Improving the Japan phytosanitary inspection process

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INTRODUCTION During 2005 over 8.5 million cartons for export to Japan were presented for inspection in the Durban port. While some of this fruit might not ultimately have been loaded onto a Japan destined ship, it did pass through one of the two Japan inspection points; Fresh Produce Terminal (FPT) and the Maydon Wharf Fruit Terminal (MFT). The huge jump in volumes compared to 2004 came with a proportional demand on physical and human resources (Department of Agriculture, Japanese inspectors, terminal operators, shippers, etc) involved in the inspection process, and an obvious need to ensure an efficient and cost effective inspection system.1

To address this need CGA were asked to facilitate a study to show where the inefficiencies lie in the inspection process and to see how these bottlenecks could be corrected. The University of KwaZulu-Natal School of Bioresource Engineering (UKZN) were contracted to characterise, measure and model the flow of fruit through the two citrus terminals at the Durban port.

Their findings were reported in two phases, dealing firstly with quantum of the issue (taking on-site measurements of elapsed time for various steps in the process, or time-in-motion studies), and secondly, creating a mathematical model of the facilities. This article attempts a brief summary of the key findings in the first report. Both full reports are available from the CGA on request.

APPRECIATION FPT and MFT personnel must be thanked for their cooperation in this study, and their ongoing commitment to improving fruit flows in the Durban harbour. Thanks must also go to Dr Daniel Cilokosz, who coordinated the project from UKZN, and the students involved in collecting data and model development.

KEY FINDINGS • time elapsed between unloading the pallets from the delivery trucks to placing them in the pre-cooling rooms averaged about 46 hours,
  • time elapsed between placing pallets in the cooler to placing them on the dock averaged about 138 hours,
  • and moving them from the dock to the ship’s hold averaged about 0.2 hours.
  • Unloading of a consignment of fruit from the truck to the terminal averaged about 0.75 hours,
  • extraction or return of sample pallets for inspection averaged about 25 seconds per box,
  • inspection time averaged 30 seconds per box.

> Inspection time at the Maydon Wharf Fruit Terminal tended to be faster than at Fresh Produce Terminal, but not to a statistically significant degree.

DISCUSSION OF FINDINGS Results from the measurement study indicate that the rate of inspection could theoretically increase to about 300% of current rates, if delays due to paperwork, availability of personnel, and delivery and removal of fruit were eliminated. Removing only a fraction of these delays would yield significantly improved efficiency and reduced overtime requirements. However, the entire fruit handling system must be designed and implemented to provide and remove fruit as quickly as the inspection process, in order to avoid delays.

Upstream from the inspection area, there appears to be potential for improving system efficiency as evidenced by the 28 minute (average) period that delivery trucks were required to wait before being able to unload their cargo. Downstream from the inspection area, there may be potential for improving efficiency since the average time spent in “pre-cooling” the fruit before placing it on the ship was 138 hours, much more than the protocol prescribed minimum of 72 hours. Several ideas for system improvement were generated from discussions between students, staff, and industry personnel. Several of these ideas are outlined in the following list.

• Increase the number of re-packers at the inspection stations, to reduce the lengthy delays as inspectors wait for fruit to be packed.
• Bring the day’s inspection pallets to the inspection area beforehand (prepare them the night before) and ensure beforehand that the paperwork for all consignments is in order.
• Increase the ambient storage capacity of the facilities.
• Automate the processing of inspection paperwork (push-button accept/reject).
• Automate the handling of rejected fruit (standardise treatment or have exporter identify alternate destination in advance).
• Insist on fruit being delivered “pre-wilted” to reduce the need for “wilting shed” during peak season.
• Inspect fruit at a location remote from the terminal (requires a change to phytosanitary guidelines).

Some of these suggestions may not be feasible due to personnel or other limitations, but many of them show promise for improving the throughput of the facilities and/or reducing the overtime burden on government inspectors. Some of the suggestions may require shifting the programme’s supply chain to more of a “pull” system, in which the terminal operators are given greater power to “order” specific amounts of fruit for specified times, in order to improve efficiency. A computerised “supply chain management system” might be a useful tool for implementing such a change.

1 Just to illustrate the greater resource demand, the overtime cost alone for the Department of Agriculture’s (DoA) inspectors was R3.1 million, roughly equal to the 2004 figure after DoA radically and generously cut the hourly rate by half.
**CONCLUSION** The actual time spent in pre-cooling is the largest time user in the process, followed by time in which the fruit is sitting, waiting for the next step in the process. The actual time spent processing the citrus is extremely small, relative to the total time used. The "slack/waiting" time is largely due to inefficiencies of the system, and would be reduced by improvements to the process. Also, improvements to the process may yield increases in throughput capacity, which could be beneficial in times of high load.

Streamlining efforts and capacity matching (ensuring that all steps in the process operate at the same rate) appear to be valuable components to an overall strategy of reducing bottlenecks and improving the efficiency of the inspection process as a whole.

While reducing the amount of time spent in pre-cooling might appear to be a worthwhile aim, this may be an impractical strategy, since the pre-cooling chambers currently act as a buffer for the system, allowing the amount of inspected fruit to build up during the days immediately before the arrival of a ship.