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HOW TO INTRODUCE NEW TECHNOLOGY TO TEA ESTATES: A PATH TO SUCCESS FROM DRAYTON ESTATE

R SRIGANEASHAN

Drayton estate, Kotagala Plantations PLC, Kotagala

Introduction

Cultural operations on tea estates in Sri Lanka are largely done by manual workers. Plucking is the most labour intensive cultural operation, which requires highest number of workers daily in any of the tea estates. Usually, more than 70% of the workforce in tea estate is employed daily on plucking. It is the common belief and reality that the worker output and quality of leaf plucked by men workers are very much poorer than those of female pluckers. However, many estates are compelled to employ men workers for plucking as a result of severe shortage of workers.

Due to the present change in working environment in estates with various social welfare and other infrastructure development activities, attitude of workers have been markedly changed. As a result, out-turn of workers and number of working days, have been reduced, the number of working hours dropped day by day seriously affecting plucking operations in tea estates. It has also been found that the worker discipline has been poorer than those in the past. Lack of workers undoubtedly delays plucking rounds reducing yield and quality of the harvest. And also these factors have a direct bearing on the Net Sale Average (NSA) of tea in the estate. In order to operate tea plantations on an ever changing, turbulent and competitive environment, it is extremely important to use new strategies aiming at improving the interest, effectiveness and efficiency of the workers to achieve the sustainability and profitability of tea estates. In this connection, shear harvesting has been reported as one of the

strategies used by some tea estates to improve plucker productivity and ease problem of labour shortage.

Issues of plucking tea in Drayton estate

The Drayton estate in Kotagala has 236.25 ha of tea and 99% of them are VP tea. The registered workforce in the estate is 657 and the out-turn of workers is about 64%. Due to high VP%, the estate requires large number of workers for plucking and hence, more than 80% of the workforce is daily employed for plucking tea. Of the plucking gang, about 35% is men workers. Plucking norm is 17 kg per day per worker. Due to extension of plucking rounds and high percentage of damaged leaves received by the factory (mainly from men workers), made tea out-turn of the factory and NSA have been comparatively poorer than some other estates in the region. In order to maximize labour use for plucking, men workers were employed. However, plucking standard of men workers were found to be very poor.

Analyzing the above issues, it was realized, management alone cannot bring about any positive changes in this estate since, it is bound to be largely a worker related issue. It was also clear that any sudden change of the situation can be resisted by workforce. Therefore, it was decided to apply the concept of team-work and formed a team consisting of deputy manager, field officer and factory officer under the closer supervision of the manager. Major issues relating to the problem was identified by the tea following *"pareto"* principle (80-20 rule) and through discussions. The team identified the following factors are the route cause for poor NSA due to 125 years old monotones manual plucking operation.

The major problems (issues) identified as contributing significantly to poor NSA were plucking related. They were, lack of interest of workers for plucking, poor plucking standard, not covering sufficient plucking extent daily, low plucking intake, high labour requirement for plucking (LPH), stripping and

removal of 'arimbu' from tea bushes resulting uneven growth of shoots, over grown leaf harvested at delayed plucking rounds, presence of single coarse leaves and high percentage of damaged leaves.

On a brainstorming session the team came out with an idea of introducing 100% shear harvesting in order to reduce coarse leaf and damaged leaf content. There was a common thought that plucking rounds can be advantageously extended by few days than proper manual rounds (around 10 days) without affecting the crop and leaf standard. Primarily, our major concern was to improve the quality of end product and not the quantity harvested by workers. Accordingly, 'TRI Selective Tea Harvesters' were introduced to the estate in September 2011. Initially, 20 harvesters were given to workers and it was increased to 500 within two months period. To attract workers and make them more comfortable with shear harvesting, an innovative basket introduced by the Tea Research Institute of Sri Lanka (TRI) was also supplied to the workers at later stages. Presently, all the estate fields are harvested by shears and it has now become a new culture in the estates accepted by workforce.

Eight steps in introducing new technology and bring out a "Change"

Mark Sanborn writes *"Your success in life isn't based on your ability to simply change. It is based on your ability to change faster than your competition, customers and business".*

Dr. John Kotter has proven that 70% of efforts made to "Change" usually fail. *Why do they fail?* According to him, "It is because organizations often do not take the *Holistic Approach* required to see the Change through".

The 8 steps outlined by Dr. Kotter was followed for introducing 100% shear harvesting in the Drayton estate in order to ensure successful adoption of the new system ("Change") without failures. A brief description of the 8 steps is given below.

Step 1. **Establishing a sense of urgency**

The shortcomings in tea manufacture were deeply analyzed by going through market reports, comments made by the brokers in progress reports and comments regarding plucking rounds and leaf standards.

Step 2. **Create the guiding coalition**

A group consisting of deputy manager, field staffs, 'Kangany', midwife and EMA was formed in order to lead the change efforts and encourage the workers to join the team.

Step 3. **Develop a change vision**

Some values for the change vision was set as innovation, efficiency and quality and a strategy was developed to bring about the change of plucking operations in the estate.

Step 4. **Communicating the vision for buy-in**

Every vehicle possible was used to communicate the new strategy of shear harvesting through meetings with leaders and workers, pocket meeting in the fields and on-the-job training. The CDs with the success stories of other estates using shears were made available to workers and together with field staff, they were taken to other plantations where the shear plucking is successfully in operation.

Step 5. **Empowering broad-based action**

All possible obstacles to change were removed. Arrangements to repair shears in the field, identifying and training of poor performers and careful listening to the plucker's difficulties were some of the steps taken at initial stages. Pilot plots to monitor the plucking operation were established and the workers, leaders and trade unions, who resisted this positive change initially, was diplomatically managed by continuous dialog. Encouragement and self

motivation of all team members to inculcate risk-taking ability and non-traditional ideas were also done.

Step 6. **Generate short term wins**

Control plots of manual plucking were established in the plucking fields to show the success of shear plucking, which gave greater encouragement to the pluckers. Additionally, best pluckers who have mastered the art of using shears were recognized and rewarded in the presence of others.

Step 7. **Never letting up**

Plucking operation of each and every plucker in the field was closely and regularly monitored to ensure that they will not return to manual plucking. Poor performing workers were motivated and continuously trained.

Step 8. **Incorporate change into the culture**

The champions who can articulate the relationship between the shear plucking and the financial and health benefits to the workers and estate were identified and new harvesting system was continued with their further support. Ergonomically designed, stylish and light weight plucking baskets introduced by the TRI were supplied to the pluckers and they were permitted to use hand gloves and caps at work place to enhance the quality of work life (cover plate).

Outcome of introducing shears

Presently, the workers are happily using shears in the Drayton estate. All the fields are harvested using shears and it has now become a new culture in the estate. Followings are the benefits accrued by the workers and the estate trough the introduction of shear harvesting for about one year. Management and workers are confident that this effort of "change" will progress further in years to come. Although, in a *"plucking race"* of 10 minutes, the output of shear was in the range of 21-30 kg/ hr, an average efficiency of a well trained plucker was found to be about 12 kg/ hr under normal shear plucking operation in the field.

With the introduction of shears, leaf standard (good leaf percentage) was in the range of 40-50% and it is now about 50-60%. Percentage of below-norm workers could be reduced from 26% to less than 1% and the plucking average of the whole estate has been increased from 16.5 to 20.5 kg per day. It was also found that, the estate yield was improved after introducing shears. The estate yield before and after introducing shears was 2082 kg per ha per year and 2262 kg per ha per year respectively. The revenue labour output (RLO) has improved from 2.4 to 2.8. The estate which was recording a NSA of "below elevation average" has now been brought up to a position of "above elevation average" generating more profits after about one year of the correction of plucking policies mainly the introduction of shears.

Benefit to workers

Improved quality of work, social acceptance, self motivation, higher income, less ailments due to work, less worker fatigue and eliminated punishments in workplace due to poor work standard and averages.

Benefit to estate

Good standard of plucking, good standard of leaf, improved intake of pluckers (plucking average), high yield, high NSA, minimum plucking related conflicts, minimum below-norm pluckers, consistent cropping pattern and awareness on mechanization and establishment of a foundation for future mechanization operations of the estate.

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