



Introducing new genetics to the beef herd via synchronisation and artificial insemination

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Artificial Insemination (AI)

- ∅ Low proportion (<20%) of AI used within the suckler herd

WHY?

- Labour intensive
- Cost
- Difficulty with heat detection
- Low success rate

- ∅ **HOWEVER there are many benefits:**

- ∅ Improved genetics
- ∅ Proven bulls
 - Maternal sires
 - Easy calving sires
 - Terminal sires – growth and carcass traits

- ∅ Eliminates cost of maintaining a bull (and H&S benefits)



Synchronisation & AI

Synchronisation minimises problems associated with conventional AI

- u Utilise benefits of AI
- u Fixed time AI reduces the need for heat detection
- u All cows can be bred at the one time

Factors to consider with synchronisation

- u what protocol do we use?
- u what conception rates do we expect?



Is there a role for sorted semen within the beef industry?

- u Sorted semen has potential to increase suckler herd output by:
 - ∅ increasing number of maternal females for replacements
 - ∅ increasing the number of terminal males for beef production
 - ∅ reducing birth weights to aid calving ease for heifers
- u To date there has been limited use of sorted semen
 - ∅ within the beef industry
 - ∅ with synchronisation protocols
- u Limitations due to:
 - ∅ beef bull availability
 - ∅ more expensive semen

Recent Synchronisation and AI projects

Objectives

- u Evaluate a range of protocols appropriate to the beef industry
 - ∅ Reduce labour input
 - ∅ Minimise the veterinary input
- u Evaluate the success of sorted semen within a suckler herd



Steps involved with synchronisation?

- 1) Farmer, vet and AI technician discussion
 - I. Protocol selection
 - II. Bull selection
- 2) Protocol Implementation
 - I. Veterinary check
 - II. Progesterone device
 - III. Hormones (Prostaglandin & Gonadotrophin Releasing Hormone)
 - IV. Artificial Insemination
- 3) Repeat breeding
- 4) Pregnancy detection



RCF Synchronisation and AI (Year 1 & 2)

- Involved 12 herds, including AFBI & CAFRE

Heifer synchronisation programmes evaluated

Day	Mon	Sat	Sun	Mon	Tue	Wed	Thur	Results % (range)
Heifer 1	Prog d. in & GnRH	Prog d. out & PG			FTAI & GnRH			53 (35 – 73)
Heifer 2	Prog d. In			PG	Prog d. out		FTAI	65 (44 – 84)

Prog d.: Progesterone device

PG: Prostaglandin

GnRH: Gonadotrophin Releasing Hormone

FTAI: Fixed Time Artificial Insemination

RCF Synchronisation and AI (Year 1 & 2)

- Involves 12 herds, including AFBI & CAFRE

Cow synchronisation programmes evaluated

Day	Mon	Sat	Sun	Mon	Tue	Wed	Thur	Results % (range)
Cow 1	Prog d. in & GnRH			Prog d. out & PG			FTAI & GnRH	63 (46 – 79)
Cow 2	Prog d. in & GnRH			PG	Prog d. out	GnRH	FTAI	62 (55 – 72)

Prog d.: Progesterone device

PG: Prostaglandin

GnRH: Gonadotrophin Releasing Hormone

FTAI: Fixed Time Artificial Insemination

Can we minimise veterinary product input?



SCAN



Prog device

**7
DAYS**

PGF 2 α



**GnRH +
FTAI**



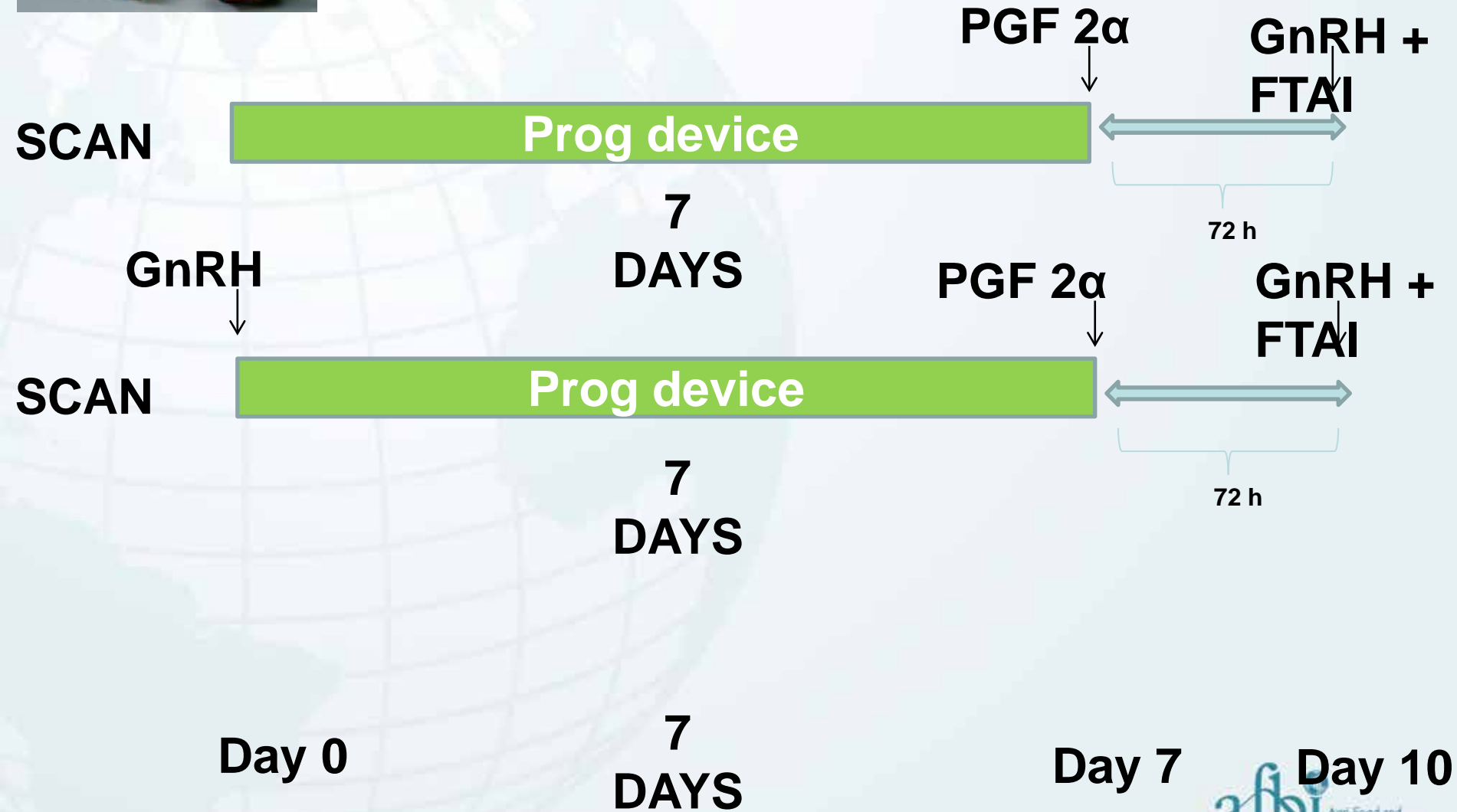
72 h

Day 0

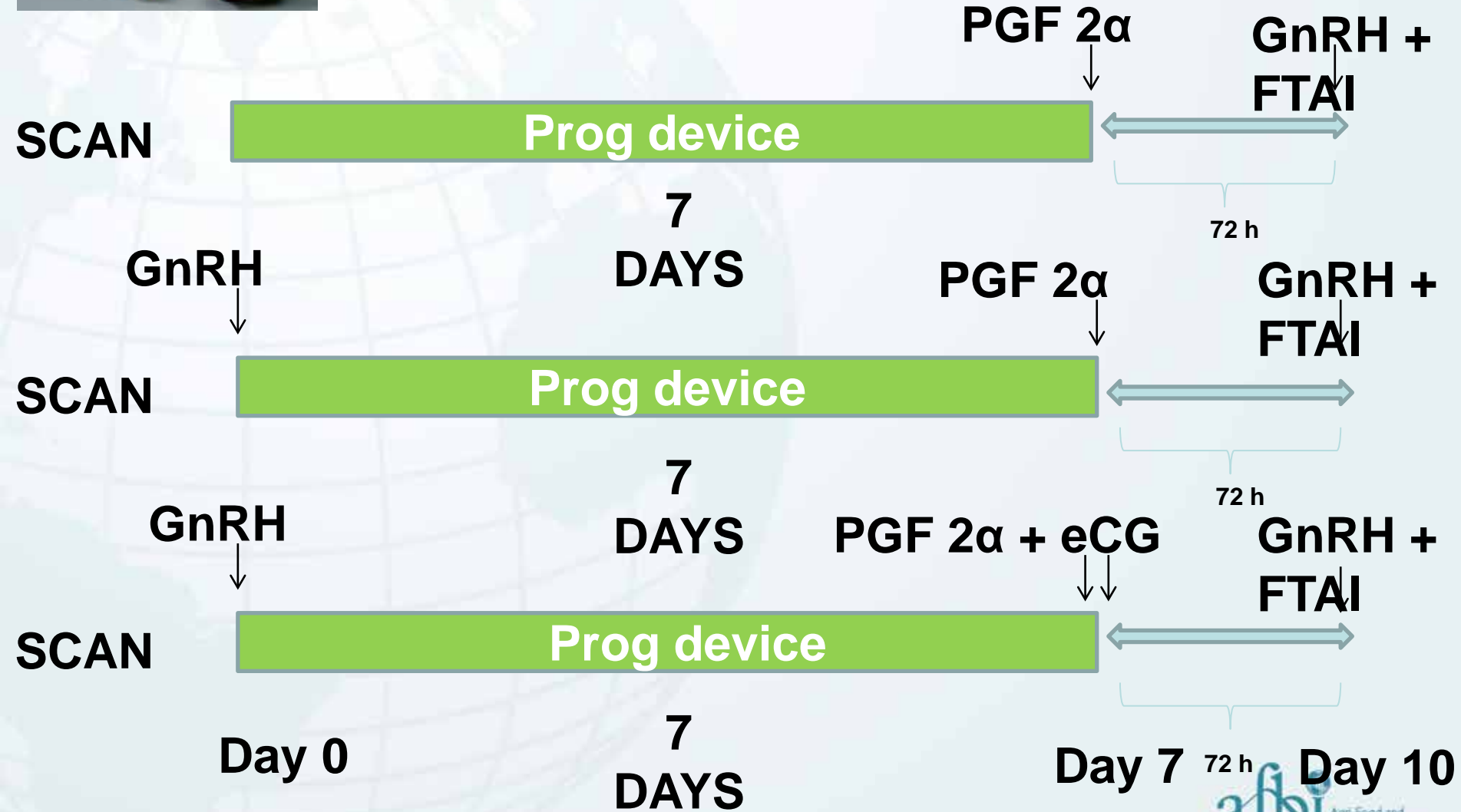
Day 7

Day 10

Can we minimise veterinary product input?



Can we minimise veterinary product input?



Can we minimise veterinary input? Pregnancy rates

	No GnRH	GnRH	GnRH & eCG
Spring 2014	50%	59%	69%

Can we minimise veterinary input?

Pregnancy rates

	No GnRH	GnRH	GnRH & eCG
Spring 2014	50%	59%	69%
Autumn 2014	54%	52%	49%

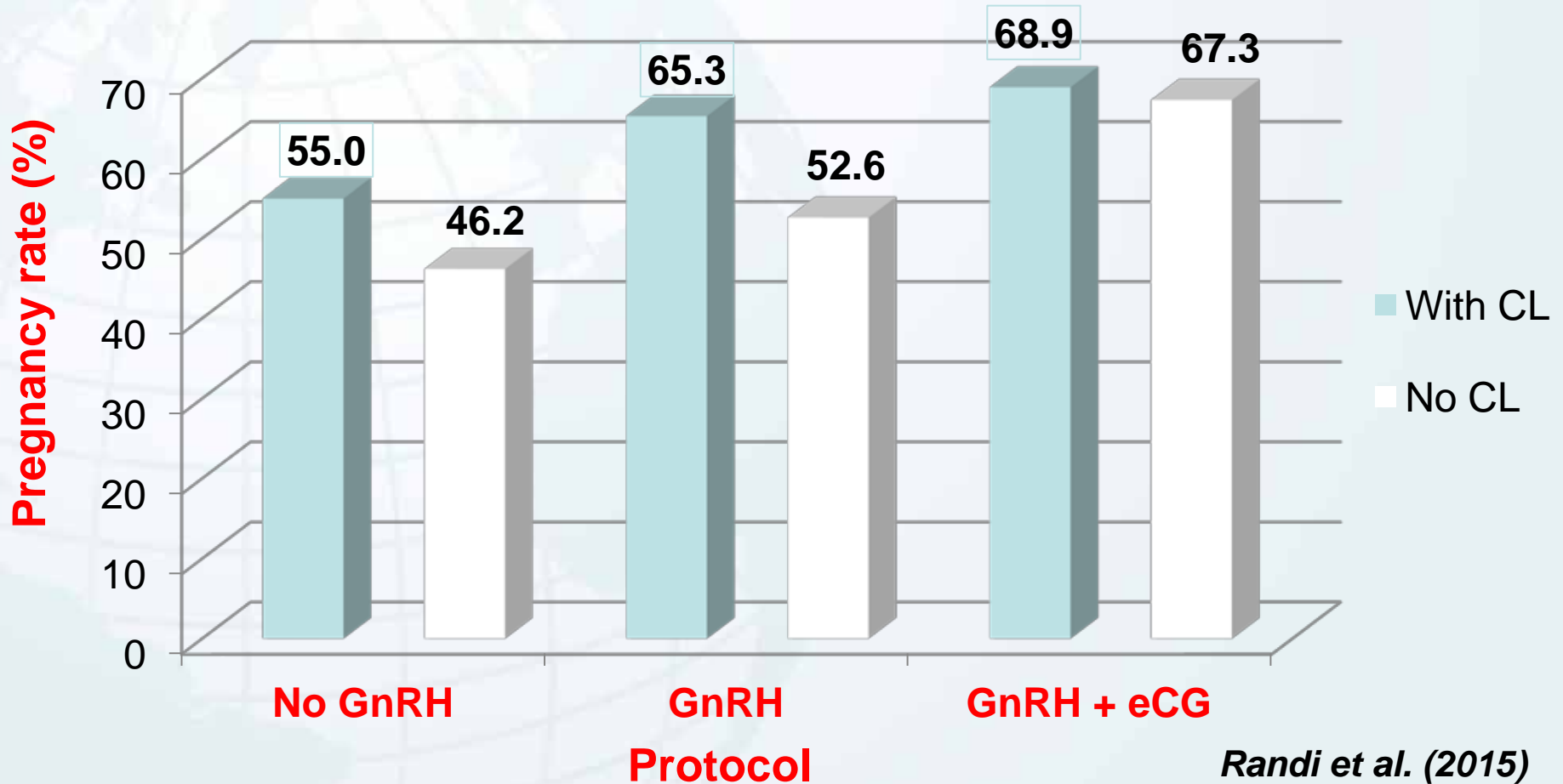
Can we minimise veterinary input?

Pregnancy rates

	No GnRH	GnRH	GnRH & eCG
Spring 2014	50%	59%	69%
Autumn 2014	54%	52%	49%
Spring 2015	-	53%	55%
Overall	52%	54%	57 %

Randi et al. (2015)

“Cyclic activity” and Pregnancy Diagnosis:



Additional veterinary input appears to improve pregnancy rates in non cycling cows indicating the importance of the pre scan

Synchronisation using sorted semen (2015)

- u Involved only the AFBI suckler herd
- u Compared conventional semen with sorted semen

AFBI suckler herd breeding regime 2015

Synchronisation protocol	Heifer 2		Cows 2		
	Conv.	Female sorted	Conv.	Female sorted	Male sort
Conception to first service (%)	59	59	58	61	68

∅ No significant difference

Synchronisation using sorted semen (2016)

- u Involved only the AFBI suckler herd
- u All sorted semen but different protocols

AFBI heifer breeding regime 2016 (female sorted)

	Mon	Mon	Tue	Wed	Thur	Conception 1 st service
Heifer 2	Prog d. In	PG	Prog d. out		FTAI	26%
Heifer 3	Prog d. In	PG	Prog d. out		FTAI & GnRH	17%

∅ No significant difference

Synchronisation using sorted semen (2016)

- u Involved only the AFBI suckler herd
- u All sorted semen but different protocols

AFBI cow breeding regime 2016 (male sorted)

	Mon	Mon	Tue	Wed	Thur	Conception 1 st service
Cow 1	Prog d. in & GnRH	Prog d. out & PG			FTAI & GnRH	38%
Cow 2	Prog d. in & GnRH	PG	Prog d. out	GnRH	FTAI	41%

∅ No significant difference

Conclusions on synchronisation and AI R&D

What synchronisation protocol works best?

- ∅ Minimal handling heifer protocol **may** result in poorer conception
- ∅ Cow protocols resulted in minimal differences **BUT** certainly protocols which involve 3 handlings will be the preferred option for beef farmers
- ∅ Additional hormone treatment beneficial in non cyclic cows
- ∅ Results can be variable

Is there a role for sorted semen?

- ∅ Sorted semen – variable results but potentially lower conception rate than with conventional
- ∅ Consider using with conventional AI initially
- ∅ More research needed in this area

Tips for success

- u Farm fertility history
 - Ø Herd health and nutrition
- u Good handling facilities are essential
- u Plan ahead (discussion with farmer, vet and AI technician)
- u Cows may calve over 7 – 14 day period so need adequate number of calving pens – determine number in each batch



Acknowledgements

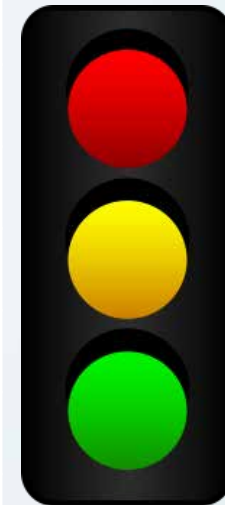


Farmers and vets for participation with these studies



Conception to 1st service (Year 1)

Farm	Heifer 1	Heifer 2	Cow 1	Cow 2
A	35%	81%		55%
B		70%	53%	
C	50%		46%	
D	45%		79%	
E	75%		64%	
F		88%		72%
G	60%		61%	
H	66%		60%	
I	46%		50%	
J	67%		60%	
K	45%			
L		64%		58%



<50%
Disappointing

50-59%
Acceptable

>60%
Good