

Is it possible to harvest balsam fir tips, while pursuing an objective of timber production?

Dodick Gasser

Research and Knowledge Transfer Officer

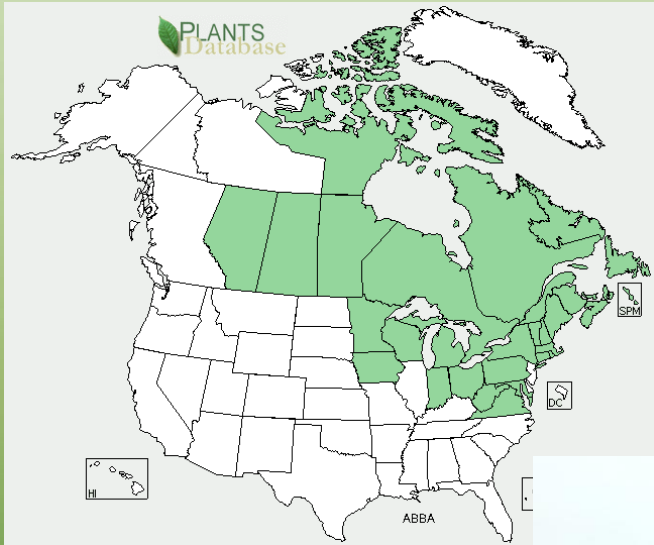


**Consortium en foresterie**

Gaspésie-Les-Îles

Affilié à l' **UQAR**

# Introduction



*Fresh from the forest!*



### A little about A&R Decorations...

**Wholesale Products**  
**Mail Order Products**  
**How to Order**  
**About A&R**

A family owned company for over 18 years, A&R Decorations is located in beautiful Cascapedia St-Jules Quebec. They employ a large percentage of the community with various products throughout the year. They specialize in hand making wood and brush crafts, but are also ecologically responsible, replanting and being careful to preserve the natural order. A&R is owned by Russell and Dorothy Campbell and is named after their children, Amanda & Ronald.





# Tip harvesting

- 6.5 – 7.0 millions pounds = 3 100 tons
- PCT + Forest roads
- Crown tipping
- Guidelines



# Balsam fir tip harvesting and timber production: are they compatible?



# Objectives

- Socio-economic impacts
- Potential biological responses
- Relevance and applicability of some specifications of management guidelines
- Compatibility of tip harvesting with timber production

# Hypothesis 1

- Harvesting practices: intense and severe = productive and efficient in the short run,  
BUT at the expense of tree survival and growth

# Hypothesis 2

- Guidelines = decrease in:
  - removal amount – tree level → no significant impacts on tree and timber/wood production
- BUT decrease in:
  - tip production – tree level
  - harvesters' production and productivity



# Study sites and experimental design

- 5 PCT + 2 years
- 15 BF/plot;  $h \geq 3.0$  m
- Tipping
- Factorial:
  - Severity – limb level (2):
    - $\geq 2/3$  = less severe
    - Variable = more severe
  - Intensity – tree level (2):
    - partial (1/3) = less intense
    - total = more intense





# 4 harvesting practices



S-2/3\_I-1/3

- Severe  
- Intense

S-2/3\_I-t

- Severe  
+ Intense

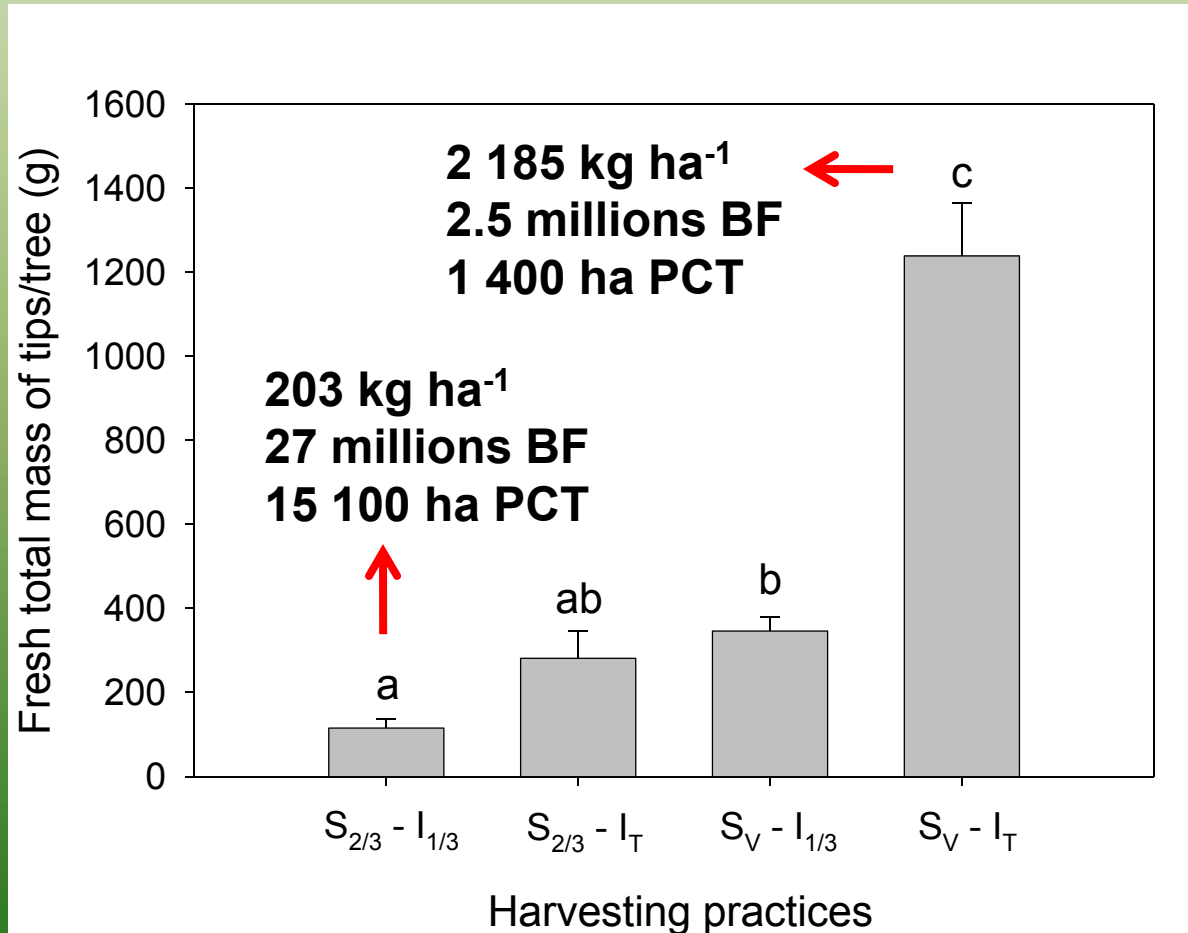
S-v\_I-1/3

+ Severe  
- Intense

S-v\_I-t

+ Severe  
+ Intense

# Tip production at the tree level - Biomass



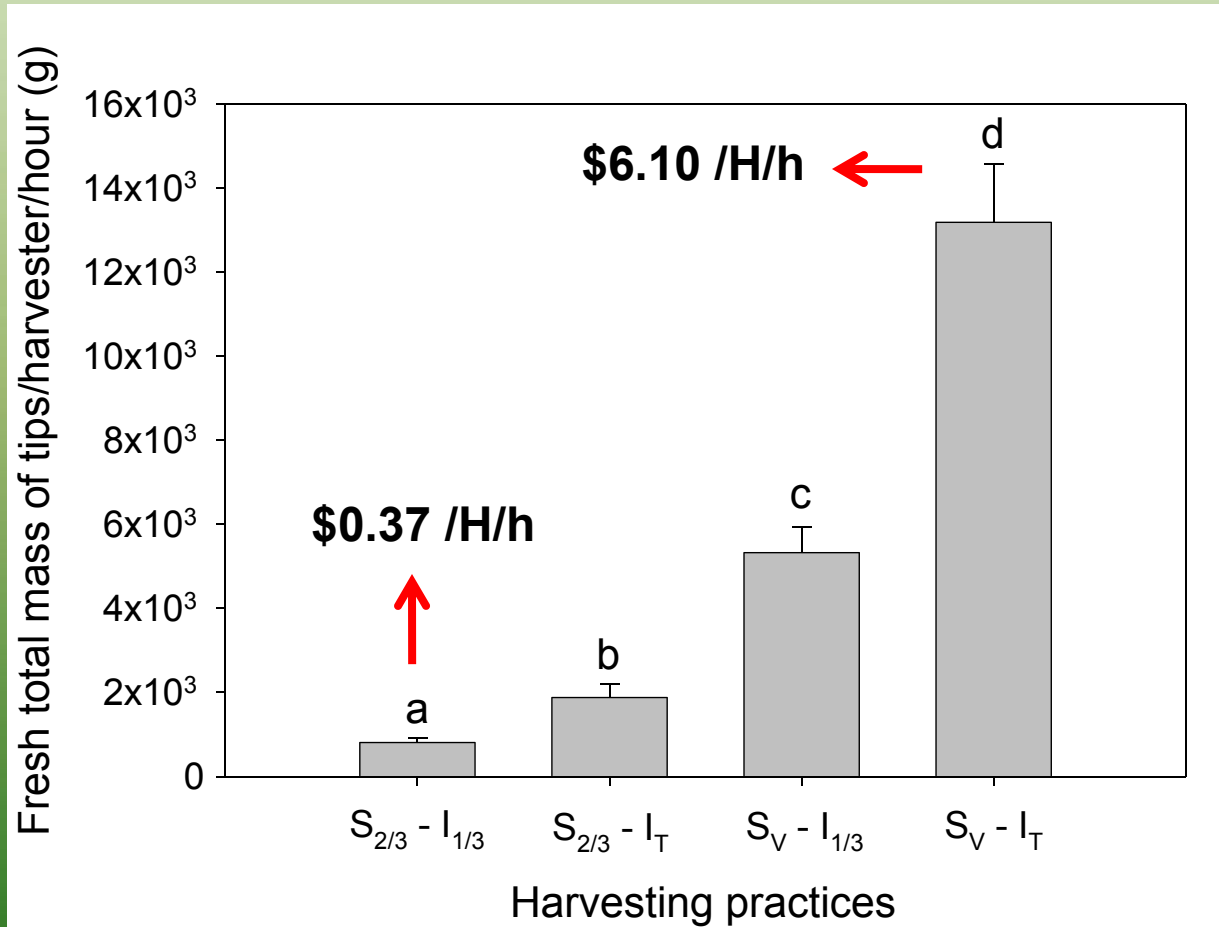
- Severe  
- Intense

- Severe  
+ Intense

+ Severe  
- Intense

+ Severe  
+ Intense

# Harvesters' productivity - Biomass



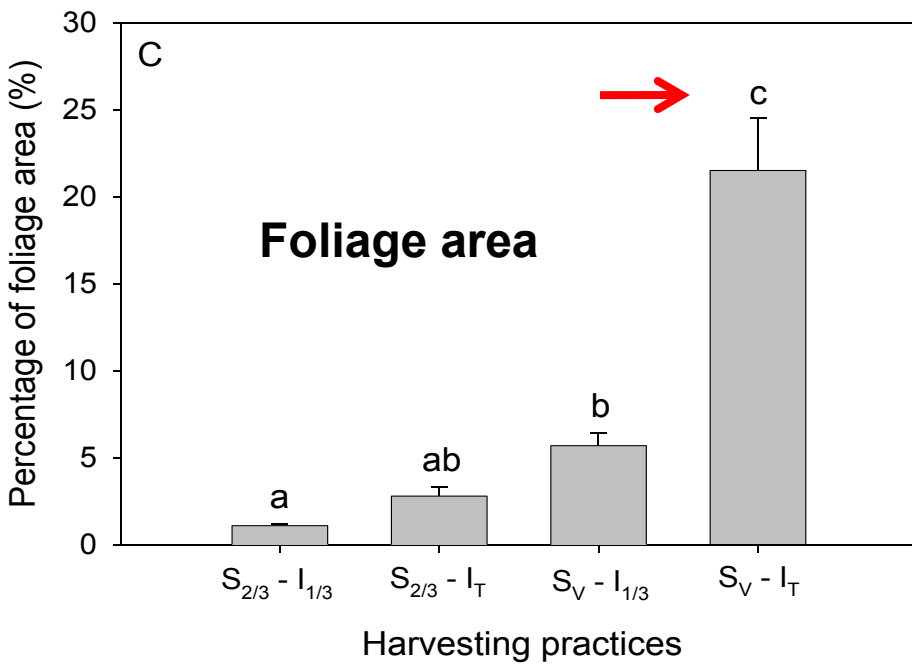
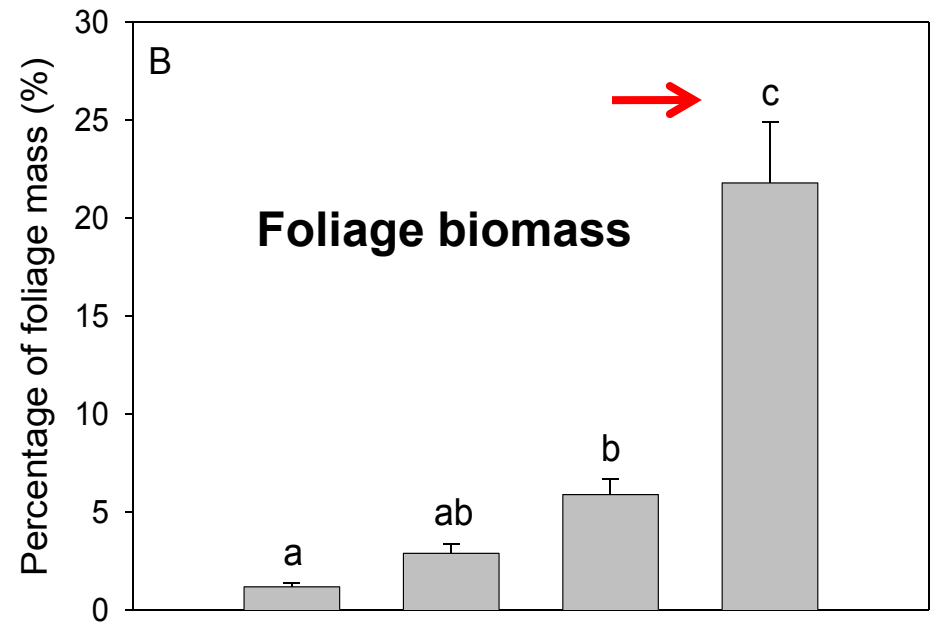
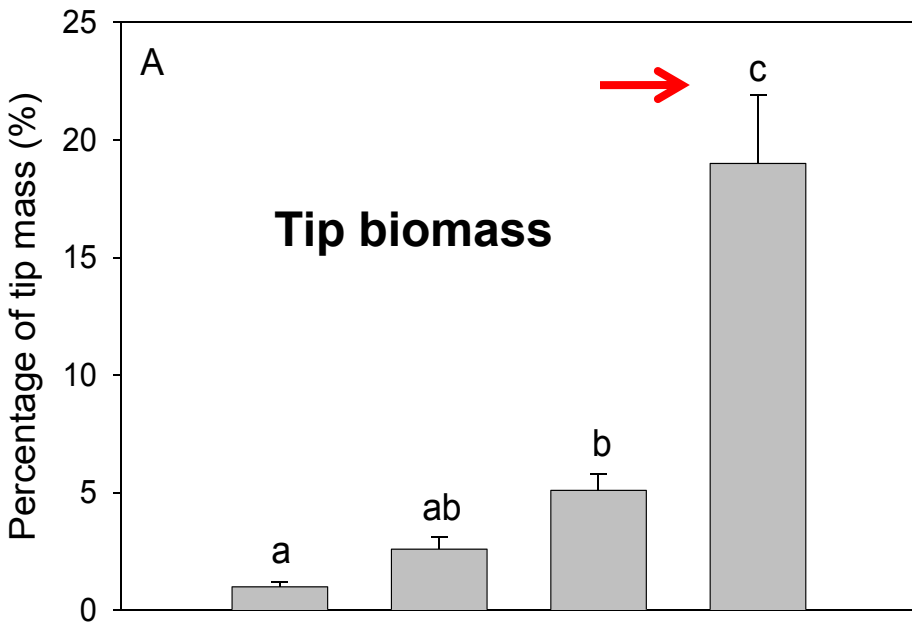
- Severe  
- Intense

- Severe  
+ Intense

+ Severe  
- Intense

+ Severe  
+ Intense





Removal  
amount at  
the tree level

# Likelihood of significant effects for greatest removal amount ( $\approx 20\%$ )

<b>Effects</b>	<b>unlikely</b>	<b>Likely</b>	<b>Very likely</b>
Increase in mortality	<b>X</b>		
Decrease in growth – height	<b>X</b>		
– diameter	<b>X</b>		
– volume	<b>X</b>		
Decrease in knots size		<b>X</b>	
Decrease in bole taper		<b>X</b>	
Accelerate the transition juvenile – mature wood		<b>X</b>	
Tip production	<b>X</b>		

# Conclusion and implications – Guidelines on $BF \geq 3.0$ m

- Biologically sound, socially acceptable, and financially viable ».
- Easy to communicate
- Operationally feasible on the ground
- Easy to monitor
- Revision
- + severe - + intense



# Conclusion

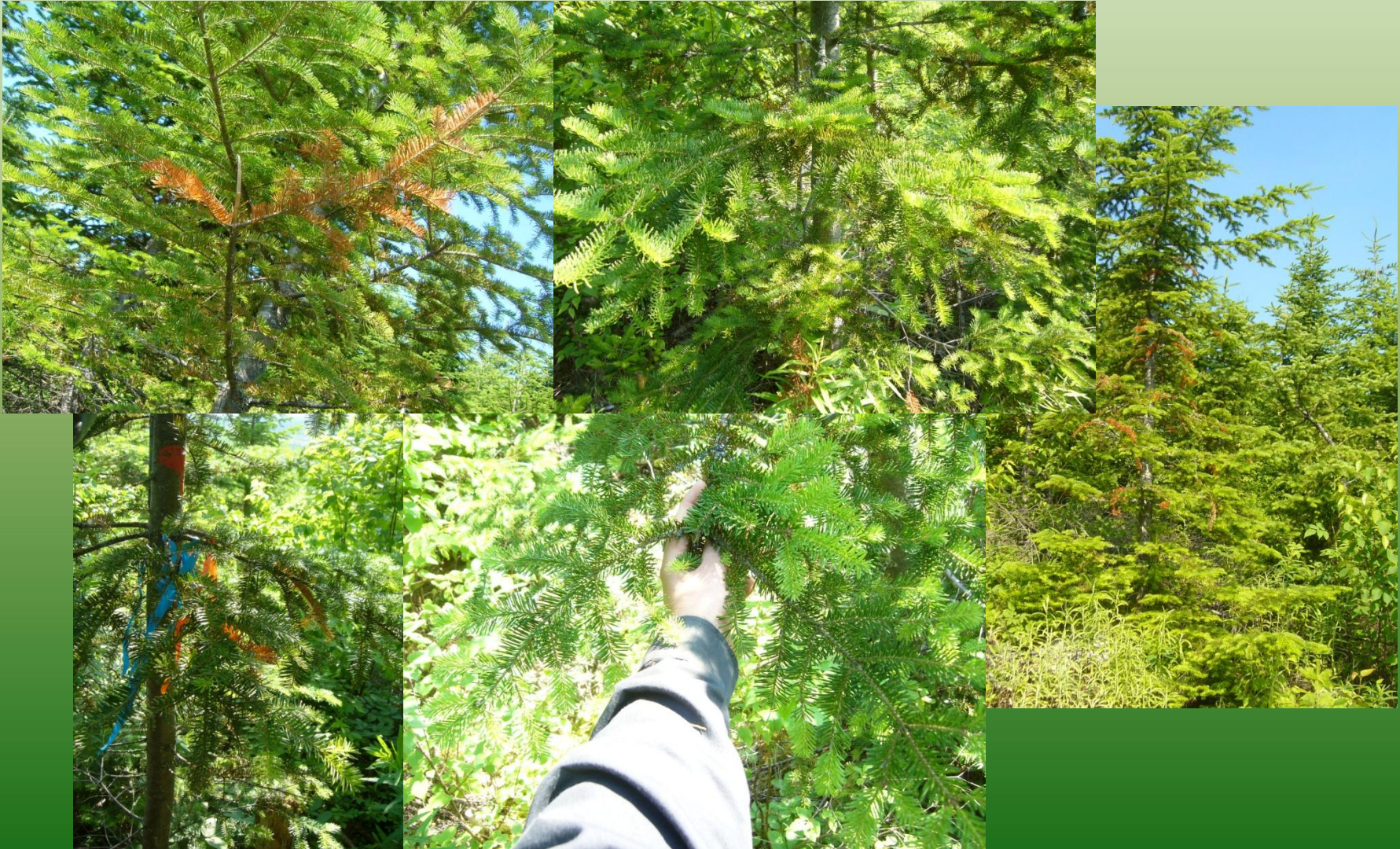
- Balsam fir tip harvesting and timber production seem to be compatible

# Bibliography

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- Testing four tip harvesting practices for their potential socio-economic and biological impacts. *in preparation*. With E. Swift.
- Récolte de branches de conifères (sapin baumier) pour la fabrication de couronnes de Noël et d'autres produits ornementaux : cahier du participant .
- Available at: [www.mieuxconnaitrelaforet.ca](http://www.mieuxconnaitrelaforet.ca)



# Survival, growth, bole quality and tip production – 2011 – 2016





# Acknowledgements

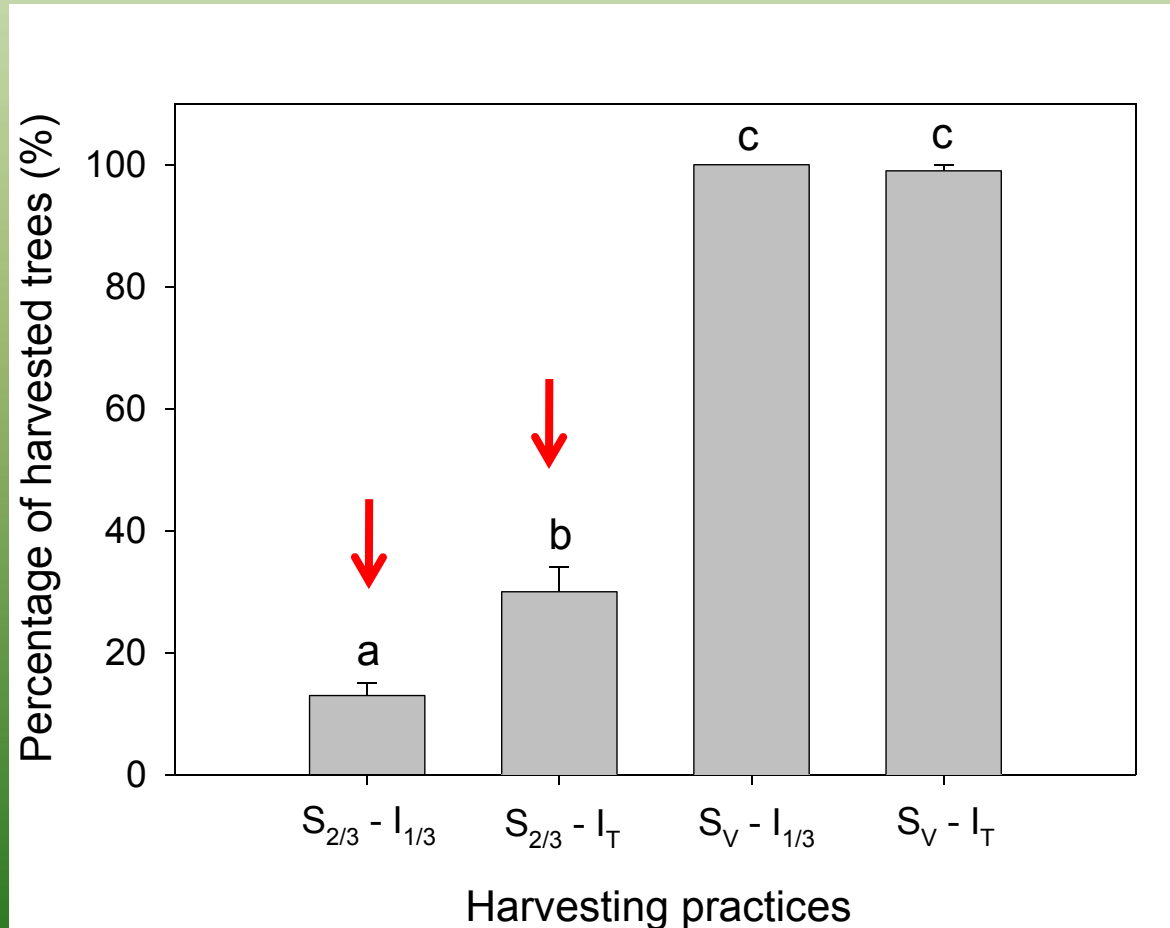
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- S. Racine et B. Pouffet
- H. Varady-Szabo
- B. Lafleur
- MAPAQ : S. Thibault et M. Desbiens
- R. Campbell, A & R Decorations
- S. Nadeau, SCF-CFA



# Effets de la sévérité, de l'intensité et de l'interaction S x I (n= 5)

Réponses	S	I	S x I
Intensité de la récolte - peuplement	<0.001	0.019	0.002
Production de « pointes » - arbre	<0.001	<0.001	0.003
Productivité des cueilleurs	<0.001	<0.001	0.740
Degré de prélèvement - arbre			
Biomasse de « pointes »	<0.001	<0.001	0.001
Biomasse foliaire	<0.001	<0.001	0.001
Surface foliaire	<0.001	<0.001	<0.001

# Tip harvesting intensity at the stand level - % harvested BF



- Severe  
- Intense

- Severe  
+ Intense

+ Severe  
- Intense

+ Severe  
+ Intense

# Production des cueilleurs - biomasse

