

NEW TRAINING AND MANAGEMENT SYSTEMS FOR LOW-CHILL STONEFRUIT

A.P. George, R.J Nissen and D. Bruun
Queensland Department of Primary
Industries and Fisheries
Maroochy Research Centre
Nambour, PO Box 5083, SCMC,
Nambour



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NEW TRAINING SYSTEMS

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MANY DIFFERENT TYPES OF TRAINING SYSTEMS



VASE



PILLAR

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MANY DIFFERENT TYPES OF TRAINING SYSTEMS



**45° Oblique Palmette
System**

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OPEN TATURA SYSTEM

- large proportion of sunlight (70 % +) is captured by the trees.
- High production without having to go on a ladder.
- High early production.



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OPEN TATURA Espalier System

(developed at Maroochy Research Station for low-chill cultivars)

The advantages of the Espalier systems vs. the 45° Oblique system

- Reduces and controls vigour
- Lowers chill requirement
- Easier to train, prune, thin
- Reduces time associated with management by 40%-60%
- 1 600 trees per hectare
- est. yields 30 tonnes/hectare



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NEW PRUNING SYSTEMS

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New Pruning Systems

- Spring stub pruning (fruiting and non-fruiting laterals)



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Spring stub Pruning + soil-applied paclobutrazol



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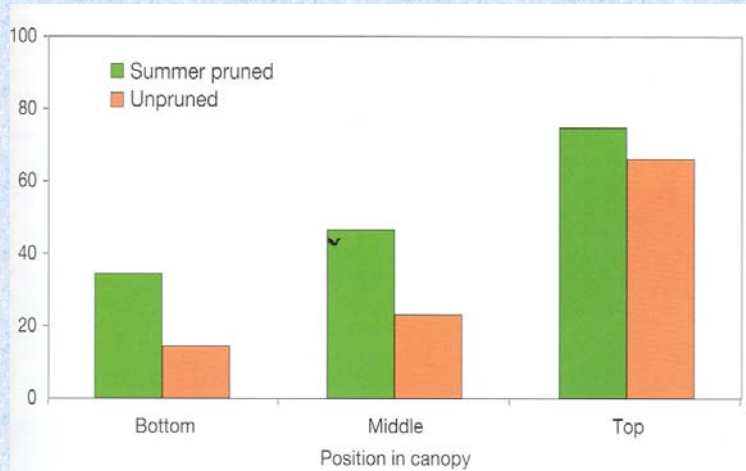
Espalier system + spring stub pruning + paclobutrazol



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EFFECTS OF SUMMER PRUNING ON LIGHT INTERCEPTION



Ian Goodwin, DPI, Tatura, 2005

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GROWTH CONTROL

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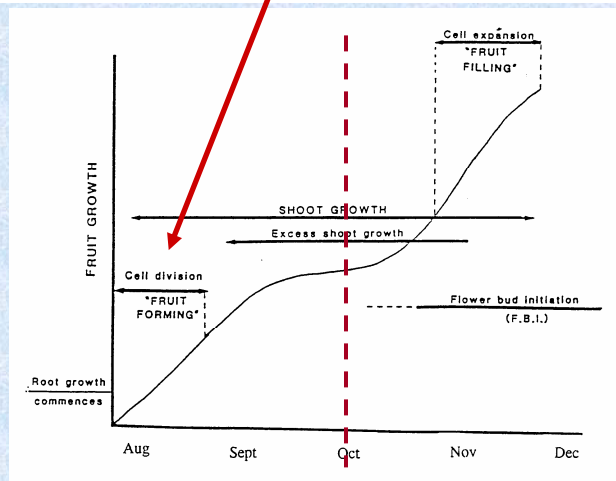
EXCESSIVE GROWTH A MAJOR PROBLEM



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CRITICAL PERIOD TO CONTROL GROWTH



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VEGETATIVE GROWTH

- ONLY NEED:
- 10 – 15 CM AT STONE-HARDENING
- 40 - 50 CM AT HARVEST

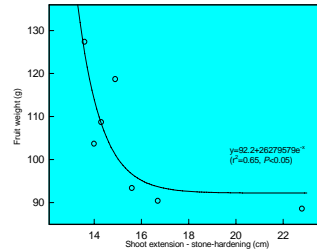


Fig. 4 Effects of shoot extension growth at stone-hardening on average fruit weight of peach cv. Newbelle at Nambour, Qld in 1999. Data are the means of 4 trees per treatment.

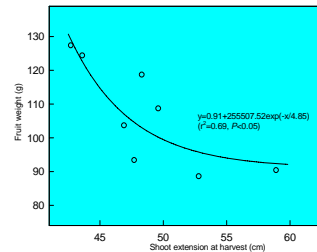


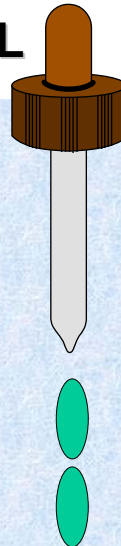
Fig. 5 Effects of shoot extension growth at harvest on average fruit weight of peach cv. Newbelle at Nambour, Qld in 1999. Data are the means of 4 trees per treatment.

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PACLOBUTRAZOL

1 - 4 ML PER TREE



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EFFECTS OF PACLOBUTRAZOL ON SHOOT GROWTH AND BUD SIZE

Paclobutrazol



Control



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Control vs. Paclobutrazol



Paclobutrazol

Control

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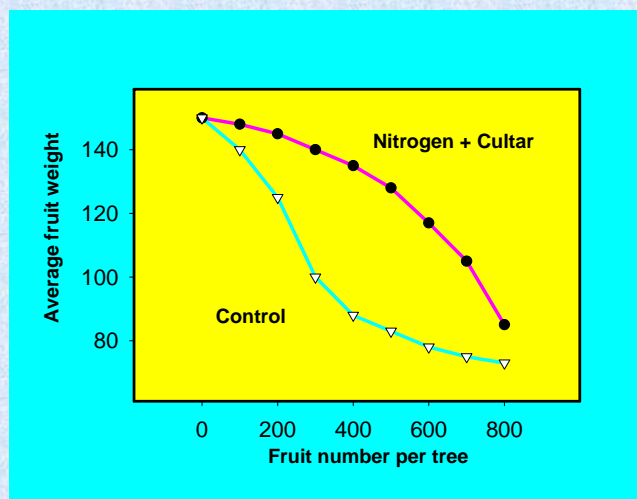
EFFECT OF PACLOBUTRAZOL ON 'EARLIGRANDE' PEACH FRUITS



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CROP LOADING



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REGALIS

- FOLIAR APPLIED
- MILD GROWTH CONTROL
- MAX CONCENTRATION – 2G/L
- REPEATED APPLICATIONS – 3?
- START EARLY AFTER FRUIT SET
- STILL NEED TO USE PACLOBUTRAZOL
- NOT REGISTERED

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CONCENTRATING FLOWERING AND FRUIT MATURITY

- APPLY PACLOBUTRAZOL AFTER HARVEST – NOVEMBER
- MAINTAIN LEAF HEALTH – LATE APRIL
- APPLY POTASSIUM NITRATE PRE-CODITIONING SPRAYS
IN LATE AUTUMN
- APPLY DEFOLIANT
- EARLY PRUNING (VERY LOW-CHILL ONLY)
- APPLY REST-BREAKING CHEMICALS – EARLY-MID JUNE



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SWEETNESS

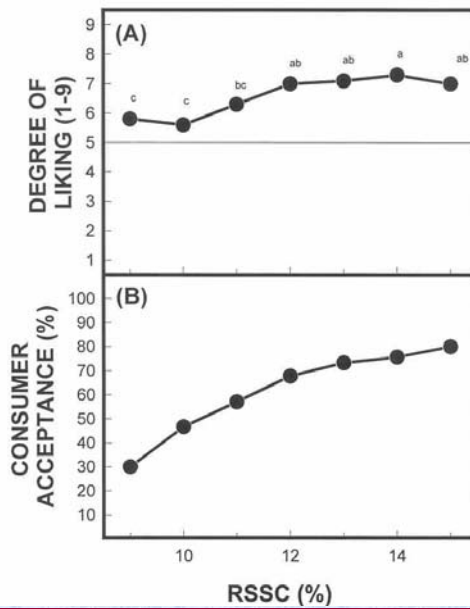


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YELLOW-FLESHED VARIETY OF PEACH

(Crisosto et al., 2003)

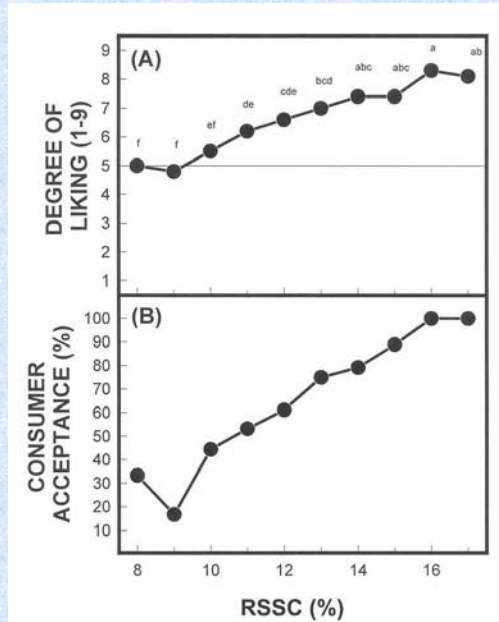


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WHITE-FLESHED VARIETY OF PEACH

(Crisosto et al., 2003)



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MINIMUM ACCEPTABLE STANDARDS

YELLOW-FLESHED ACID TYPES

>11°Brix

≤ 0.7%

WHITE-FLESHED LOW ACID TYPES

>12°Brix

≤ 0.4%

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FRUIT FLY EXCLUSION NETTING

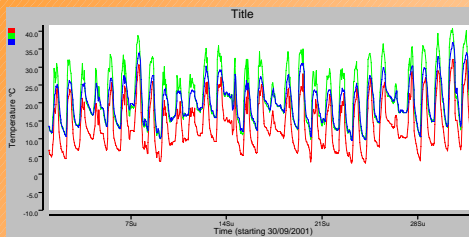


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Air Temperature

Outside (Screen)	66 hrs > 30°C
Bird & Bat	7 hrs > 30°C
Fruit Fly	217 hrs > 30°C

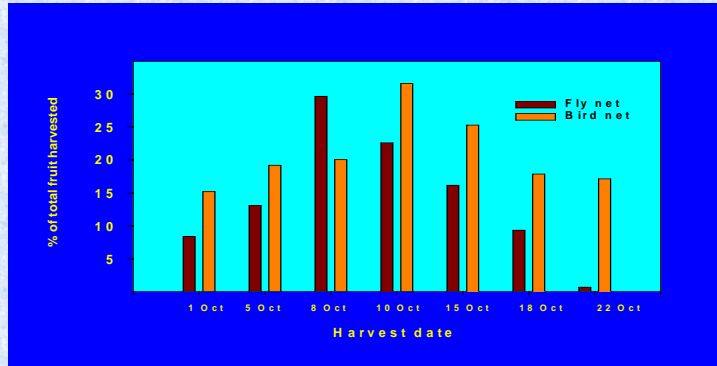


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Fruit Maturity

Advanced - approximately by 1 week



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EFFECTS OF NETTING TYPE ON SUGAR CONCENTRATION

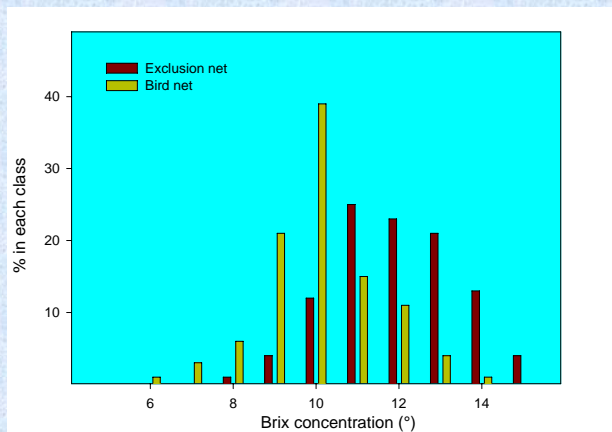


Figure 17. Effects of netting type on distribution of Brix concentration of 100 randomly sampled fruit of cv. Sunwright at the Maroochy Research Station in 2005.

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Effects of rainfall on sugar concentration

Bird net

Exclusion net

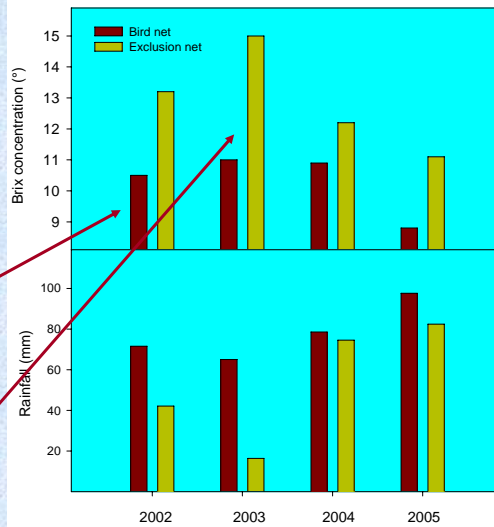


Figure Changes in Brix concentration and rainfall during fruit maturation over four years under different types of netting for nectarine cv. Sunwright.

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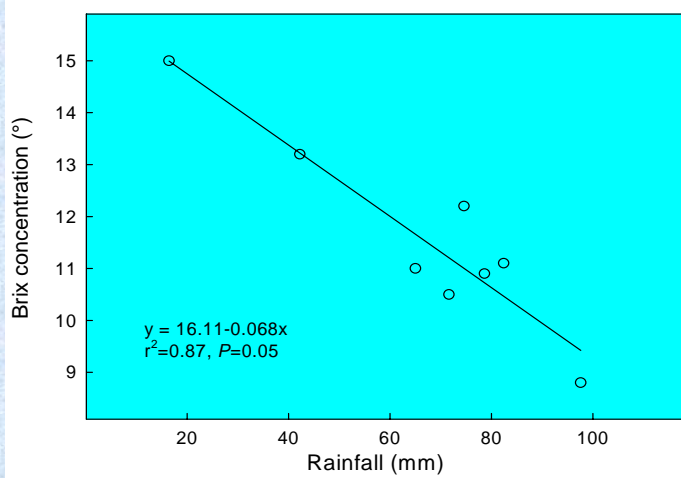
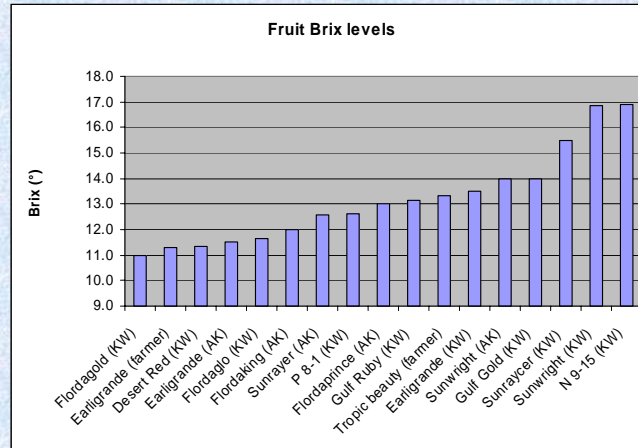


Figure 18. Relationship between rainfall during fruit maturation and Brix concentration of nectarine cv. Sunwright.

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Higher sugar concentrations when grown under dry climates eg Thailand



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TESTING OF COLOURED NETTING IN ISRAEL



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Orchard – sprayed with Surround®



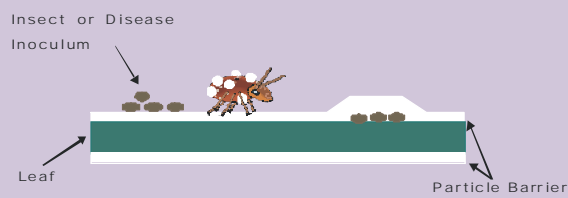
Michael Glenn (2003)

PARTICLE FILM TECHNOLOGIES



Mechanisms of Action

Mechanisms of Action



Michael Glenn (2003)

EFFECTS OF MULCHING AND HUMIC ACID ON TREE GROWTH



CONTROL



MULCH + HUMIC ACID

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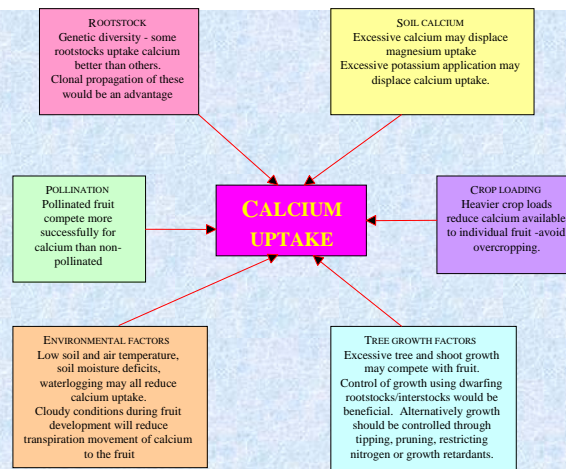
IMPROVING CALCIUM NUTRITION

- **SOIL pH (1:5 water) 6.5 - 7.0**
- **SOIL CALCIUM > 8 meq/100 g Ca**
- **APPLY 5 KG GYPSUM PER TREE ANNUALLY**
- **APPLY HUMIC ACID?**
- **APPLY MULCH**

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INTER-RELATIONSHIPS BETWEEN SOIL, TREE AND WEATHER FACTORS WHICH AFFECT CALCIUM UPTAKE



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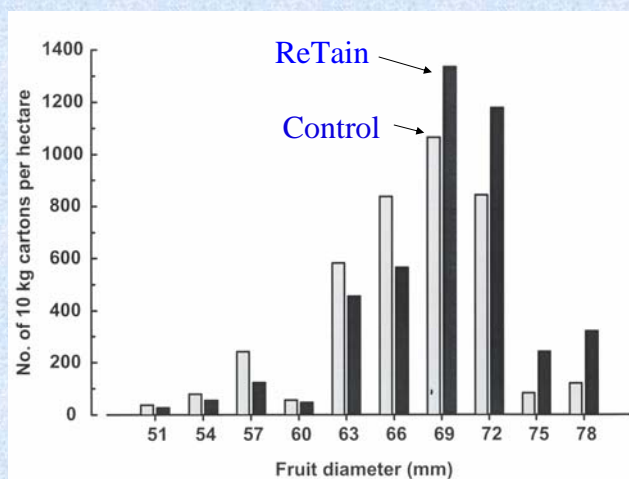
ETHYLENE BIOSYNTHESIS INHIBITORS

- **RETAIN - AMINOETHOXYVINYLGLYCINE (AVG)**
 - **APPLY 1 WEEKS PRIOR TO HARVEST**
 - **INCREASES FRUIT SIZE UP 15%**
 - **INCREASES FRUIT FIRMNESS 15%**
 - **CAN INCREASE SUGAR CONC.**
 - **RESPONSE GREATER PARTICULARLY UNDER EXCLUSION NETTING**

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EFFECTS OF RETAIN ON FRUIT SIZE OF ARTIC SNOW NECTARINES



Rath and Prentice, 2004

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Artic Snow		Untreated	Treated
Yield		48.7 tonnes	54.8 tonnes
Gross value (\$)	Class 1- Export	\$86 601	\$104 545
	Class 1- Domestic	\$29 900	\$32 765
	Class 2- Domestic	\$13 320	\$13 332
Total		\$129 821	\$150 642
Total costs		\$28 116	\$31 282
Net return/ha			+\$17 655

Rath and Prentice, 2004

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ECONOMIC PERFORMANCE

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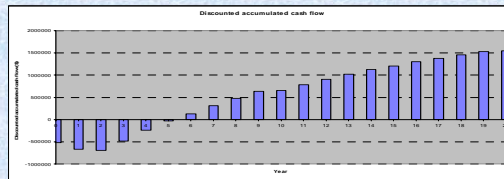


SYNERGIES OF MARGINS

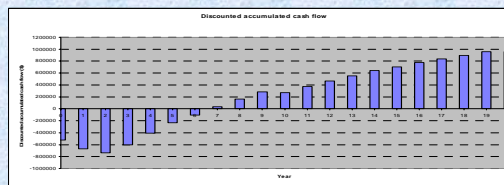
SYSTEM	VARIABLE COST PER TRAY	GROSS PROFIT PER HECTARE	NET PROFIT PER HECTARE
Open Tatura 5 000 trays	\$10	\$60 000	\$10 000
Open Tatura + new variety	\$10	\$70 000	\$20 000
Open Tatura (esp) 7 000 trays + new variety+PP333 + reduced costs	\$8	\$98 000	\$42 000
Open Tatura (esp) + new variety+ PP333 +advanced harvest period+reduced costs	\$8	\$126 000	\$70 000

* Figures are for illustration purposes and are a guide only

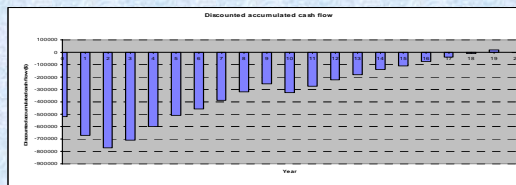
**MID-
OCTOBER**



**EARLY
NOVEMBER**

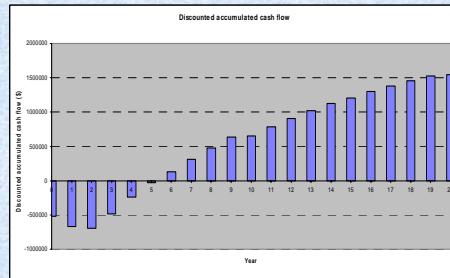


**LATE
NOVEMBER**

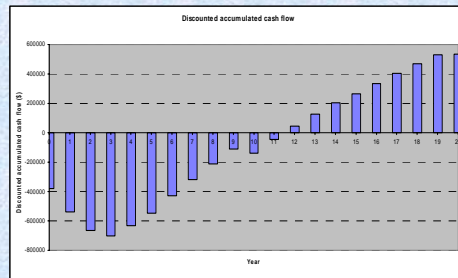


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NEW OPEN TATURA ESPALIERED SYSTEM



OPEN VASE



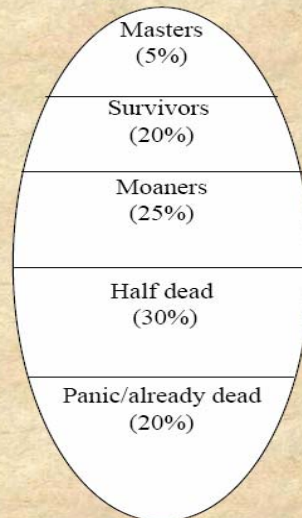
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WHERE ARE YOU!!!

Managerial skills



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