with scientific and modern techniques tempered with traditional knowledge gained from generations of successful farmers. Conservation Agriculture has at its core three interlinked principles, namely, (i) minimum soil disturbance, (ii) providing a soil cover (crop residue) and (iii) sound crop rotations and diversification. Because of the integration of several practices, we tend to reduce soil erosion and land degradation.

Improve soil quality

The conservation agriculture strategies outlined in the previous section also result in an improvement of the soil quality - physical, chemical and biological properties. We can also reduce dependence on nitrogenous fertilizer by following diversified cropping systems that include a legume. Growing crops in rotation will also circumvent the pest and disease problems.

Cotton is grown at wide row spacing (>60 cm) and is also slow growing initially. This inter-



Growing a nitrogen fixing crop, such as sunnhemp (in picture), moong, udid, soybean, groundnut in between cotton rows will help reduce dependence on fertilizer-N.

row space can be effectively used by growing a legume cover crop and later applying it as mulch. Legumes fix nitrogen from the air and will make it available to the crop at a later date. Thus, there is a potential to reduce dependency on fertilizer-N. Furthermore, cover crops offer protection to the soil against erosion and conserve the soil moisture. This can be adapted as per the location and the market demand, taking up a cover crop or a food legume. Farmers also stand to benefit from the extra income from the food legume grown.

Get soils tested and take care of it

Most often, we think that the soil is just a medium for plant growth and opine that adding nutrients to the soil will take care of the plant. In the short-term, this works; but not in the long-term. We can take good care of the soil, if we get the soils tested on a regular basis and realise what is happening to it.

At the end of the day, by careful stewardship of our natural resource 'the soil', we will get soils that are livelier, healthier and environmentally safer and restored to a healthy state. To achieve this end, we need to treat the soil as a long-term investment. All these will ultimately lead to more productivity of not only cotton but any crop that we grow.

"We owe it to ourselves and to the next generation to conserve the environment so that we can bequeath our children a sustainable world that benefits all." – Wangari Maathai

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(The views expressed in this column are of the author and not that of Cotton Association of India)

CAI Office Bearers Attend Karnataka Cotton Association's AGM

Cotton Association of India President, Shri. Atul Ganatra, Vice-President Shri. Bhupendra Singh Rajpal and other CAI Directors attended the Annual General Meeting and get together of the Karnataka Cotton Association held in Goa on 3rd and 4th October 2017.

Fourth from l to r Shri. Arun Sekhsaria, Vice-President, CAI - Shri. Bhupendra Singh Rajpal, President, CAI - Shri. Atul Ganatra, Shri. Pankaj Mepani and Shri. Pankaj Lakdawala

COTTON EXCHANGE MARCHES AHEAD

Madhoo Pavaskar, Rama Pavaskar

Chapter 7
Revival of Futures Trading

Introduction

Although futures trading in cotton commenced at the Cotton Exchange Building in Sewree with much fanfare and alacrity after a lapse of over 32 years, the cotton trade had never given up hope for the revival of such trading through all those years. At every annual general meeting of the East India Cotton Association, the demand for resumption of futures trading in cotton was vociferously voiced for over three decades and more. After all, none was probably so much affected by the closure of the futures market as the cotton merchants. For, the suspension of futures trading in cotton did neither remove nor reduce the price fluctuations in it and the associated risks.

Over the years, the magnitude of the risks from price fluctuations had actually increased, because not only the instability in cotton prices was aggravated for want of efficient risk management tool, but the level of prices was also rising rapidly following the inflationary pressures in the economy. To be sure, the cotton market was caught in a vicious circle of rising price fluctuations, growing price risks, widening marketing margins and increasing price movements as a result. As the level of prices tended to rise, the price variations became larger, enhancing thereby the magnitude of price risks in absolute terms as well.

With the private cotton trade marketing almost three-fourths of the crop, the brunt of increasing price risks in the physical market was borne essentially by the cotton merchants. Small wonder, they were constrained to raise their demand for the resumption of futures trading with religious fervour year after year, even though laboring under the misconception of ushering in a socialistic pattern of society, the government seemed to be dead set against such revival. But being convinced of its case and the seriousness of the risk problem, the cotton trade refused to give up its struggle, hoping against hope that one day the authorities would see the light. That day finally dawned, but not before the trials and travails of the Cotton Exchange in its struggle culminated in the authorities giving in to the legitimate and logical trade demand.

Early Attempts

It all began in January 1979 when, in view of the very satisfactory supply situation in cotton, the Board of Directors of the Cotton Exchange appointed a Committee to examine the feasibility of reviving trading in futures and/or transferable specific delivery (t.s.d) contracts in cotton. The Committee recommended that the Forward Markets Commission (FMC) be approached to allow the Exchange to commence futures trading from the 1979-80 season. On February 16, 1979 the Exchange requested the Commission to permit futures trading, since shortages in cotton that existed in the mid-1960s, when futures trading was suspended, had disappeared.

In the changed situation, the Commission too appeared keen to examine the issue afresh and asked the Exchange to provide the terms of the futures contract. The Exchange proposed two contracts- one for the medium staple cotton and the other for the long staple, but finalised the terms to begin with for only the medium staple contract with M.G. J-34 of 22 mm as the basis variety. The Commission was informed of the terms on March 20, 1979.

Meanwhile, although the Millowners' Association in Mumbai was in favour of resuming futures trading in cotton, the Indian Cotton Mills' Federation felt that the matter should be kept in abeyance till such time as the supply situation for cotton turned comfortable on a durable basis. Following the resistance from the textile industry, the Department of Textiles in the Union Ministry

of Commerce seemed reluctant to support the proposal of the Cotton Exchange. In the end, to the great disappointment of the Exchange, the Union Ministry of Food and Civil Supplies decided to put the proposal in cold storage.

Plea for Revival

In the meantime, the Government of India appointed in March 1979 yet another Committee under the chairmanship of the eminent economist, Prof. A.M. Khusro, to assess the need for futures trading and ascertain the commodities suitable for such trading". Welcoming the appointment of this new committee, Mr. Rajnikant Purshotamdas, the then President of the East India Cotton Association (E.I.C.A.), made a fervent plea for the revival of futures trading in cotton in his address at the 58th Annual General Meeting held on February 19, 1980. He validly argued that "suspension of futures trading in cotton has hardly served any useful purpose. Neither has it helped to curb the rising trend in cotton prices nor has it reduced price fluctuations in the commodity. It has merely denied the legitimate hedging facilities needed for orderly marketing for the cotton trade and the industry".

Mr. Rajnikant went on to add, "But whatever may have been the reasons which prompted the authorities in the past not to allow futures trading in cotton, the time is now quite opportune to revive such trading. A breakthrough has been achieved in cotton production during the last two years. As a result, supply is now running ahead of demand. In fact, the surplus cotton output, including staple varieties, is now being exported. Cotton prices are also reasonable, despite the strong inflationary pressures in the economy. Clearly, the need for hedging in cotton by all market interests – traders, exporters, mills – is now all the greater than at any time in the recent past. We, therefore, sincerely hope that the Khusro Committee would recognise this need and recommend an early resumption of futures trading in cotton".

In conclusion, Mr. Rajnikant Purshotamdas stressed that "the presence of public sector agencies like the Cotton Corporation of India and the Maharashtra Monopoly Scheme does not reduce the need for futures trading. These agencies themselves need the facility for protecting against price falls. The futures market precisely provides such a facility, and even if the prices tend to be stabilised as a result of the public sector agencies, the need for futures market will not vanish since the price fluctuations, small though they may be, will still continue. In such circumstances, there will be no need to close the futures market. The market activity will automatically fall and yet the market will serve the useful purpose of hedging and price making". Mr. Rajnikant therefore urged the authorities "to revive futures trading in cotton with appropriate safeguards, if necessary". Much to the satisfaction of the Cotton Exchange, the Khusro Committee recommended to the government in June 1980 to revive futures trading in several commodities, including cotton and kapas. It, however, took the authorities five more years to make its next move.

Contract in Four Varieties

After two decades since the suspension of futures trading in cotton in 1966-67, cotton production had more than doubled – from 53.50 lakh bales to 107 lakh bales in 1984-85. The cotton famine of the 1950s and 1960s had become a relic of history. Having achieved self –sufficiency, India even emerged as a net exporter of cotton to the world markets. The Cotton Exchange therefore once again approached the Forward Markets Commission on May 20, 1985 to consider favourably its demand for futures trading. In January 1986, the Exchange also requested the Department of Textiles in the Ministry of Commerce, whose concurrence was required, to support its proposal. Ultimately, a year later in January 1987 the government agreed to resume futures trading in cotton, but in just four long and extra-long staple varieties, namely, DCH-32, MCU-5, Shankar-6 and Hybrid-4.

The Cotton Exchange was pleased that at long last the government had conceded its demand, but was far from happy. The four tenderable varieties, in which futures trading was agreed to be allowed, together accounted for less than one-third of the country's cotton crop. The Exchange therefore feared that the contract based on those four varieties would be too narrow to operate smoothly. What prompted the government to permit futures trading in just four varieties was a mystery beyond logic. It betrayed lack of understanding on the working of a futures contract. Like Hamlet, the Cotton Exchange was in dilemma – to accept or not to accept the odd and strange government proposal.

(To be continued ...)

Production Of Man-Made Filament Yarn

(In Mn. kg.)

Year/Month	Viscose Filament yarn	Polyester Filament yarn	Nylon Filament yarn	Poly propylene Filament yarn	Total
2010-11	40.92	1462.28	33.46	13.14	1549.79
2011-12	42.35	1379.52	27.95	13.19	1463.01
2012-13	42.63	1288.15	22.91	17.18	1370.87
2013-14	43.99	1212.43	24.09	12.91	1293.42
2014-15	44.24	1158.20	32.55	12.77	1247.76
2015-16	45.41	1068.80	37.26	12.66	1164.13
2016-17 (P)	46.07	1060.41	41.00	11.45	1158.93
2017-18 (P) (Apr.-July)	11.33	272.89	10.12	2.54	296.88
2015-16					
April	3.80	95.97	3.22	1.09	104.08
May	3.70	96.03	3.01	0.99	103.73
June	3.69	82.80	2.69	0.95	90.13
July	3.78	82.67	3.11	1.12	90.68
August	3.81	86.94	2.96	1.13	94.84
September	3.82	89.67	2.81	1.00	97.30
October	3.83	89.49	3.17	1.00	97.49
November	3.75	87.58	2.86	1.32	95.51
December	3.82	90.60	3.29	0.91	98.62
January	3.83	93.31	3.36	1.02	101.52
February	3.78	86.91	3.32	1.10	95.11
March	3.80	86.83	3.46	1.03	95.12
2016-17 (P)					
April	3.78	84.08	3.30	0.96	92.12
May	3.88	85.31	3.38	0.96	93.53
June	3.90	84.93	3.27	0.95	93.05
July	3.98	89.83	3.46	0.99	98.26
August	3.97	90.88	3.38	0.97	99.20
September	3.75	89.11	3.67	0.96	97.49
October	3.89	93.00	3.69	1.05	101.63
November	3.78	86.49	3.06	0.77	94.10
December	3.84	84.59	2.76	0.80	91.99
January	3.87	93.21	3.77	1.10	101.95
February	3.56	85.78	3.49	0.89	93.72
March	3.87	93.20	3.77	1.05	101.89
2017-18 (P)					
April	3.81	89.41	3.24	0.85	97.31
May	3.83	92.68	3.49	0.79	100.79
June	3.69	90.80	3.39	0.90	98.78
July	3.92	96.51	2.96	0.95	104.34

P - Provisional

Source : Office of the Textile Commissioner

UPCOUNTRY SPOT RATES

(Rs./Qtl)

Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	Spot Rate (Upcountry) 2017-18 Crop OCTOBER 2017 2nd	3rd	4th	5th	6th	7th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15		9673 (34400)	9673 (34400)	9673 (34400)	10545 (37500)	10686 (38000)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15		9870 (35100)	9870 (35100)	9870 (35100)	10691 (38000)	10826 (38500)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20		7677 (27300)	7677 (27300)	7677 (27300)	7677 (27300)	7677 (27300)
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21		8942 (31800)	8942 (31800)	8942 (31800)	8942 (31800)	8942 (31800)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	H	9701 (34500)	9701 (34500)	9701 (34500)	9701 (34500)	9701 (34500)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26		10179 (36200)	10179 (36200)	10179 (36200)	10067 (35800)	10123 (36000)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	O	9364 (33300)	9364 (33300)	9364 (33300)	9505 (33800)	9505 (33800)
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25		9617 (34200)	9617 (34200)	9617 (34200)	9758 (34700)	9758 (34700)
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	L	10320 (36700)	10320 (36700)	10320 (36700)	10208 (36300)	10264 (36500)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26		9701 (34500)	9701 (34500)	9701 (34500)	9842 (35000)	9842 (35000)
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	I	9926 (35300)	9926 (35300)	9926 (35300)	10067 (35800)	10067 (35800)
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27		10376 (36900)	10376 (36900)	10432 (37100)	10320 (36700)	10348 (36800)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	D	10545 (37500)	10545 (37500)	10601 (37700)	10573 (37600)	10629 (37800)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27		10545 (37500)	10545 (37500)	10601 (37700)	10573 (37600)	10629 (37800)
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	A	10714 (38100)	10714 (38100)	10770 (38300)	10742 (38200)	10798 (38400)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28		10686 (38000)	10686 (38000)	10742 (38200)	10714 (38100)	10770 (38300)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	Y	10967 (39000)	10967 (39000)	11023 (39200)	10995 (39100)	11051 (39300)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30		11332 (40300)	11332 (40300)	11389 (40500)	11360 (40400)	11417 (40600)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31		11923 (42400)	11923 (42400)	11979 (42600)	11951 (42500)	12007 (42700)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33		14482 (51500)	14482 (51500)	14482 (51500)	14482 (51500)	14482 (51500)

Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]

(Note: Figures in bracket indicate prices in Rs./Candy)