



1. Fumigation site: Gunsan Port (2014)
2. Fumigation Inform: PVC tent,  $20 \pm 7^\circ\text{C}$ , 107m<sup>3</sup>
3. Target Pest
  - *R. speratus* (Japanese termite)
  - *C. fulvus* (Yellow minute bark beetle)
4. Experiment design
  - 24hr fumigation, f.r.: 46%, New Zealand pine



Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese Termite			Yellow minute bark Beetle		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	850	0	0.0%	570	0	0.0%
EDN	>15	30	24	162.47	1550	1550	100.0%	310	310	100.0%
				142.28	600	600	100.0%	490	490	100.0%
				146.32	1200	1200	100.0%	330	330	100.0%



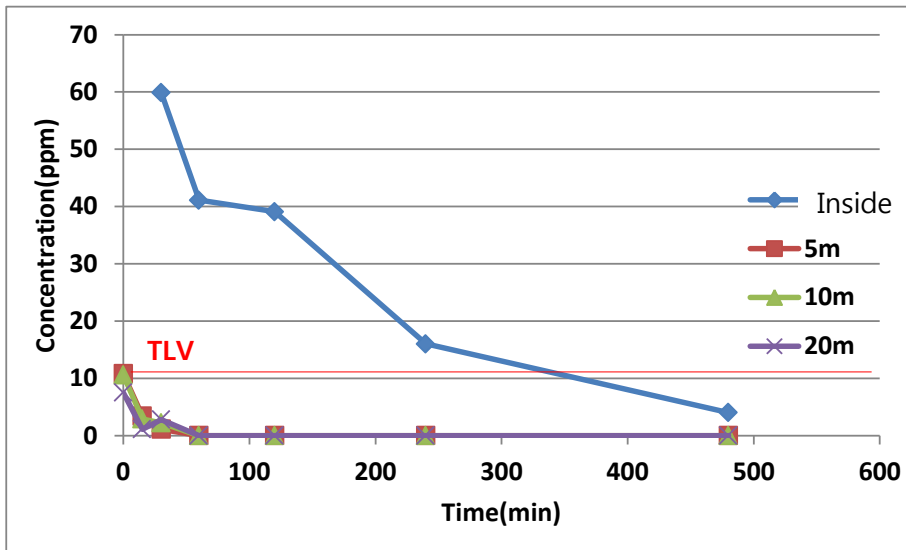
1. Fumigation site: Gunsan Port(2014)
2. Fumigation Inform: PVC tent, 20±7°C, 107m<sup>3</sup>
3. Target Pest
  - *M. alternatus* (Japanese pine sawyer)
  - *B. xylophilus*(Pine wilt nematode)
4. Experiment design
  - 24hr fumigation, f.r.: 46%, New Zealand Pine



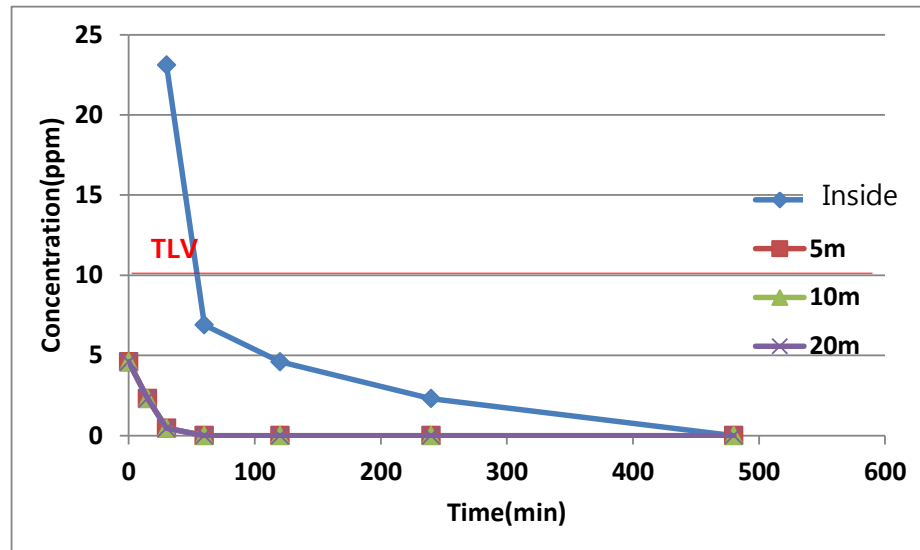
Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese pine sawyer			Pine wilt nematode		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	147	0	0.0%	1100	0	0.0%
EDN	>15	100	24	375.50	281	281	100.0%	1500	1500	100.0%
				409.43	307	307	100.0%			
				411.09	215	215	100.0%			



1. Fumigation site: Gunsan Port
2. Fumigation Inform: PVC tent, 20±7°C, Wind speed 3-4m/s
3. Experiment design  
- 24hr fumigation, f.r.: 46%,  
New Zealand pine



**Edge open ventilation**  
(under TLV: **6hr** after vent)



**Full open ventilation**  
(under TLV: **1hr** after vent)



1. Fumigation site: Gunsan Port (2014)
2. Fumigation Inform: PVC tent, 10±4°C, 50m<sup>3</sup>
3. Target Pest
  - *R. speratus* (Japanese termite)
  - *C. fulvus* (Yellow minute bark beetle)
4. Experiment design
  - 24hr fumigation, f.r.: 45%, New Zealand pine



Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese Termite			Yellow minute bark Beetle		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	1120	0	0.0%	290	0	0.0%
EDN	5~15	40	24	138.93	800	800	100.0%	610	610	100.0%
				139.77	990	990	100.0%	670	670	100.0%





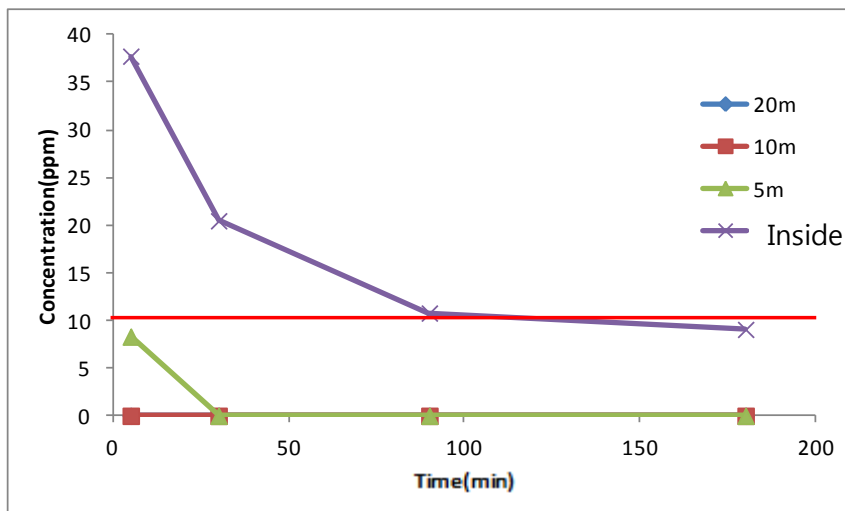
1. Fumigation site: Gunsan Port(2014)
2. Fumigation Inform: PVC tent, 10±4°C, 50m3
3. Target Pest
  - *M. alternatus* (Japanese pine sawyer)
  - *B. xylophilus*(Pine wilt nematode)
4. Experiment design
  - 24hr fumigation, f.r.: 45%, New Zealand pine



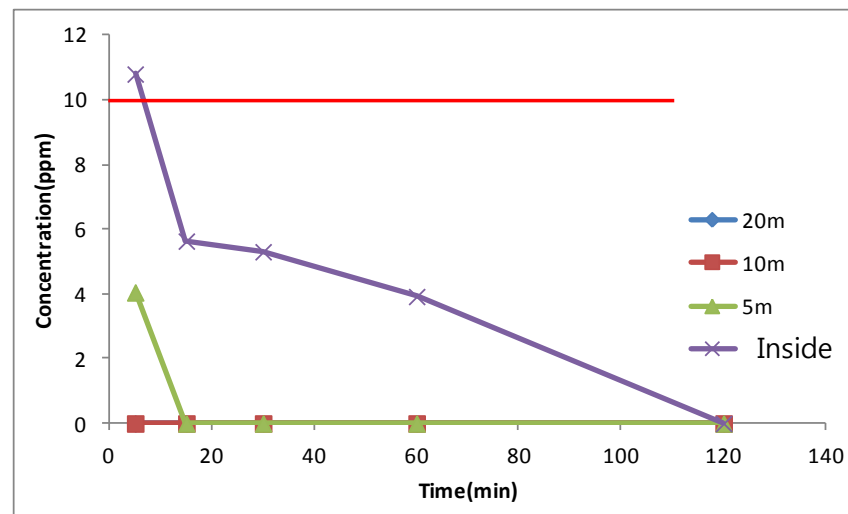
Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese pine sawyer			Pine wilt nematode		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	143	0	0.0%	900	0	0.0%
EDN	5~15	120	24	530.92	314	314	100.0%	2100	2100	100.0%
				563.52	249	249	100.0%			



1. Fumigation site: Gunsan Port
2. Fumigation Inform: PVC tent, 10±4°C, Wind speed 2-4m/s
3. Experiment design
  - 24hr fumigation, f.r.: 46%, New Zealand pine



**Side open ventilation**  
(under TLV: **2hr** after vent)



**Full open ventilation**  
(under TLV: **1hr** after vent)



1. Fumigation site: Gunsan Port(2015)
2. Fumigation Inform: PVC tent, 1±5°C, 108m3
3. Target Pest
  - *R. speratus* (Japanese termite)
  - *C. fulvus* (Yellow minute bark beetle)
4. Experiment design
  - 24hr fumigation, f.r.: 46%, New Zealand pine



Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese Termite			Yellow minute bark Beetle		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	850	0	0.0%	290	0	0.0%
EDN	<5	40	24	264.95	1240	1240	100.0%	1110	1110	100.0%
							100.0%			100.0%



1. Fumigation site: Gunsan Port(2015)
2. Fumigation Inform: PVC tent, 1±5°C, 98m<sup>3</sup>
3. Target Pest
  - *M. alternatus* (Japanese pine sawyer)
  - *B. xylophilus*(Pine wilt nematode)
4. Experiment design
  - 24hr fumigation, **f.r. 30%**, New Zealand pine

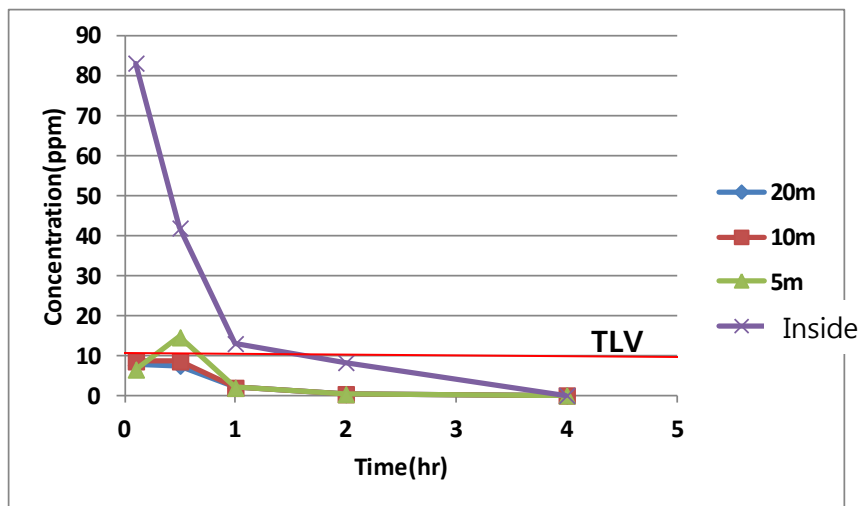


Fumigant	Trt.				Mortality(%)					
	Temp (°C)	Dose (mg/L)	Time (h)	CT (mg h/L)	Japanese pine sawyer			Pine wilt nematode		
					Total	Dead	Mort	Total	Dead	Mort
Cont	-	-	-	0	151	0	0.0%	1300	0	0.0%
EDN	<5	150	24	595.95	583	583	100.0%	1700	1700	100.0%

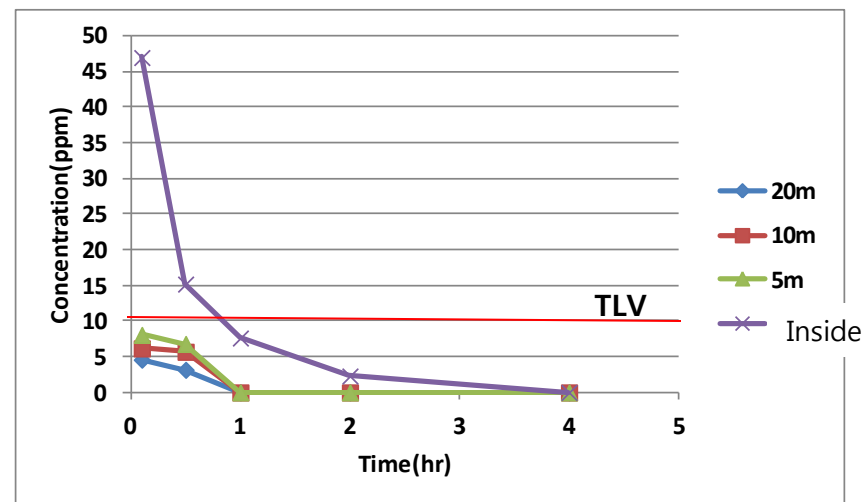




1. Fumigation site: Gunsan Port
2. Fumigation Inform: PVC tent, 20±7°C, Wind speed 3-4m/s
3. Experiment design
  - 24hr fumigation, f.r.: 46%,  
New Zealand Pine



**Side open ventilation**  
(under TLV: **2hr** after vent)



**Full open ventilation**  
(under TLV: **1hr** after vent)