How Well Does That Larvicide Get Through The Mangrove Canopy?

by
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Mangrove Canopy Penetration Studies

Year	Nozzle	Material	Formulation Application gal/ac	Technical oz/ac	Chart ID
1998	TwinJet 8002	BTI	1.8	32	**1**
	TwinJet 8003	BTI	1.8	32	**2**
	Delavan 50/140	BTI	4.67	32	**3**
	TwinJet 8003	Abate	1.7	0.5	**4**
2000	Delavan 50/40	Abate	2.9	0.83	**5**
	Delavan 10/140	Abate	1.8	0.5	**6**
2006	Delavan 50/140	Water	4.67		**7**
	Delavan 50/140	Water	2.5		**8**
2010	Accu-Flo .085/16	Water	4.67		**9**
	Accu-Flo .085/16	Water	2.33		**10**

Experimental Design

- ❑ 3 Transects were setup in Black Mangrove under the canopy
- ❑ 3 Transects were setup in an open area within the Black Mangrove
- ❑ Sampling stations were ~4 tall survey stakes with an inverted plastic plate attached to the top
- ❑ Sampling stations were 10 feet apart

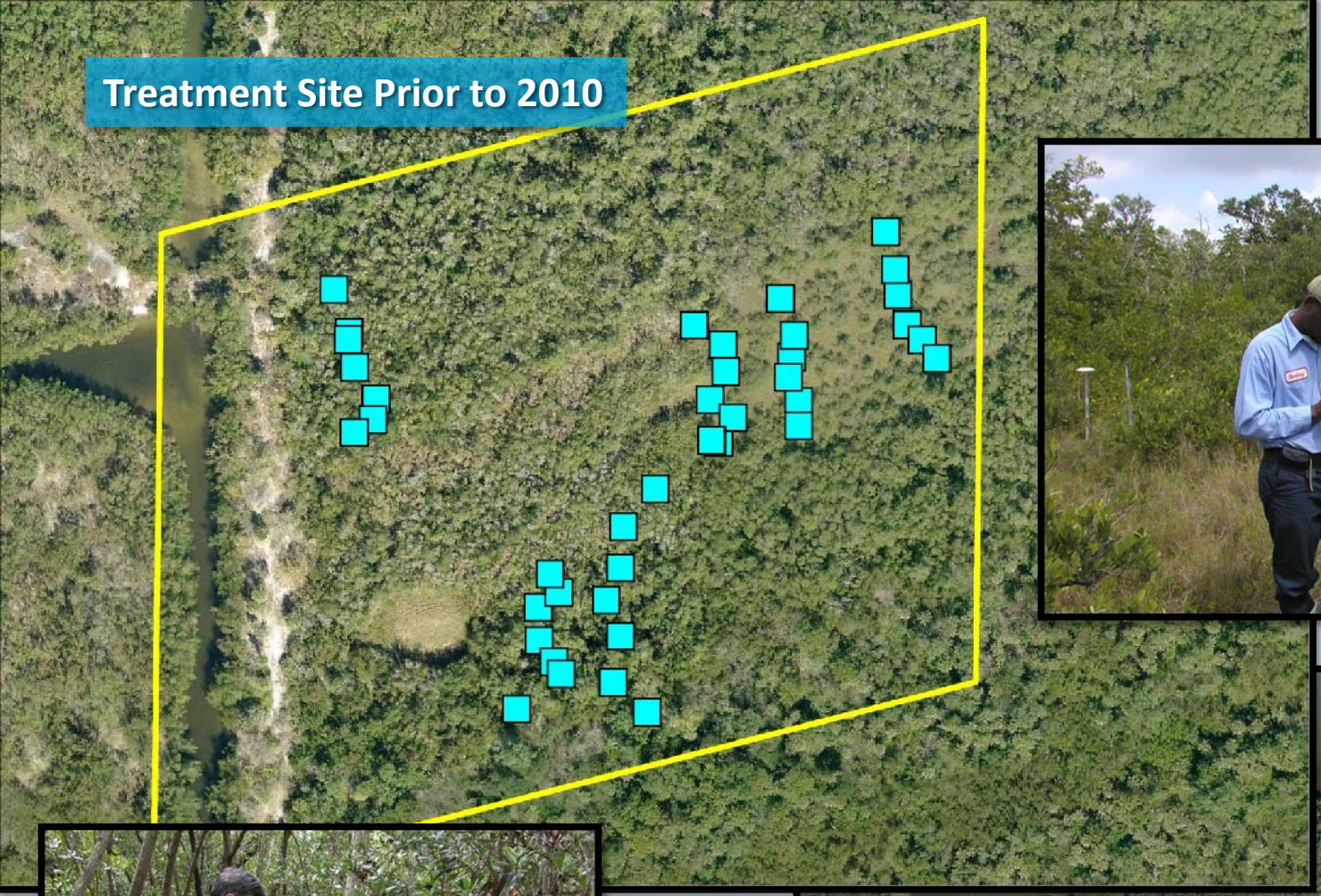
Prior to 2010

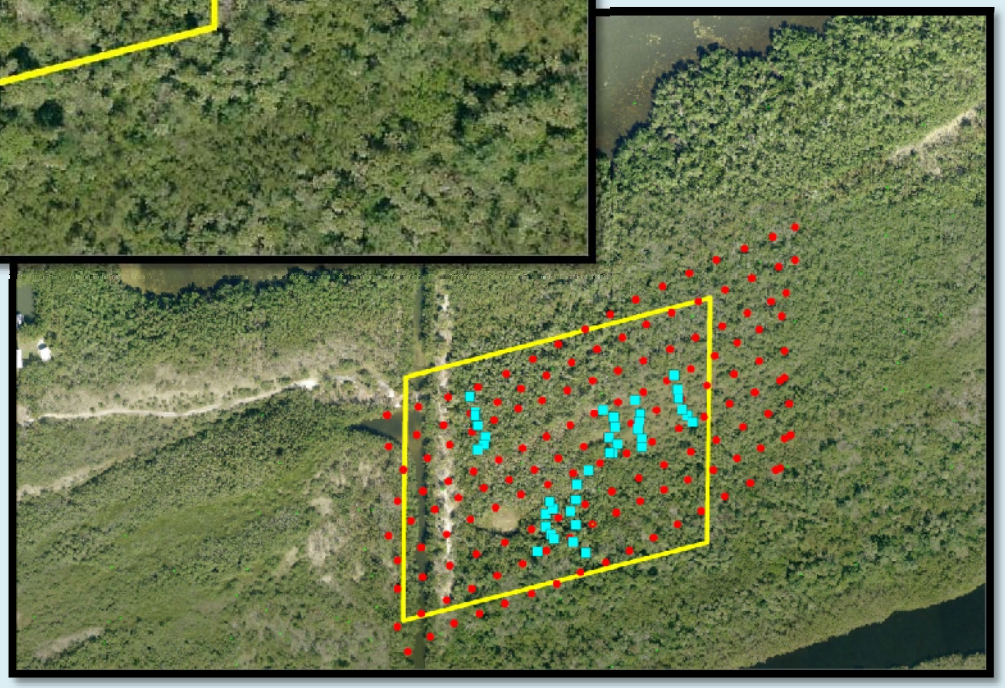
- ❑ Transects were 100 ft long which required 2 or more swaths to cover the transect
- ❑ A single application was made to the test site
- ❑ 3 Replicates were made

2010

- ❑ Transects were 50 ft long
- ❑ 3 applications were made to the test site

Treatment Site Prior to 2010





Treatment Site 2010

Analysis Procedures

- Spray was 1% Solution of Red Dye FD&C #40 in spray tank formulation or water
- Collected a sample from the spray tank to verify dye concentration
- Collected spray on petri dishes and allowed it to dry
- Dissolved the dried dye in 3ml water
- Read absorbance at 537 nm
- Determined amount of dye on each plate from standard curve for dye
- Calculated amount of spray collected on each petri dish based on the known tank concentration and surface area of petri dish

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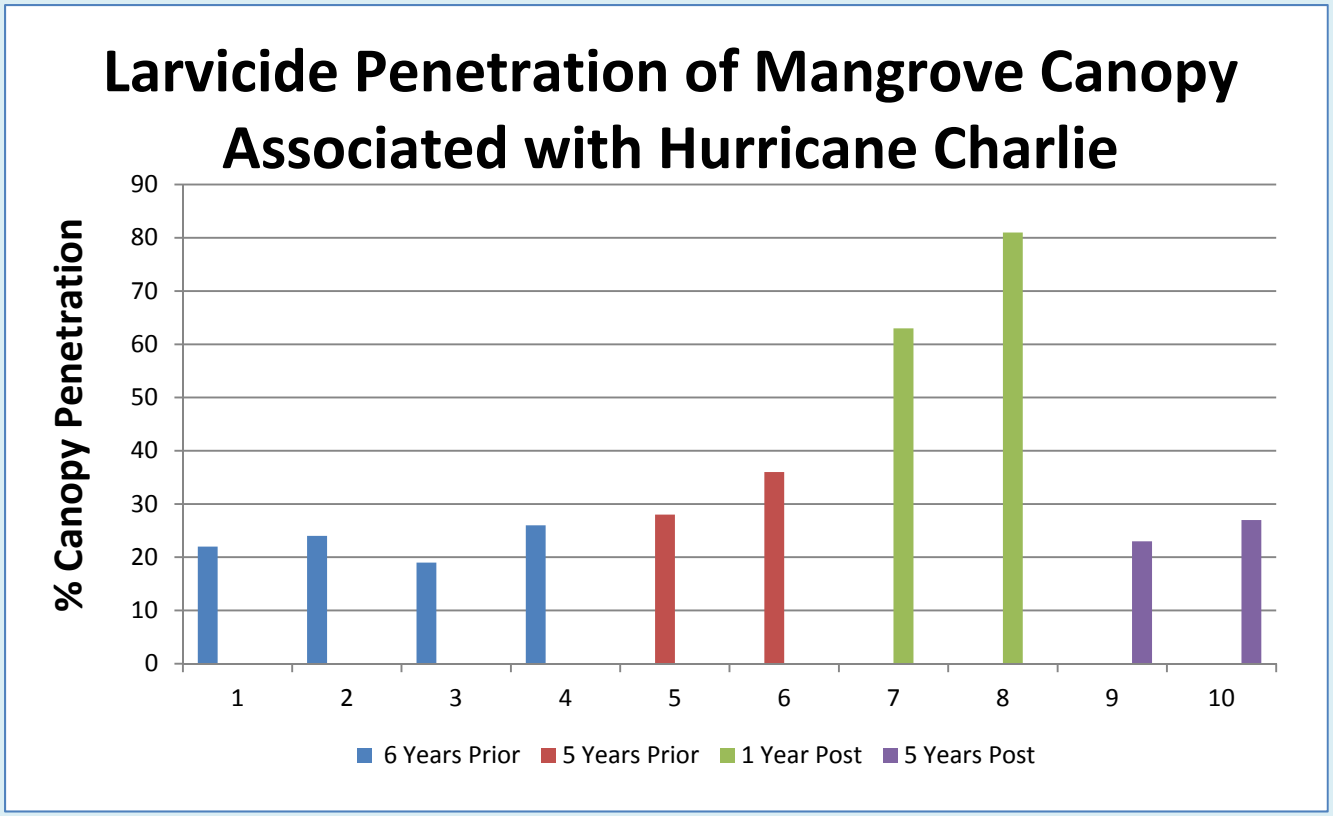
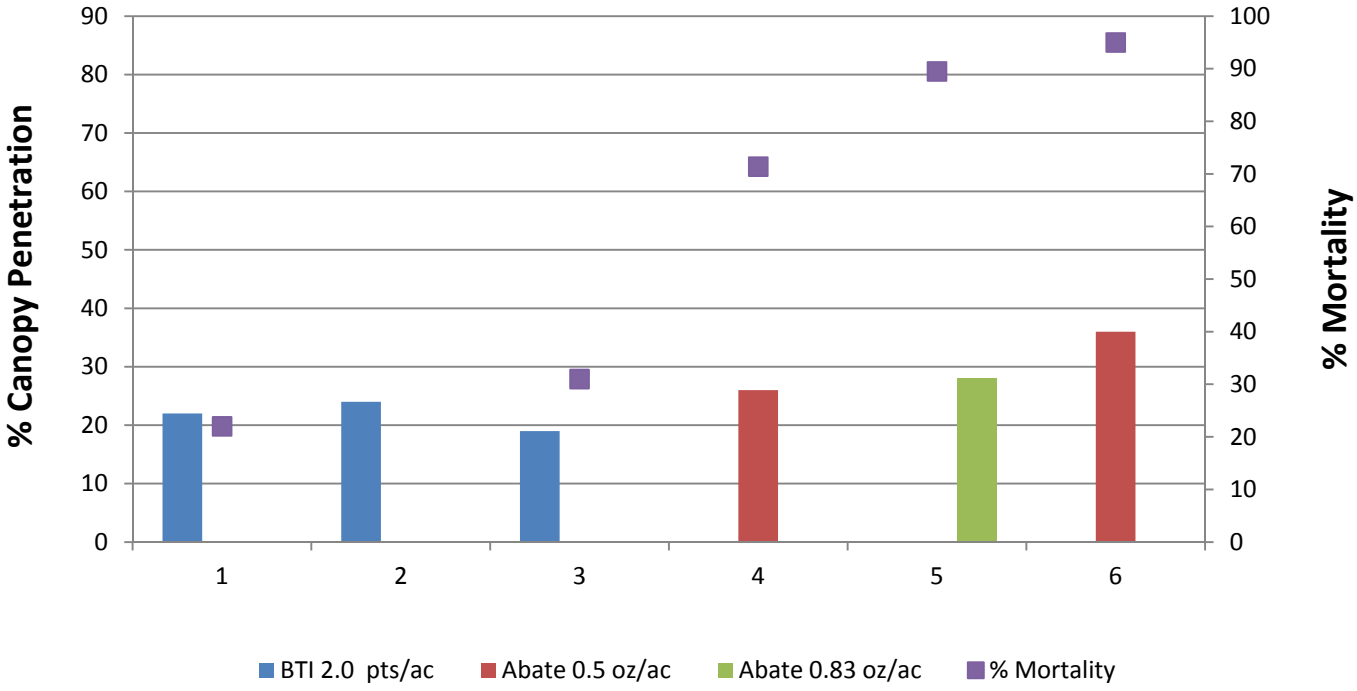
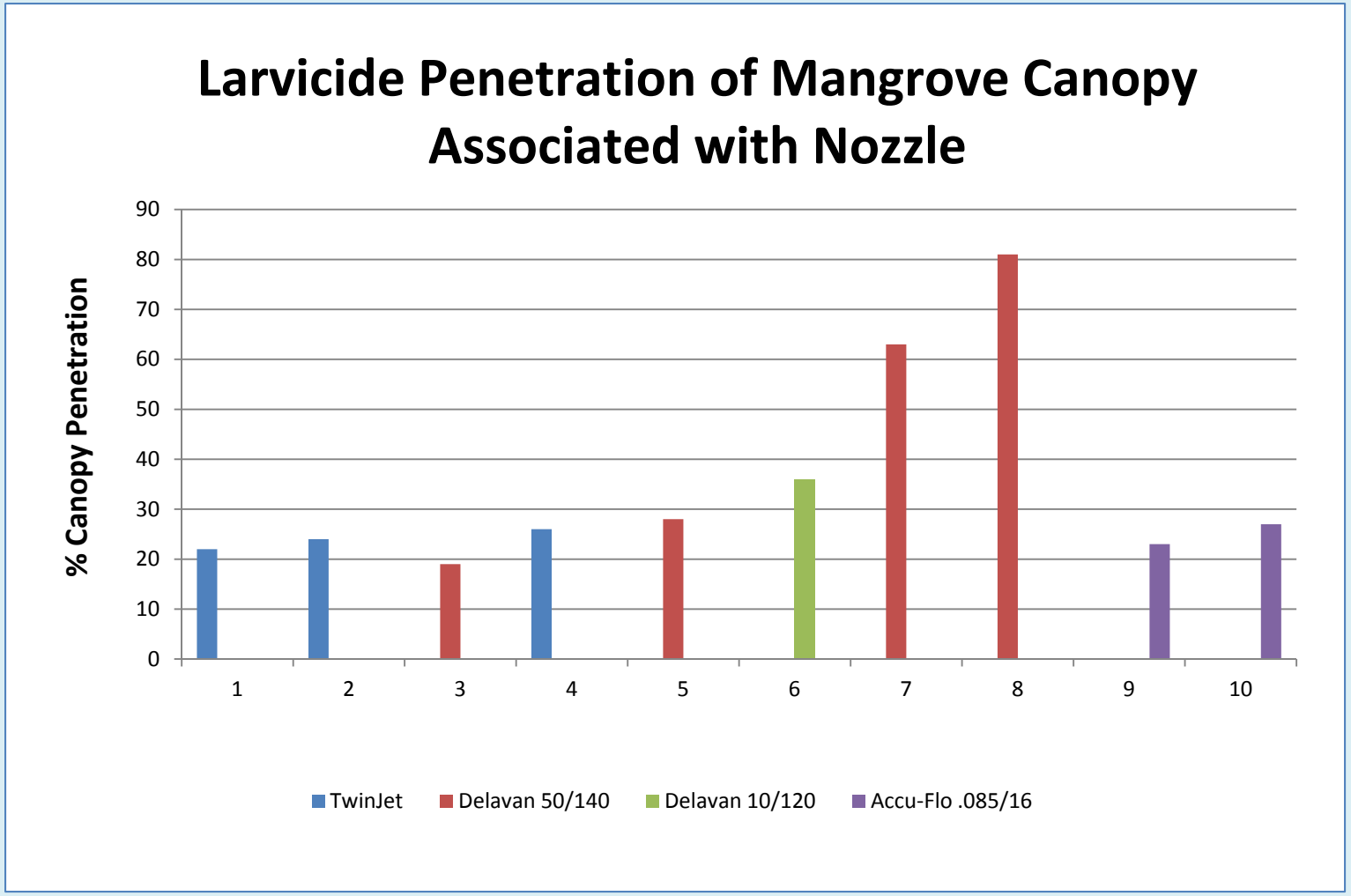


Larvicide Penetration of Mangrove Canopy Associated with Larvicide




Larvicide Penetration of Mangrove Canopy Associated with Nozzle
% Canopy Penetration
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
TwinJet
Delavan 50/140
Delavan 10/120
Accu-Flo .085/16

Results

- ❑ Hurricanes can reduce canopy density allowing for more spray penetration
- ❑ Efficacy loss to canopy deposit is greater for BTI than Abate
- ❑ Delavan 10/120 nozzles deliver larvicide to the target through canopy better than Delavan 50/140
- ❑ Black Mangrove canopy blocks 70 – 80 percent of larvicide

Questions?