A combination of these factors can severely impact on the productivity of the rambutan industry and disrupt marketing and sales development.

Dr James Drinnan and Yan Diczbalis from QDPI have been undertaking a project to determine the ideal rates and timings of different synthetic auxin compounds including NAA and 3,5,6-TPA to promote the production of male flowers to improve pollination, fruit set and yields.

Trials have been conducted in North Queensland and in the Northern Territory to determine the ideal rates and timings of different synthetic auxin compounds including NAA and 3,5,6-TPA to promote the production of male flowers to improve pollination, fruit set and yields.

Variability in annual production

Variability in annual production is primarily caused by two contributing factors. 1. Early flowering in late winter and spring results in the production of hermaphrodite flowers with an unviable pollen source (female) resulting in poor fruit set; and 2. Mid to late maturity fruit drop and is usually associated with wet overcast conditions.
Promoting exotic and tropical fruit to teenagers

It is widely accepted that a teenagers’ fussy food requirements is what drives the household weekly grocery list.

Now food scientists at the Department of Primary Industries and Fisheries (DPI&F) want to tap into this power by introducing and educating the younger population on a variety of exotic tropical fruits.

DPI&F food scientists believe that by targeting this untapped market with fruits that have varying appearances, textures and flavours, mostly unknown to the general public – the overall uptake of these fruits will increase.

Targeting the younger population

The first educational workshop targeting the younger population was held in conjunction with a DPI&F organised ‘Revolutionary Science’ student forum on 9 May, 2008.

The Queensland Academy for Science, Mathematics and Technology hosted the event with local private and state high schools also taking part.

Workshops and displays at these special events provide a valuable tool to promote and encourage the younger population to taste these new and exotic fruits.

Encourage less adventurous peers

Additionally, as observed during Revolutionary Science, a teenager who enjoys the taste of a fruit despite its appearance is able to encourage their less adventurous peers to participate in the tasting.

This type of viral adoption is perhaps more successful than parents introducing the same fruit to their children.

Revolutionary Science

60 teenagers who attended Revolutionary Science participated in an exotic tropical fruit tasting session. The first part of the workshop focused on teenager knowledge and preference for exotic tropical fruit. The second part of the workshop focused on generating interest around food and science by talking generally about the fruits and DPI&F research.

Stimulate curiosity

The workshop aimed to promote exotic tropical fruits to teenagers, stimulate their curiosity toward new tropical tastes and gain a direct insight into the experience of Queensland teenagers and their consumption of exotic tropical fruits.

To gather information about familiarity with particular exotic tropical fruits, respondents were asked to fill out a survey prior to tastings. Specific Information was collected on the following fruits:

- persimmon
- mangosteen
- carambola
- dragon fruit.

These fruits were chosen because they were in-season and available for consumers to purchase from the market the same week of the workshop.

The 60 teenagers in the group seemed more familiar with the appearance of the exotic fruits than with their tastes.

Results indicate the lychee is the most popular fruit with 83 percent of respondents having consumed it previous to the tasting. Mangoes and passionfruit followed in popularity and approximately half the group also had previous experiences with carambola, guava and custard apple.

20 out of 60 young people who participated in the project had previously tasted Pitaya, pictured above.

Surprisingly, only one third of the teenagers reported to have previously tasted paw paw (papaya). If these results are confirmed, this fruit, considered a common exotic tropical fruit, needs active promotion directed at young people.

One third of the group had previous experience with persimmon and pitaya, 25 percent had tasted star apple, 15 percent had tasted durian and ten percent had tasted rambutan.

Mangosteen, breadfruit, jackfruit, soursoap, abiu, black sapote, rollinia were unknown by most of the surveyed teenagers.

Consumer insight on four specific exotic tropical fruits

Before the tasting session, only three percent of the group indicated they had previously tasted mangosteen.

Continued on page 5
Project ID: PRJ-002333
Yan Diczbalis

The project will conduct a stock take of tropical exotic fruit trees in Australia. Particular reference will be made to gaining accurate numbers of trees in the Wet Tropics of north Queensland and production areas in the monsoonal tropics of the Northern Territory.

In Queensland the post cyclone Larry survey will assess the level of damage and quantify the surviving stock of trees and the amount of replanting that has occurred since the cyclone. The stock take will allow the industry to determine their major crops and to predict production levels and industry value for the coming years.

The project will also assist the Tropical Exotic Fruit Industries to upgrade their individual crop strategic plans (durian, mangosteen and rambutan) and to develop an overall plan to assist "direction setting" for research, development and marketing priorities.

Boosting rambutan productivity through improvements in fruit set

Project ID DAQ-289A
Dr James Drinnan

Supply sufficient efficacy and residue information to allow the industry to apply for registration of synthetic auxin compounds to promote the production of male flowers to enhance fruit set.

Conduct a literature review on mid to late season fruit drop and trial the use of synthetic auxins and anti ethylene compounds to counteract fruit drop.

The major output of this project, will be to solve the fruit set issues in early flowering orchards and hence may immediately contribute to an increase in production of 20%.

The work related to mid to late season fruit drop has longer term benefits which will come as a result of a better understanding of the climatic and tree physiological aspects leading to the condition.

This will assist in the stabilisation of supply and allow the industry to develop domestic and export supply chains.

Project update features on page 1 and 5

Consumer drivers and barriers for exotic tropical fruits

PRJ-002470
Stephanie Kirchhoff

This project will deliver a better insight of consumer behaviour with respect to purchasing exotic tropical fruit.

This project will be a consumer study of the two main market segments in Australia:

Segment 1: The current main domestic market segment - the Asian population living in capital cities
Segment 2: The targeted potential market - Australian consumers unfamiliar with minor tropical exotic fruits and inclined to taste new products (mostly Caucasian origin).

Most tropical exotic fruits originate or grow in South East Asia, making them familiar to the Asian population. A direct insight into consumer behaviour in the Asian market would allow a better understanding of these important consumers. In addition, understanding this population will help to anticipate their reaction to the promotion of the tropical exotic fruit category.

The major objectives of this project are:

1. Identify consumer drivers to differentiate exotic tropical fruits from other fruit categories and to compare between major and minor tropical exotic fruits.
2. Characterise and compare Asian and Caucasian market segments of the tropical fruit category.
3. Identify key attributes of tropical fruit that are important in meeting consumer requirements and expectations.

PROJECTS FUNDED BY RURAL INDUSTRIES RESEARCH AND DEVELOPMENT CORPORATION
Floral manipulation and canopy management cont...

Counteract fruit drop
The literature review on the mechanisms behind mid to late season fruit drop in Rambutan and related species will be conducted to try and gain a better understanding of the factors involved. Preliminary trials will also be conducted with synthetic auxins and anti ethylene compounds to investigate if these chemicals can be used to counteract fruit drop.

The project has also investigated the use of potassium chlorate (KClO₃) to induce flowering in longans in Australia (having recently been discovered to induce flowering in Longans in other countries). The outcomes of these investigations will be published in a report for the Rural Industries Research and Development Corporation by Yan Diczbalis and Dr. James Drinnan, titled Floral manipulation and canopy management in Longan and Rambutan.

Promoting exotic and tropical fruit to teenagers...continued

The carambola and dragon fruits used at the workshop may were not mature enough and thus did not provide the optimal tasting experience.

Teenagers widely enjoyed its taste
In contrast, the mangosteen was criticized for its quartered appearance (served as segments without the attractive outer shell) but the teenagers widely enjoyed its taste and sweetness which they associated with other tropical fruits.

The first tasting experience strongly influences the chance of a repeat purchase. To appeal to Australian teenagers and encourage their consumption, the importance of the flavour of exotic tropical fruits should be understood.

Mature fruit could have a positive effect
Choosing tastier or sweeter varieties and harvesting more mature fruit could have a positive effect on consumption of exotic tropical fruits.

Postharvest techniques should increase and optimise the fruit flavour and aim to satisfy both the consumer’s eyes and palate.

Conclusions for this session need to be further investigated to confirm these preliminary results before they can be extended to the wider population. Nevertheless, the results obtained are an excellent first insight into young consumer appreciation for exotic tropical fruits.

This consumer tasting was conducted by scientists in the QDPI&F Innovative Food Technologies group (May 2008). For further information on this study, please contact stephanie.kirchhoff@dpi.qld.gov.au.

Above: Dr James Drinnan QDPI

The efficacy and residue data collected from these trials will be used to apply for registration of these compounds with the Australian Pesticide and Veterinary Medicine Association (APVMA).

Information provided by James Drinnan, pictured above, Project supported by RIRDC, QDPI & NTDPIFM

Continued from previous page

Mangosteen was a totally new fruit for them and, interestingly, was significantly preferred over carambola and dragon fruit. Persimmon was not significantly preferred in comparison with the three other fruits.

Carambola and dragon fruits were specifically appreciated for their attractive appearance and texture. The sourness of carambola and the lack of taste of dragon fruit seemed to have negatively influenced the students.
Tropical Fruits in Human Nutrition and Health Conference 2008

Invitation to submit abstracts

The organising committee of the 2008 Tropical fruits in human nutrition and health conference invites you to submit an abstract for presentation consideration.

The conference takes a 'whole of food approach' to advance the impact tropical fruits can have on human health and nutrition by promoting international scientific understanding and cooperation.

Topics to be discussed include:

- Opportunities to enhance economic and population health benefits from tropical fruits
- Consumer attitudes to health benefits from tropical fruits
- Identification of nutritional bioactives and the applications of bio-assays, bioavailability and clinical studies to elucidate the potential health benefits of tropical fruits.

When: 8-11 November, 2008

Where: Couran Cove Island Resort
South Stradbroke Island
Brisbane, Australia

To find out more about the conference, register or submit an abstract visit the website www.tropicalfruits2008.org

Presentation applications are selected from abstract submissions on the ability to contribute to the conference objectives. Conference attendance is limited to 50 participants.
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