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Modern High-Biotechnologies for Improvement of Superior Fibre, Productive and Early Maturing Upland Cotton Cultivars

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GUEST COLUMN

Dr. Ibrokhim Y. Abdurakhmonov

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Worldwide agricultural production is significantly suffering from day-to-day worsening environmental situations because of land degradation, decreased level of crop genetic diversity, increased biosecurity threats and global climate change. This has decreased soil water availability, increased heat stress of plants, and altered the development cycles of crops. Soil salinity and drought stress accounts for large reductions in the yield of a wide variety of crops worldwide. The area of salt-affected land is very large, and rapidly increasing due to increased irrigation, farming practices in arid zones, and global warming. There is a noticeable downward trend in cotton production during the past decades that is due to genetic (narrow genetic diversity), environmental (drought, heat, salinity, etc.) and a number of policy factors (food security, low fibre price, etc.). In particular, the decrease in area allocated to cotton sowing is attributed to issues concerning food security and problems with irrigation and soil salinisation.

The main bio-security issue threatening agricultural production, including cotton and wheat, is related to this issue of problematic shortages in irrigation and water deficiencies that will remain a priority danger for Central Asian region and beyond[1]. Water deficiency and high temperature, combined with saline conditions, are seriously affecting crop production and yield, and affect the economy on a year-to-year basis. This problem may be significantly aggravated due to global warming[2]. The utilisation of available freshwater resources for irrigation of cotton plantations causes many ecological problems in the region, including soil salinity and human population health issues, mainly associated with decreasing the level of Aral Sea basin, which has become a global problem for the past several decades[3]. In that note, most irrigated land is subject to natural salinisation and cropland suffering from secondary salinisation in Central Asia, including Uzbekistan.

Being one of the important cash crops,cotton (Gossypium spp.) is the unique, most important natural fibre crop in the world with a significant economic impact. The worldwide cotton industry is estimated at $500 billion/yr with an annual utilisation of 115-million bales or 27-million metric tons (MT) of cotton fibre valued for $27 – 29 billion. Additionally, cotton provides a significant food (cottonseed oil) and feed (cottonseed meal, cottonseed hulls and whole cottonseed) source for humans and livestock. Compared to other many field crops including tropics such as soybeans, corn, maize, rice and wheat (with a net return of $312, $234, $138, $126 and $116 per hectare respectively), the average net return from cotton is significantly higher and valued for US$415 per hectare[4].

Genome of allopolyploid cotton (Gossypium ssp.) is poorly studied and cotton lags behind many crop genomics and genetics as well as marker-assisted selection (MAS) due to existence of low molecular polymorphisms among cultivar germplasm caused by a 'genetic bottleneck" during cotton domestication. There are two tetraploid species of cultivated cotton grown, Gossypiumhirsutum (so called Upland cotton) and Gossypiumbarbadense [so called Extra Long Staple (ELS) or Pima/Sea Island cotton]. Upland cotton cultivars are grown over 90% the world cotton area because of their productivity and early maturity and moderately good fibre properties. ELS cotton cultivars, however, is grown in only 5% worldwide. Although ELS cultivars produce very fine fibre qualities, their productivity, and other key agronomic properties are poorer than Upland cottons. Improvements of fibre quality of Upland cottons like what is in ELS varieties without affecting early-flowering, early-maturity and productivity is a very difficult task using conventional breeding methods, because it has been observed that normally negative correlations exists between major fibre quality and yield or maturity traits. It is important and imperative to develop Upland cotton cultivars with increased yield, early maturity while producing longer and stronger fibres to be competitive in the global market and over synthetic fibres. However, traditional breeding successes have been minimal over 100 years of worldwide breeding efforts that suffered from linkage drag and distorted segregation in interspecific hybrid progenies from Upland and Pima sexual crosses. This prompted the cotton community to develop an "innovative new generation crop technology" to address this largely eluded and fundamentally longstanding challenge in worldwide cotton improvement programs[5].

This issue was even more challenging due to a global climate change coupled with accelerated rise in atmospheric carbon dioxide (CO2), shifted vegetation period and crop cycle, and increased biological and environmental threats, that is expected to be negatively impacting world agricultural farming including cotton and many other crops. Similar challenges of negative correlation between productivity/maturity and crop quality as well as a narrow genetic diversity do exist in many crop species of world agriculture, where a solution would provide an opportunity to benefit more from marginal agricultural production of high quality in shorter vegetative periods that helps to save land resources and environment. Here it should be noted that based on 11,275 approved field trials for genetically engineered (GE) crops that covered more than 20 years of research and 13 years of commercialization, helped to have no boost of intrinsic (or potential) yield of agricultural crop with marginal 3-4% operational yield gains. This underlies the necessity for novel biotechnology tools to solve these outstanding problems of yield increase, in particular intrinsic yield improvement in all crops[5].

We took innovative approaches to timely overcome above-mentioned obstacles in agriculture in an example of cotton research. We added new results to the world literature on genetic mapping of complex agriculturally important complex traits such as early leaf defoliation, lint percentage, photoperiodic flowering, wilt disease resistance and major fiber quality traits. Further, our team analysed a global set of 1000 accessions of worldwide Upland cotton germplasm from Uzbekistan collection, and for the first time estimated "yet unknown" linkage disequilibrium (size of recombination blocks; LD) in complex poorly characterized cotton genome. A genome-wide averages of LD extended up to genetic distance of 25 cM at $r2>0.1$ and ~5-6 cM at $r2>0.2$ in variety germplasm. Genome wide LD at $r2>0.2$ was reduced on average to ~1-2 cM in the landrace stock germplasm and 6-8 cM in photoperiodic variety germplasm, providing evidence of the potential for association mapping of agronomically important traits in cotton. Results suggest that linkage, selective sweeps, inbreeding and genetic drift as the potential LD-generating factors in cotton[5].

Efforts resulted in association mapping of major fibre quality traits in two globally diverse environments of Uzbekistan and Mexico using mixed liner model (MLM), considering both kinship (K) and population structure (Q) to minimise spurious associations. LD-based association mapping was found to be effective in cotton. Efforts provided first insight into understanding environment-specific functions of genes controlling fiber development that increases the effectiveness of cotton marker-assisted breeding programs in similar latitudes. This study demonstrated that successful application of genetic association analysis using large numbers of populations accelerates the discovery rate of gene and quantitative trait loci (QTL) alleles, tagging

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useful genes and biologically meaningful markers useful for marker-assisted selection (MAS) of cotton[5].

Most importantly, these pioneering investigations, for the first time, resulted in designing and completing a successful MAS programs in Uzbekistan. We succeeded in creating modern MAS breeding platform for improving complex cotton fibre quality traits of any Upland variety in a short-term using DNA markers and donor lines as well as prepared new generation molecular breeders. MAS concept and platform developed through examining a global set of worldwide Upland cotton germplasm resources provided opportunity to utilise "yet untapped" QTLs from cotton germplasm that widened the genetic background of commercial cotton cultivars conventionally suffered by a narrow genetic diversity[5]. This should increase adaptability of commercial cultivars to the harsh environmental abiotic and biotic stresses in the era of global climate change and warming as well as global biosecuriy threats of crops in the era of global technological advance. To address crop biosecurity more specifically, efforts are in progress in our laboratory to breed, for instance, highly Fusiarumwilt disease (FOV) resistant MAS cotton varieties keeping superior fibre quality, maturity, and productivity using molecular breeding.

In particular, the first generation novel and high impact MAS cotton cultivars, named as "Ravnaq" series (translates as "Advance"), bear novel and "yet-unused in Uzbek cotton breeding" fibre quality QTLs and have improved cotton fibre quality from coarse types of 4-5 or from code of 35-36 (typically marketed worldwide) to the finest type of 2-3 or code of 38-39 fibre. These improvements add higher premium price for each pound of fibre that should bring significant economic income and help to benefit more, therefore, if necessary, may allow cut the acreages engaged to cotton saving the land resources. Modern MAS breeding platform significantly cuts breeding period from traditionally required 10-12 years of tedious traditional breeding with minimal success to 3-4 years for improving cotton fibre qualities of any Upland variety with keeping early maturity and high yield characteristics - helping to save resources and accelerated solving of any key issues in breeding. This demonstrated the power of using MAS DNA marker panel and novel QTL-bearing donor genotypes in cotton breeding. This helps to decrease the cost and resources needed for breeding that accelerate cotton-breeding efforts worldwide.

Currently "Ravnaq" MAS cultivars are being tested by State Variety Testing Committee of Uzbekistan across different cotton growing soil-climatic zones of the country with the aim of its commercialization. MAS cultivars has passed 2-years of large field evaluations in 2013 and 2014 seasons and have already proved their genetic and agronomic superiority to conventional Upland cultivars. It is expected that after completion 3rd year of field evaluations in 2015/16 season the first generation MAS cotton cultivars will be considered for a large-scale cotton farming.

Secondly, to develop cotton biotechnology and produce Uzbekistan's own biotech cottons, we put specific effort to de novo characterize important cotton gene families and sequence signatures involved in cotton photomorphogenesis and flowering, fibre and seed development, root development, and in plant defense and disease resistance. We have established an efficient high-through put cotton tissue culture and transformation system in order to study newly cloned gene functions. For instance, because of multiple gene effects in plant development, yield potential and productivity, plant flowering and architecture, salt tolerance, cold/freezing and drought tolerance in model plant Arabidopsis and fungal disease resistance in rice, for the first time, we characterised cotton phytochrome gene family. Our team genetically associated cotton phytochrome and its signal transduction factors to cotton fibre quality, yield potential, and maturity traits in his genetic mapping and targeted RNA interference studies[5, 6].

PhytochromeRNAi study provided the first molecular evidence of importance of the phytochrome gene family in cotton fibre development and demonstrated the role of phytochrome-specific RNAi, simultaneously improving several important agronomic (e.g., early maturity, high yield) and fiber quality traits (length, strength, fineness, elasticity, and uniformity) in somatically single-cell regenerated RNAi Coker 312 cotton plants. Previous studies in model plant Arabidopsis have shown physiological consequences associated with modulation of expression of phytochromes and cross-regulatory effects as the manifestations of a compensatory regulatory network of phytochromes. Our results sharply contrast with findings from Arabidopsis in which loss-of-function phyA mutations showed no increase in PHYB expression. PHYA1RNAi cotton lines with 70% decreased level of PHYA1 expression showed increased transcript levels for PHYA2, PHYB, PHYC and PHYE. These observations indicate that the phytochrome regulatory network of cotton may have a fundamentally different dynamic architecture than that of Arabidopsis[5, 6].

Our effort proved that RNAi of cotton PHYA1 gene generated agronomically useful phytochrome-associated RNAi phenotypes in somatically regenerated RNAi Coker-312. Efforts improved fibre quality (38-40 mm fibre length versus 29-32 mm), micronaire (3.9-4.2 vs. 4.9-6), early maturity

Figure 1. General filed and cotton bush view of novel RNAi cultivars series "Porloq" grown and field trialed in 2014 season in Uzbekistan.

(for 5-10 days early) and higher seed cotton yield (~10-18% higher) with developed root system (two times longer) and better adaptation to salt/drought and heat conditions. A concept of this technology demonstrates a great potential to develop superior cultivars in a globally important crop species in a short time without any adverse effect on yield and other desirable agronomic traits[5], [6].

Using this state-of-art PHYA1 RNAi concept and results, we developed the first generation novel generation GE cotton variety series "Porloq-1", "Porloq-2", "Porloq-3" and "Porloq-4" (translates to "Great future"; Figure 1). These RNAi cultivars have successfully passed three years (2012-2014) of extended field trials across 13 different soil-climatic regions in Uzbekistan[6-8]. Results of field trials demonstrated superiority of RNAi cultivars to any traditional Uzbekistan varieties both in terms of fiber quality, adaptation to harsh environmental conditions across Uzbekistan, early maturity and significant increase in seed cotton yield or production of average lint fibre. It is noteworthy to mention this here that these first generation RNAi cultivars developed from application of state-of-art RNAi technology concept, to the best of current knowledge, are the world's first biotech cotton with improved fibre quality and other agriculturally important characteristics. This is also the first example of successfully field trialed RNAi cotton cultivars worldwide.

The state-of-art novel RNAi cultivar series "Porloq" demonstrated a huge impact[6-8] and superiority of these GE cultivars to any traditional Uzbekistan cotton varieties in terms of fibre quality (38-41 codes vs. 35-36 of ordinary). Further, the superiority is evidenced by adaptation to harsh environmental conditions (salt and drought/heat stress) across Uzbekistan, early maturity for 5-10 days, and at least 10-18% increase in seed cotton yield or production of average lint fibre over 1000 kg per hectare versus current estimate of ~800 kg/ha in Uzbekistan. RNAi cotton varieties yield more cottonseed with 25-30% increase in 1000 seed mass providing an opportunity to increase food and feed products.

Production of "yet not existed in world fibre market" novel Upland cotton fibre with 38-41 code (versus possibility of production of fibre with only maximum 35-37 code from existing ordinary Upland cottons) would have a premium price and increased in income per acre in Uzbekistan and worldwide[8]. Increased yield and fibre quality improvement of RNAi cotton varieties should allow for expanded cotton production on marginal land and create a new cotton fibre/cloth market. This would provide opportunity of planting more other food crops ensuring food security of people and sustainability of the environment suffering from cotton production and application of agricultural chemicals. A patent[9] on the new RNAi technology was filed in Uzbekistan (IAP: 20120069) and USA (USPTO: 13/445696) and internationally (PCT application; National phase applications in India, China, Egypt and Russia) the technology is ready for licensing to other cotton growing countries.

Differing from existing transgenic cottons and technologies, the phytochrome-specific and RNAi based cotton cultivars, bearing only cotton genes, are "ecologically safer and could potentially have a multi-billion-dollar impact on the global cotton industry and help cotton farmers fend off increasing competition from synthetic fibers". "This will increase the competitiveness of natural cotton fibers versus synthetic fibers, which have been snagging an increasing amount of the market share every year"[10].

"The PHYA1 RNAi based technology appears to address multiple critical fiber quality needs in the cotton industry (especially length, strength, and elongation). "The fiber data is comparable to the high end of "SJV Acala" cotton. The severe drought continues in California and very little "SJV Acala" cotton was planted in 2014. Likely there will be even less planted in 2015 and thus there is a strong world demand for fiber of this high quality (Dr. Kater, Vice President of Agricultural Research Division of Cotton Incorporated, personal communication)."

Therefore, outstanding cotton RNAi technology utilising common photoreceptor plant gene with wide plant developmental functions directly and indirectly provide environmental sustainability and crop biosecurity. This is due to offered possibility and opportunity of enhancing the key agronomic properties (maturity, productivity, quality, and biotic & abiotic resistance) of cotton cultivars largely grown worldwide in about 36 million hectares land by 80 countries, as well as applicability of similar concepts to many other key crops of world agriculture. This means – befitting more while cutting land area of production and decreasing the use of harmful chemicals, biocides, fertilizers, and water that definitely will help to save our planet ecology and provide an opportunity to feed and clothe increasing number of human population in the environment of climate change, technological advance and societal globalisation of the 21st century.

A collaborative effort between USDA/ARS and Uzbekistan made possible to transfer the RNAi seeds from Uzbekistan to the USA where USDA partners have already proved all RNAi effects in the USA environment in 2014/15 greenhouse and field environment in the USA. Efforts are in progress to mobilise PHYA1 RNAi effects into the several USA Upland cotton cultivars and conduct extended field evaluations in 2016. This research will help further in technology transfer among the USA and other stakeholders of all cotton growing countries[8].

In summary, considering the fact that cotton is one of the important cash crop in Uzbekistan and in more than 80 countries worldwide, innovative MAS and GE technology concepts and resulting crop varieties will undoubtedly contribute to prosperity and quality of lives, especially in rural areas. The majority population in Uzbekistan is engaged in cotton farming and in general with agricultural practice. Global climate change issues and water scarcity will be most dangerous for Uzbekistan and many other tropical regions, can be minimized by using the above-mentioned technologies. Applicability of the concept of the technologies to many food crops, further highlight the innovativeness of the scientific accomplishments where we also applied the state-of-art RNAi tools to develop superior quality, disease resistant and highly adapted cultivars of other important agricultural crops such as wheat, potato and vegetables. Several "laboratory variants" of RNAi-based and MAS derived genotypes of wheat and potato have already been obtained that have important characteristics such as yellow rust resistance, high productivity and early maturity. All these novel application should not only boost Uzbekistan agriculture production and sustainability, food security, improvement lives in rural areas and livelihoods and the country's prosperity, but also impact worldwide agriculture.

Courtesy : Cotton India 2015-16

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

1 *http://www.icac.org/econ_stats/country_fact_sheets/fact_sheet_uzbekistan_2011.pdf)*

2 *http://www.worldbank.org/en/news/press-release/2013/12/05/reducing-the-vulnerability-of-uzbekistans-agriculture-to-climate-change*

3 *https://en.wikipedia.org/wiki/Aral_Sea*

4 *National cotton Council report. (1991). Physiology today. Newsletter of the Cotton Physiology Education Program. Available at: http://www.cotton.org/tech/physiology/cpt/soilmgt/upload/CPT-Oct91-REPOP.pdf.*

5 *Abdurakhmonov, I. Y. (2013). "Role of genomic studies in boosting yield," in Proceedings of International Cotton Advisory Board (ICAC), ed. T. Townsend (Washington DC: ICAC Press), 7-22.*

6 *Abdurakhmonov, I. Y., Buriev, Z. T., Saha, S., Jenkins, J. N., Abdukarimov A., and Pepper, A. E. (2014). PhytochromeRNAi enhances major fibre quality and agronomic traits of the cotton Gossypium hirsutum L. Nat Comm. 5, 3062. doi: 10. 1038/ncomms4062.*

7 *Cotton outlook. (2014). Improving cotton yield – Uzbekistan expands new variety. Available at: https://www.cotlook.com/2014/10/21/improving-cotton-yield-uzbekistan-expands-new-variety.*

8 *Abdurakhmonov, I.Y., Ayubov, M.S., Ubaydullaeva, K.A,, Buriev, Z.T., Shermatov, S.E., Ruziboev, H.S., et al. (2016). RNA interference for functional genomics and improvement of cotton (Gossypium spp.). Front. Plant Sci.7:202. doi: 10.3389/fpls.2016.00202*

9 *Abdurakhmonov, I. Y., Buriev, Z. T., Saha, S., Jenkins, J. N., Abdukarimov A., and Pepper, A. E. (2012b). Cotton PHYA1 RNAi Improves fibre Quality, Root Elongation, Flowering, Maturity and Yield Potential in Gossypium hirsutum L. U.S. Patent Application No 13,445,696. Washington, DC: U.S. Patent and Trademark Office.*

10 *http://givingblog.tamu.edu/college-of-science/king-cotton*

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Technical Analysis

Price outlook for Gujarat-ICS-105, 29mm and ICE cotton futures for the period 12/04/16 to 26/04/16

(The author is Director of Commtrendz Research and the views expressed in this column are his own and the author is not liable for any loss or damage, including without limitations, any profit or loss which may arise directly or indirectly from the use of following information.)

EXPERT's Column

Shri Gnanasekar Thiagarajan

We will look into the Gujarat-ICS-105, 29mm prices along with other benchmarks and try to forecast price moves going forward.

As mentioned in the previous update, fundamental analysis involves studying and analysing various reports, data and based on that arriving at some possible direction for prices in the coming months or quarters.

Some of the recent fundamental drivers for the domestic cotton prices are:

- Cotton futures are higher in line with international prices. Prices have moved higher due to strength from international markets.

- Drought in the southern states has affected the cultivation of major commodities like rice, cotton and spices. Production of these commodities is likely to come down sharply if the absence of rains prevails. India's cotton output is estimated to be 345 lakh bales for the 2015-16 season, which began on October 1, as against 382.75 lakh bales in the previous year, according to the Cotton Association of India (CAI).

- The Cotton Advisory Board has forecast that cotton production in India will fall by over 7% to around 35.2 million bales (170 kg each) for the October 2015-September 2016 crop year as against 38 million bales in the previous year. Despite a drop in production, cotton prices have been in a bear grip owing to higher carryover stocks.

- The projected Balance Sheet drawn by the CAI has estimated the total cotton supply for the season 2015-16 at 432.60 lakh bales, while the domestic consumption is estimated at 304.00 lakh bales, thus leaving an available surplus of 128.60 lakh bales.

Some of the fundamental drivers for International cotton prices are:

- Cotton futures were the highest in over six weeks, breaking through the key psychological levels on short covering, amid an outlook for tight supplies and an uptick in overall commodities.

- The market sentiment has been buoyed by last week's export sales data, which showed a 144 percent week-on-week rise in sales of upland cotton and strong export numbers to China.

- Data from the U.S. Commodity Futures Trading Commission showed on Friday that speculators reduced a record bearish stance in cotton by 3,976 contracts to 37,134 in the week upto April 5.

Let us now dwell on some technical factors that influence price movements.

As mentioned earlier, we expect prices to recover slightly towards 9,200-300/qtl. The price charts are turning friendlier and a possible higher rally seems to be in the offing. Any unexpected rise above 9500/qtl, will hint that the recent rally has ended prematurely. Such a rise could see prices trying to test the important resistance around 9,900-10,000/qtly levels.

Indicators are turning friendly now, which could see prices moving higher gradually. As mentioned earlier, indicators are displaying oversold conditions, which could see minor upward corrections in the coming sessions. We see resistances in the 9500-600 levels followed by 9800-900/qtl zone now. The MACD indicator has started displaying bullish signs again. Any unexpected rise above 9,700/qtl could hint that a minor uptrend is in the offing.

We will also look at the ICE Cotton futures charts for a possible direction in international prices.

As mentioned in the previous update, the targeted levels have come and charts are turning friendly for a possible move to 60.50c in the coming sessions. Prices moved perfectly in line with expectations. Resistance will be seen around 61.35c followed by 62.85c now. We still maintain our bearish view in the medium term, but will review it if prices cross key resistances around 63-65c in the short term. Such a rise will repose faith in the uptrend. Our favoured view now expects prices to pull back initially towards 62.75-63.00c and then edge lower again towards 60.50c. Only an unexpected fall below 60.25c could cast doubts on our bullish view now.

CONCLUSION:

Both the domestic and international prices have risen and show promise to move further higher. For Guj ICS supports are seen at 9,200-300/qtl followed by 9,100 /qtl or even lower, and for ICE March cotton futures at 60.25 followed by 58c. Only an unexpected rise above 9,700/qtl would confirm that the picture has changed to bullish in the domestic markets. In the international markets, prices are indicating a possible reversal in the bearish trend and the indicators have turned friendly. It needs to surpass key resistance levels around 63c levels for the trend to turn convincingly bullish again. So, we will closely watch for the above levels in the coming weeks.

SAGA OF THE COTTON EXCHANGE

By Madhoo Pavaskar

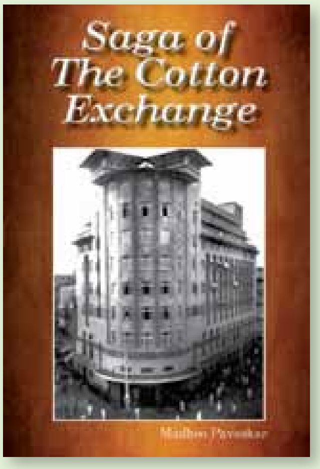
Chapter 8

Death of a Futures Market

(Contd. from Issue No.50 dated 15/03/2016)

FMC Strikes Again

As if this was not enough, the Commission further raised the special deposit rates in respect of Jarilla May 1957 delivery during the delivery period on the ostensible plea that "it was possible for the operators to invoice back their contracts at the end of the delivery period at the due date rates, which under the bye-laws were to be fixed on the basis of ready prices and were not subject to the maximum prices laid down"by the Commission. Still, with the spot prices running ahead of the futures, hedge contract prices were raising inevitably. But the Commission failed to appreciate this plain economic logic. Hurt by the fact that its successive regulatory steps had little effect on the market, on May 24, 1957, i.e. one day before the due date, it closed out all the outstanding contracts in Jarilla May 1957 delivery at Rs 715 per candy, which was the closing rate on the preceding date. That this rate was far below the maximum price of Rs 754 specified by the Commission (let alone the statutory ceiling of Rs 820 fixed by the Textile Commissioner) proves that the Commission's fear that the hedge contract would have otherwise pierced the maximum price a day after on the due date was unwarranted.



The Commission apprehended a similar situation in respect of the Vijay June 1957 delivery also, and therefore imposed on May 20, 1957, a special deposit during the delivery period at the flat rate of Rs 200 per bale on every outstanding purchase, when the price of the Vijay June contract rose above Rs 824 per candy, and finally closed out all the outstanding contracts on June 24, 1957, at Rs 873 per candy i.e. Rs 97 below the statutory ceiling price fixed by the Textile Commissioner. Thereafter, as the Commission did not permit trading in July and August 1957 deliveries of Jarilla and Vijay Contracts respectively, the experiment of running two contracts came to an abrupt end.

Although Natu observes that the "two hedge contracts framed for the season 1956-57 did not work satisfactorily, it is clear that the FMC did not give a fair trial to these contracts. They appear to be more concerned about the firmness in cotton prices, which was essentially 'economic' in nature and did not seem to have been fanned by the running of the contracts. With short supply situation prevailing for the second year in succession, cotton prices would have risen, even had there been only one hedge contract. Not surprisingly, the FMC's stringent regulatory measures, including the eventual closure of both the hedge contracts in June 1957, failed to curb the firmness in cotton prices. The ready prices of almost all the cotton varieties ruled at or near the statutory ceiling prices till the end of October 1957, when the new crop for the season 1957-58 began to move to the market and eventually eased the price position.

Lest we are accused of having undue bias against the Forward Market Commission, at this stage it may not be out of place to quote the Forward Markets Review Committee appointed by the Government of India in 1966. The Committee was headed by the country's foremost agricultural economist, Prof. M.L. Dantwala, and included, among others, Dr. A.S. Naik I.C.S., the then Chairman of the Forward Market Commission, and the noted economist, Prof. S.V. Kogekar, who was then Member of the Commission. While examining the efficacy of the instruments of control used by the FMC from time to time, the Committee observed: "A review of the action taken from time to time suggests that by and large it served only the limited purpose of reducing the volume of trading and open position in the forward markets. It did not check the rise in ready prices, if that was the intention... It should also be noted that restraints were sometimes imposed when futures prices were distinctly lower than ready prices. In any case, the fact that the ready prices continued to rise in spite of the restrictions suggests that such actions when confined to futures markets have not much utility for restraining the rise in ready prices. Often the only visible impact of the restraints was to distort the relation between the ready and the futures prices, rendering the futures markets unsuitable for hedging. They could then be used only for speculation."

Not surprisingly, the Forward Markets Review Committee unanimously suggested: "The one general recommendation we should like to make is that the regulatory measures should not generally be used for artificially restraining prices on the futures market. When we say artificially, what we have particularly in view is their relationship with prices in the spot market. In other words, the price policy should be equally applicable both to the spot and futures prices. To attempt to keep down prices in the futures market irrespective of their behaviour in the spot markets, is to destroy the utility of the futures markets. If the hedging utility of the futures markets is destroyed, they would serve the interests of only the speculators. Such use of the regulatory measures only exposes the regulating authority to the charge of unreasonable and unwarranted action".(Emphasis added). Clearly, these views of the committee on the FMC's regulatory actions put the FMC in the dock.

Back to Square one

Be that as it may, as the Forward Market Commission "felt that the short supply position of cotton did not justify the continuance of the two contract system" it became necessary for the East India Cotton Association to reconsider the hedge contract scheme for the 1957-58 season. After prolonged deliberation and mainly in deference to the wishes of the Commission, the Board of the Association finally decided to revert to a single hedge contract with MoglaiJarilla of 25/32" staple as the basis, and March, May and August as the months of delivery. To render the contract 'bearish', the most inferior variety of the Jarilla group was selected as the 'basis'.

Further, in its obsession to depress the contract to as great an extent as possible, the Commission required the Association to amend its bye-laws relating to "tendering differences," which hitherto empowered the Board to fix such differences for varieties other than the basic cotton only on the basis of the actual premia or discounts between the respective spot prices and the hedge contract prices. The new bye-law empowered the Board at its discretion to fix tendering differences by further adding to the actual premia or discounts to the extent of 50 per cent of the difference between the hedge contract rate and the spot rate of the basis variety. As it is, even the earlier bye-law, which was introduced at the suggestion of the Forward Market Commission in 1955, was aimed at depressing the hedge contract price relative to the ready price of the 'basis' variety. The amended bye-law made the hedge contract still more vulnerable to bearish pressures.

The single hedge contract system was continued in the subsequent years, though minor modifications were made from time to time in the bye-law relating to tendering differences, These modifications set certain limits on the Board for adding or reducing the actual premia or discounts between the ready prices of tenderable varieties (other than the basis variety) and the hedge contract rare. While the limits varied slightly from year to year, the basic principle of fixing tendering differences on the basis of difference between the hedge contract rate and the ready rate of tenderable varieties by adding or subtracting from such difference certain amounts continued. It is this unusual practice that rendered the cotton hedge contract at Bombay decidedly bearish, with the result that it was invariably quoted at a heavy discount below the ready price of the basis variety.

Normally, in any future market, the tendering differences are fixed on the basis of the actual differences between the ready rate of the basis variety and the ready rates of the tenderable varieties. But the Cotton Exchange at Bombay was asked to adopt the aforesaid unusual practice in the fond hope that it could help arrest the rising trend in the spot cotton prices. Unfortunately, this practice gave rise to a fear in the minds of the buyer of the futures contract that unduly large premia may be fixed by the Board of the East India Cotton Association for tender of superior varieties, if during the delivery period the hedge contract were to be at a discount below the ready price of the basis variety. Resulting in a vicious circle, this fear discouraged buying of the hedge contract, aggravated its bearishness in the process and thereby further increased the actual discount for it. As a result, not only did the hedge contract persistently rule at a heavy discount below the ready price (which, at times, ranged upto as much as Rs. 100 per candy, or about 10 to 12 per cent of the spot price of the basis variety), thus impairing its utility for hedging, but contrary to the official expectations, the pressure on the ready market mounted as buyers preferred to avoid the futures market. Verily, the FMC's strategy of depressing the hedge contract artificially did not yield the desired result. While it reduced considerably the utility of the cotton futures market for hedging, not infrequently it also aggravated the firmness in the ready prices of cotton.

(To be continued)

UPCOUNTRY SPOT RATES

(Rs./Qtl)

Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]							Spot Rate (Upcountry) 2015-16 Crop APRIL 2016					
Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	4th	5th	6th	7th	8th	9th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15	8183 (29100)	8183 (29100)	8183 (29100)	8183 (29100)		8323 (29600)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	8323 (29600)	8323 (29600)	8323 (29600)	8323 (29600)	H	8464 (30100)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	5343 (19000)	5343 (19000)	5343 (19000)	5371 (19100)		5483 (19500)
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	7030 (25000)	7030 (25000)	7030 (25000)	7058 (25100)	O	7171 (25500)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	8267 (29400)	8267 (29400)	8267 (29400)	8295 (29500)		8408 (29900)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	8998 (32000)	9026 (32100)	9026 (32100)	9055 (32200)		9167 (32600)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	7789 (27700)	7789 (27700)	7789 (27700)	7789 (27700)	L	7845 (27900)
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	8408 (29900)	8408 (29900)	8408 (29900)	8408 (29900)		8464 (30100)
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	9280 (33000)	9308 (33100)	9308 (33100)	9336 (33200)	I	9448 (33600)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	8099 (28800)	8099 (28800)	8099 (28800)	8099 (28800)		8155 (29000)
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	8717 (31000)	8717 (31000)	8717 (31000)	8717 (31000)		8773 (31200)
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	9392 (33400)	9420 (33500)	9420 (33500)	9448 (33600)	D	9561 (34000)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	9055 (32200)	9055 (32200)	9055 (32200)	9055 (32200)		9111 (32400)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	9139 (32500)	9139 (32500)	9139 (32500)	9139 (32500)	A	9195 (32700)
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	9280 (33000)	9280 (33000)	9280 (33000)	9280 (33000)		9336 (33200)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	9336 (33200)	9336 (33200)	9336 (33200)	9336 (33200)		9392 (33400)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	9448 (33600)	9448 (33600)	9448 (33600)	9448 (33600)	Y	9533 (33900)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	9729 (34600)	9729 (34600)	9729 (34600)	9729 (34600)		9814 (34900)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	10179 (36200)	10179 (36200)	10179 (36200)	10179 (36200)		10236 (36400)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	13638 (48500)	13694 (48700)	13694 (48700)	13779 (49000)		13779 (49000)

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