74th Plenary Meeting of the
INTERNATIONAL COTTON ADVISORY COMMITTEE

MINUTES
FOURTH OPEN SESSION
Mechanical Picking of Cotton

13:45 hr. Tuesday, December 8, 2015
J. Thulasidaran in the Chair

- o "Cotton Harvester for small farms: Make in India initiative" Dr. Gautam Majumdar (Central Institute for Cotton Research, India)
- o Rinat Gulyaev (Uzpakhtaexport Joint-Stock Company, Uzbekistan)
- o "Mechanical Picking of Cotton" Gusvinder Singh (Bayer, India)

Dr. Gautam Majumdar explained that there are around 24 million hectares under cotton around the world that are yet to be harvested mechanically, which is equivalent to around 75% of the total cotton area. He noted that machine harvesting can help to reduce the costs of harvesting by replacing labor, which has become increasingly expensive, accounting for around 30% of total productions costs, and more difficult to find. In the future, a point may be reached where leaving cotton in the field would be more profitable than hiring labor. Dr. Majumdar explained that there are several reasons why mechanical harvesting is not more prevalent, including: a trend towards decreasing size of farms; the high costs of currently available machines; the size of current machines not being very suitable for small plots; and the difficulties in operating and maintaining machines. He then discussed a case study in India, where almost half of the world area of handpicked cotton is located (around 12 million hectares), with over 6.4 million farms that are fully handpicked, of which 50% are less than one hectare. With this in mind, a suitable machine for India would need to be low cost, simple to operate and maintain and keep contaminants (trash) within acceptable limits. He described the advantages of the Central Institute for Cotton Research's machine that he has been testing as cutting down on the time it takes to harvest cotton and reducing the cost of labor from $151.51 per hectare for manual picking to $112.2 per hectare for machine-picked cotton that has also been cleaned of trash. He then made a comparison between the CICR machine and a one-row combine picker with a higher cost. This showed that CICR's machine had lower initial costs, was simpler to operate and maintain, took slightly more time and had a higher trash content. He noted, however, that 70-80% of the trash content consisted of burrs and sticks, which are much easier to remove than other types of trash. He observed that handheld machines that did single-boll picking were found to be less efficient than handpicking when tested. Dr. Majumdar concluded his presentation by showing archival images from the US of a horse-drawn machine for harvesting cotton, raising the question of why more research couldn't be done on this type of solution.

Rinat Gulyaev explained that Uzbekistan is currently passing through a period of macroeconomic stability as shown through the national budget surplus in recent years, the reduction in the minimal personal tax rate, inexistent internal debt and inflation that has not surpassed 7% due to its recent economic reforms. He noted that exports in terms of value for many products, including complex fertilizers and yarn have increased substantially since 1990 and Uzbekistan has remained a significant producer and exporter of cotton. He stated that seedcotton production in in the last year was around 3 million tons with harvesting be done mostly by hand, though the government is working to increase the volume of machine-harvested cotton. He noted that around 20% of the crop is currently machine-picked but that government plans to increase that share to around 80% in the near future, using domestically-designed machines that are made in a Tashkent facility. Mr. Gulyaev explained that the government recently started to modernize its ginning facilities, which include new bale presses that use plastic bagging. The new bags are widely accepted under most international standards and help to improve the marketability of Uzbek cotton fiber.

Mr. Gusvinder Singh presented a cotton mechanization project in India that is the result of collaboration between John Deere, Bayer and Bajaj Steel. He referenced the first presentation that discussed why machine-picked cotton might advantageous and added that machine-picking can also increase productivity, as well as addressing issues related to contamination and child labor. The projected had started in 2009 with the importation of two machines from Turkey. These were two-row pickers but did not work well since they were too large for the average size of farms in India. He explained that over the next few years, with the support of the government of Punjab and the Ministry of Agriculture, the machine was fine-tuned. In addition, new seed varieties were developed that would produce cotton that was more suitable for machine-picking. The machine was introduced commercially in 2013 at a commercial level with 22 farmers and 150 hectares, which was increased to 2,650 hectares in 2015. Mr. Singh reported that the farmers using the machine saw their average yield and earnings increase. He stated that, given the history of other countries, larger-scale implementation of machine-picking in India may take many years. He asserted that the right agronomic practices, supportive government policies and an urgent need to reduce labor costs need to be present before machine-harvesting cotton becomes adopted. He suggested that around 2-3% of cotton in India may be machine-picked in the next ten years.

The delegate from India noted that the session's Chair was involved with the development of a larger-scale machine, asked for more details and whether the machine was still in research. The Chair stated that the machine was successful and users experienced a 50% savings in labor cost. The machine was already available commercially with sales in Punjab and several other locations.

An audience member associated with the Central Institute for Cotton Research noted that, in the presentation by the representative of Bayer, several factors (the use of high density planting, certain agricultural chemicals and machine harvesting) seemed to work together to achieve an increase in yield. How much did each component contribute to improved yield? Mr. Singh agreed that all the factors mentioned contributed to the higher yield, but a significant part of this came from the increase in the number of cotton plants sown per plot when following such a method.

The same audience member asked that if there enough time after monsoon to ensure timely planting of cotton using the machine. The representative from John Deere noted that 80% of cotton in India was sown under dryland conditions. As a result, John Deere had came out with a precision planter suitable for these conditions, which could be used within a few days of the end of monsoon weather without any special preparation of the field.

The audience member from Egypt's Cotton Research Center asked whether the machine worked well for longer staple cotton. Mr. Singh replied the Indian cotton has an advantage in that it had few neps when handpicked, but that the cost of labor made handpicking prohibitive. This overshadowed any issue with neps, but machine-picking did not affect fiber length.

The delegate from the Cote d'Ivoire noted that while it seems that mechanization of the harvesting can result in higher quality cotton, in Africa cotton is handpicked in many countries. A move to machine-picking could affect the reputation of African cotton in the international market and asked whether there were machines suitable for the very small-scale farming that occurred in Africa. Mr. Singh replied that machine-harvested cotton tends to have lower contamination since it requires less handling. This characteristic may possibly be beneficial to African countries and also helps with sustainability by reducing costs. Mr. Singh noted that there were a number of machines suitable for small-scale farms.

The delegate from Mali maintained that the it was not certain that handpicked cotton would be more contaminated than machine-picked cotton since this did not often occur in Mali. There, cotton is harvested by hand on plots of just 2 to 3 hectares and the quality of handpicked cotton in Mali is very high. At the current time, any savings in labor cost were not enough to offset the potential loss in quality. Mr. Singh stated that the conditions in Mali may be very different from those that prevail in India, where cotton is often picked several times during the season and stored in an area subject to contamination between harvests. Therefore, contamination is a significant issue in India for handpicked cotton.

Dr. Majumdar noted that a significant trade-off can exist, so the cost and lack of availability of labor provides a bigger impetus to use machine-picking, even though trash can also increase.

The Chair observed that, although spinners may prefer to buy handpicked cotton, the high cost of labor made machine-picking a better option for producers.

Mr. Jens Soth, from the Swiss delegation, stated that comments made in the earlier session on cotton by-products were pertinent to this session given the discussion on "trash" in machine-harvested cotton in comparison with hand-picked cotton. This "trash" can be transformed to a value-added product, since it is a raw material and biomass that has value. The terminology used needed to be changed to reflect the value of these by-products.

The Chair concluded the session by noting that high-labor cost countries are turning toward higher usage of machine-picking but, given the complexity of large machines and their high cost, smaller machines for small-scale farms are more advantageous.