What "sustainability means to Ginners" and "how it's changing the business?"

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(A) What sustainability means to Ginners?

"The word "sustainability" is derived from the Latin word '*sustinere*' which means to hold up, maintain, support or endure".

"Sustainable Development" is development that meets the needs of the present without compromising the ability of future generations to meet their own needs – Wikipedia.

At the 2005 world summit on Social Development, it was noted that sustainability requires reconciliation of environmental, social equity and economic demands.

(A universally accepted definition of sustainability remains elusive because it needs to be factual and scientific, a clear statement of a specific "destination". The simple definition "sustainability is improving the quality of human life while living within the carrying capacity of supporting eco-systems", though vague, conveys the idea of sustainability having quantifiable limits. But sustainability is also a call to action, a task in progress or "journey" and therefore a political process, so some definitions set out common goals and values. The Earth Charter, speaks of "a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace")

In short, sustainability has a different meaning for different people and different organizations; similarly the sustainability is having different meaning for different type of ginners of the world.

(a) Job-worker Ginners in Private / Co-operative Sector
For job-worker ginner in private sector, sustainability means availability of adequate quantity of cotton for ginning at remunerative job charges to earn enough for pay back of its investments and make good profit.

(b) Job-worker Ginners in Government Sector
Since the profit and loss of the operation are taken by Government, the sustainability to this section of ginner means availability of adequate finances for its expenses either from the operation or from Government fund.

(c) Trader Ginners in Private / Co-operative Sector
Sustainability to Trader Ginner in Private sector means, availability of adequate seed cotton with lowest trash and contamination at lowest price and cotton lint and cotton seed should be sold at profitable prices. He is always worried and affected by adverse price volatility.

(d) Trader Ginners in Government Sector
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Despite different working conditions and fundamentals, the real sustainability for a ginner will be ensured by the following factors:

1. Availability of adequate volume
2. Lowest cost for ginning / pressing per unit of production
3. Retention of best natural fibre parameters i.e.
    a. Length of fibre
    b. Desired moisture contents
    c. Micronaire
    d. Fibre strength
    e. Uniformity of fibre etc
4. Highest ginning out-turn
5. Lowest trash
6. Lowest contamination
7. Income from complete cotton value chain
8. Reduction in the cost of logistics
9. Reduction in the cost of storage

To understand each factor it will be necessary to elaborate the same:

1. **Availability of adequate volume:**
   The availability of the adequate volume of cotton for ginning directly depends upon the production of cotton, the sustainability of which depends upon various factors such as market share, environmental issues, water availability, land availability and several other factors. We will not go in to the details as this will be very large subject and here we restrict ourselves to the factors affecting the availability of adequate volume for ginning.

   The world cotton fibre production is likely to decline to 25 Million Tons in 2012-13 and the share of cotton in the total textile fibre consumption of about 75 Million Tons is likely to decline to about 31%. This decline in the volume of cotton production is triggered by the lower consumption due to relative price of cotton to polyester and resultant carryover higher stocks of cotton have further added the reduction in prices resulting in lower profits to ginners.

   To revive the quantity of cotton production it is necessary to increase the demand by increasing the share of cotton in the textile fibre and by several innovative, alternative uses including nanocelluose uses which is only possible if the desired initiatives to reduce the cost are taken and the complete value chain of cotton right from farm level till the end user level for cotton and its all by-products i.e. linter, cotton seed, cotton seed oil, cotton cake / de-oiled cake, cotton stalk is fully utilized so that the pressure on cotton lint prices decreases and its competitiveness against manmade fibres and petroleum fibres etc is achieved.

2. **Lowest cost for ginning / pressing per unit of production**
   "Results of survey carried out on cotton ginneries in the USA reveal that cost comparison based on gin annual volume showed that larger volumes help to reduce per bale cost" (Valco et al, 2007). Together with high volume of ginning, adoption of best management practices and enforcement of standards will lead the reduction of cost of ginning per unit while adoption of improved technological inventions will ensure lower cost of ginning per unit.

The cost of ginning is significantly affected by the quality of cotton, moisture contents in cotton, and harvesting methods of cotton, i.e. hand picking, machine picking, hand stripping and mechanical harvesting, method of transportation of cotton to processing machines and equipments. When the trash and moisture contents are high more equipment, more capital investment, more manpower, more electrical power etc is required to clean and dry the cotton which increases the cost of ginning substantially. Therefore, all the efforts should be made to adopt the practices which keep the trash content in the seed cotton low and moisture contents at desired level.

3. **Retention of best natural fibre parameters i.e.**

The ginners get more profit if they can offer best fibre parameters near to the natural fibre parameters after ginning, here the technology and the gentle treatment to the fibre during the processing play a vital role. The selection of processing machinery and requirement should be guided by the ginning requirement of the natural fibre parameters of the quality of cotton being ginned, such as a hand picked cotton where fibre bolls are pulled out from the flower without collecting any pods will always be very very clean unless contaminants and trash is added by careless handling.

Picture showing handpicking & clean cotton

If this hand picked cotton is ginned on Double Roller Gins, the natural fibre parameters will be best retained while the machine picked cotton which will have higher trash content and will be required to clean and dried by machines and will be more suitable for ginning on saw gin there by attracting higher power consumption and incur higher processing cost at the same time will damage the fibre parameters.

It is desirable that in anyone area, one variety should be grown so that the optimization of ginning parameters may be done by selecting the suitable ginning technology. If the other variety of cotton which is not suitable for ginning on particular ginning technology machine is ginned on the same it will cause some losses to ginner due to lower GOT and resultant reduction in realization.

In short fibre parameters at the time of feeding in to ginning machine, limitations of ginning technology, speed of ginning machines, temperature at ginning point, setting of the ginning equipments, trash contents, moisture percentage etc play a significant role in the fibre parameters of ginned lint.

The comparable fibre parameters obtained on same variety and quality of cotton when ginned on two different technologies in the same area given in table below will demonstrate the difference due to wrong selection of ginning technology.

Comparative Results for Hand Picked Clean Cotton when Ginned on Double Roller and Rotobar

Description	Fibre Parameters obtained on Bajaj Double Roller Gin	Fibre Parameters Obtained for same cotton on Rotobar Gin	Remarks
Fibre Parameters Fibre Length (2.5%)	31 to 31.5	30.5 to 31	Rotobar shows 0.5 to 1 mm less length than DR
Micron ire	3.8 to 4	3.5 to 3.6	All immature bolls got ginned along with good kapas in Rotobar
Maturity	0.83 to 0.84	0.81 to 0.82	Rotobar ginned all immature fibres with out dropping immature bolls
SCI Value	150 to 170	130 to 140	Rotobar fibres show always less SCI due to fibre damages
Short Fibre Index	7 to 9	6 to 8	Rotobar shows less short fibre Index due to harsh fibre pulling
Strength	20 to 22 gtex	18 to 20 gtex	Rotobar fibres strength is low due to harsh pulling and higher temperature at ginning point.
Uniformity	46 to 47	45 to 46	Rotobar fibres shows less uniformity due to variation in length
Rd Value	78 to 80	72 to 74	Rotobar crushes all immature bolls, yellow pickings so RD is less
+b Value	7 to 8	8 to 10	Rotobar fibres are pale yellow colour as it crushes all immature bolls and yellow pickings due to poor cleaning at high speed
Trash %	2 to 3%	4 to 6%	Rotobar fibres have more trash as seed cuts are high and more meat in fibres.
Neps in Bales(Neps per gram tested in AFIS)	80 to 120	150 to 300	More Nep generation due to harsh ginning and fibre stress in Rotobar and these neps will affect spinning process.

4. **Highest Ginning out-turn**

In case the cotton parameters at the time of ginning are suitable to efficient ginning on selected ginning technology, the optimum ginning outturn can be obtained. The economics of ginning outturn plays prominent role in the profit of ginner as the ginner gets higher return on increased quantity of fibre with best fibre parameters at the same time seed also gets higher return being nearer to suitable for intended use. The higher outturn of clean cotton in India on Double Roller gins as compared to comparable clean cottons in Western Africa when ginned cotton saw gin.

The variety of cotton having higher bunch of fibre on the seed is best option for higher outturn and ginner gets better profit on such varieties, for example, the bunch of fibre on seed is over 44% in Zimbabwe while less than 37% in most of the Indian varieties, hence

with the same price of seed cotton ginner gets higher return for higher percentage of fibre.

5. **Lowest Trash**

   The trash contents in the fibre depend upon the harvesting practices, variety of cotton, moisture content etc. A cotton variety which opens fully can be handpicked without pod while a cotton variety the flower of which does not open properly such as some Turkish variety, 797 in Gujarat India, some varieties in Pakistan cannot be cleaned picked hence have to be hand stripped or machine stripped / picked where the trash contents go very high. The ginning of such varieties is very lengthy process requiring lot of equipments hence higher cost of ginning and low price due to damages in the fibre parameters due to higher processing. Higher the trash, lower the profit of ginner, therefore all efforts should be put that farmers grow only those varieties fibre boll of which can be easily taken out from flower either by hand or spindle picker. The varieties which do not open should be avoided.

6. **Lowest Contamination**

   By adopting best picking, storing and transportation methods the contamination level in the seed cotton may be reduced to a great extent. The use of scanning machines is also contributing in lowering down the contamination levels in the cotton after modernization of ginning factories in the various parts of the world. When the contamination is lowest ginners incur lower processing cost and get higher price from the buyers hence their profit improves.

7. **Income from complete Cotton Value Chain**

   The complete value chain of cotton right from the level of planting to end use for cotton fibre and all the byproducts of cotton viz cotton seed, linter, hull, kernel / meat for oil, oil cake / DOC, cotton stalk for wood pallets / particle boards etc. should be fully explored and utilized to reduce the pressure on prices of cotton lint which in turn will give the adequate income to farmer and ginner at the same time will provide the cotton fibre to the spinning mills and other users at competitive prices resulting in increase of share of cotton in the textile fibre encouraging adequate volume of cotton to ginners.

8. **Reduction in the Cost of Logistics**

   Logistic is a big cost in the cotton value chain at present. From harvesting places to ginning factories huge sums are spent on loose transportation of seed cotton. If all this seed cotton is compacted and then transported it will make huge difference in the logistics, handling and storage costs. The governments and all concerned should device schemes and rules to make the compaction of the seed cotton compulsory which in turn will save the space and capital cost of the ginner finally resulting in huge saving.

9. **Reduction in the Cost of Storage**

If the compaction is made compulsory for seed cotton during logistics and handling the space required for the seed cotton storage will reduce dramatically, while the handling of cotton will be very cost effective by reduction of manpower, due to use of tractor and tractor attachments and similar other module / compact bales handling devices. This will result in lot of convenience and cost saving to ginners.

(B) How sustainability is changing the business in Ginning Sector?

The need for handling high volume, low labour cost, lower trash content, and to avert risk in storage of higher volume of loose cotton in the ginneries has resulted in establishment of large capacity modernized automatic ginning plants for cotton ginning in cotton growing developing countries in the recent past while the small gins which are having all manual arrangements are closing down being unsustainable. This trend has increased at a rapid speed in India alone after the year 2000 about 3000 such modernized ginning factories have been established. The ginners are able to produce bales at lowest cost of production per bale and earn higher profits, a portion of that is getting transferred to farmers which in turn are getting encouraged to plan more cotton. The work on the increase in demand by increase in share of cotton in textile fibre in the world and exploring of other alternative uses will certainly enhance the sustainability of ginners.

The ginners have now started understanding the merits and demerits of various ginning technologies and going for selection ginning technologies suitable for their cotton varieties, such as the ginners in Turkey have started putting saw gins while ginners in East African countries have started putting Double Roller Ginning machines to optimize their out turns and retention of fibre parameters.

The government policies in various countries have supported the modernization and up-gradation of ginning factories in their respective countries as in India the schemes like Technology Mission on Cotton (TMC), Technology Up gradation Fund (TUF) have substantially provided support for the modernization of ginning factories in India. In the similar way governments of the various countries are adopting such measures as to boost the modernization and up gradation of ginning factories in their countries.

Large efforts are seen in enhancing the cotton value chain while innovations and adoptions of various technologies for cotton linters, better cotton seeds, cotton seed oil cake / deoiled cake, use of cotton stalk for various purposes which is easing out the pressure on cotton prices and cotton prices have started showing stability.

These efforts will certainly help sustainability to the ginners and they will be able to contribute in the enhancing the share of the cotton fibre in textile fibre as well as various other uses of all the byproducts of cotton to strengthen cotton value chain and future appears to be quite sustainable.

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