

Options to Mitigate Acute Exposures to 1,3-Dichloropropene

Public Workshop

October 21, 2019



Workshop Goal

Explore additional measures to protect bystanders and residents from short-term inhalation exposure to 1,3-dichloropropene (1,3-D).

These measures include buffer zone requirements, application rate limits, and tarping.

Options for Addressing Acute Bystander Exposures

*DPR is identifying options for consideration;
the specific combination of mitigation measures is intended for discussion at this workshop.*

- Continue to prohibit all 1,3-D applications during December
- Require tarps
- Require a Field Management Plan (FMP) for every application
- Incorporate current fumigant Phase II label requirements including: Emergency Preparedness, Response, and Difficult to Evacuate Site
- Cap Application Blocks to a **maximum of 40 acres**
- Require a permanent distance to an Occupied Structure of **200 ft**
- For two or more applications, if the application times are within **96 hours** or their application blocks are **within 800 ft.**, their combined acreage **shall not exceed 40 acres**
- ***Additional Field Fumigation Method (FFM) specific mitigation options:***
 - *Buffer zone distances and durations, maximum application rates, longer TIF tarp cut times, increased soil moisture requirement or other new reduced-emission application methods*

Selected Estimated Buffer Zone Distances and Duration

FFM	Description	Buffer Zone Distance (Rate = 332 lbs/acre) Target = 55 ppb		Buffer Zone Distance (Rate = 332 lbs/acre) Target = 110 ppb	
		Buffer distance (ft)	Buffer duration (day)	Buffer distance (ft)	Buffer duration (day)
		1201	Shallow/Broadcast or Bed/Non-Tarp	3,540	5.2
1206	Deep/Broadcast or Bed/Non-Tarp	1,919	6.4	1,001	4.4
1242	Shallow/Broadcast/TIF	62	1.7	23	0.7

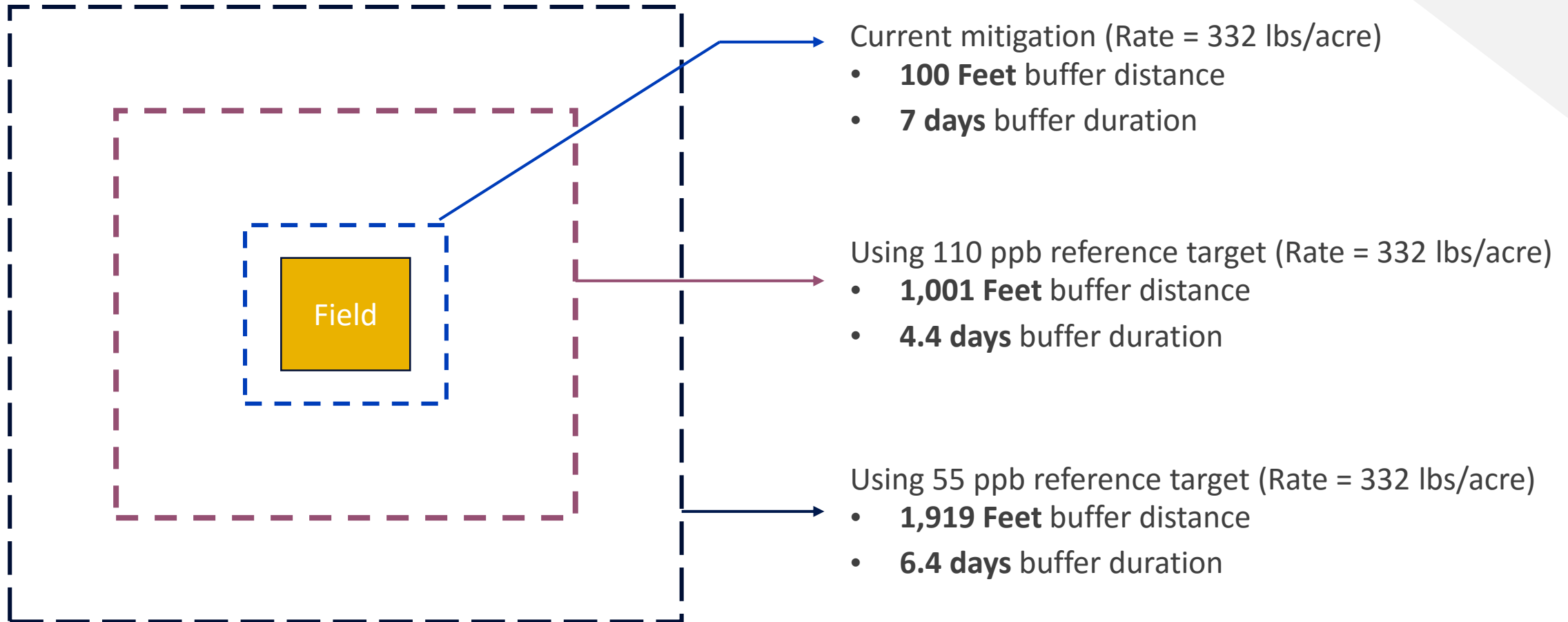
FFM 1201: FFM with the highest estimated 1,3-D emissions

FFM 1206: Most popular 1,3-D application method overall

FFM 1242: Most popular 1,3-D application method using a Totally Impermeable Film (TIF)

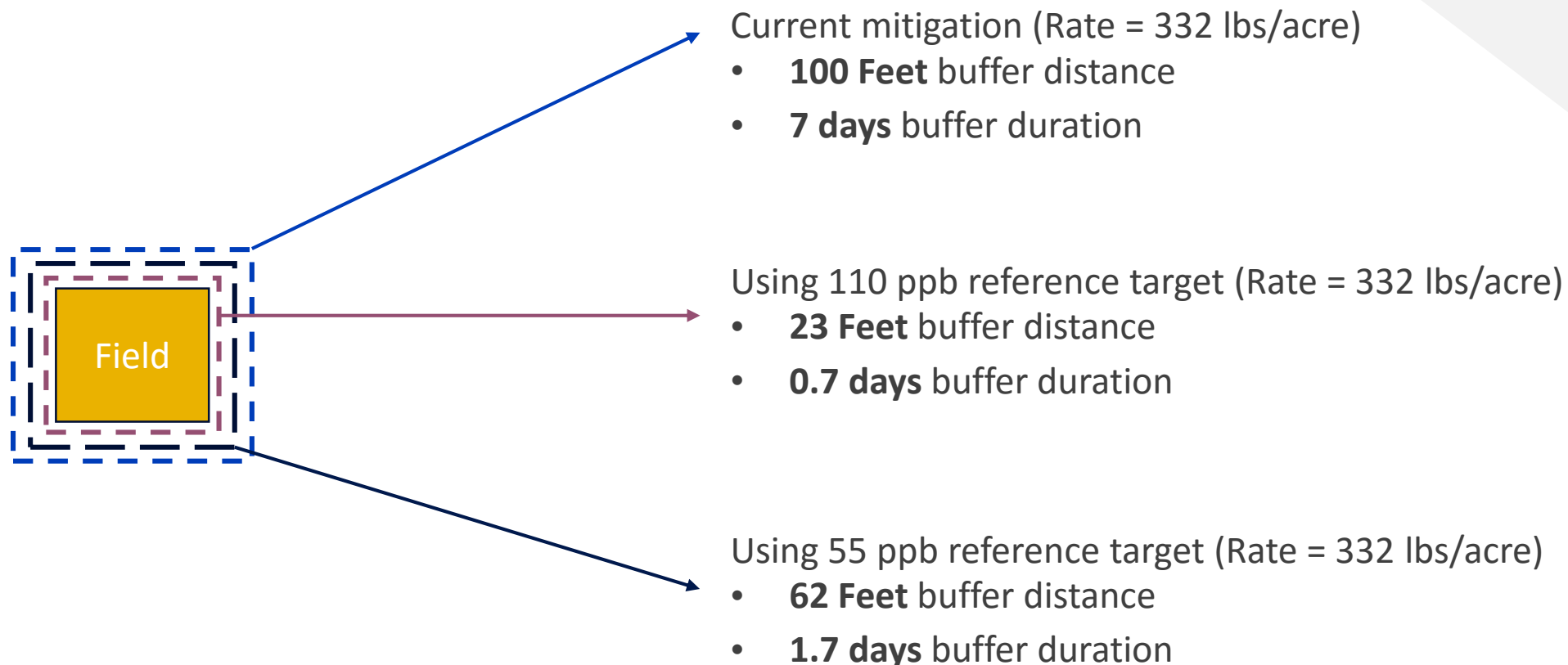
Selected Estimated Buffer Zone Distances and Duration

FFM 1206 (Deep/Broadcast or Bed/Non-Tarp): Most popular 1,3-D application method overall



Selected Estimated Buffer Zone Distances and Duration

FFM 1242 (Shallow/Broadcast/TIF): Most popular 1,3-D application method using a Totally Impermeable Film (TIF)



Selected Estimated Maximum Application Rates

FFM	Description	Maximum application rate (lb/ac), BZ=200 or 500 ft for 7 d and a target concentration of 55 ppb		Maximum application rate (lb/ac), BZ=200 or 500 ft for 7 d and a target concentration of 110 ppb	
		200ft	500ft	200ft	500ft
1201	Shallow/Broadcast or Bed/Non-Tarp	41.7	62.7	83.5	125.5
1206	Deep/Broadcast or Bed/Non-Tarp	98.2	141.4	196.5	288.4
1242	Shallow/Broadcast/TIF	332	332	332	332

FFM 1201: FFM with the highest estimated 1,3-D emissions

FFM 1206: Most popular 1,3-D application method overall

FFM 1242: Most popular 1,3-D application method using a Totally Impermeable Film (TIF)

Selected Estimated Maximum Application Rates

FFM 1206 (Deep/Broadcast or Bed/Non-Tarp): Most popular 1,3-D application method overall

Current mitigation

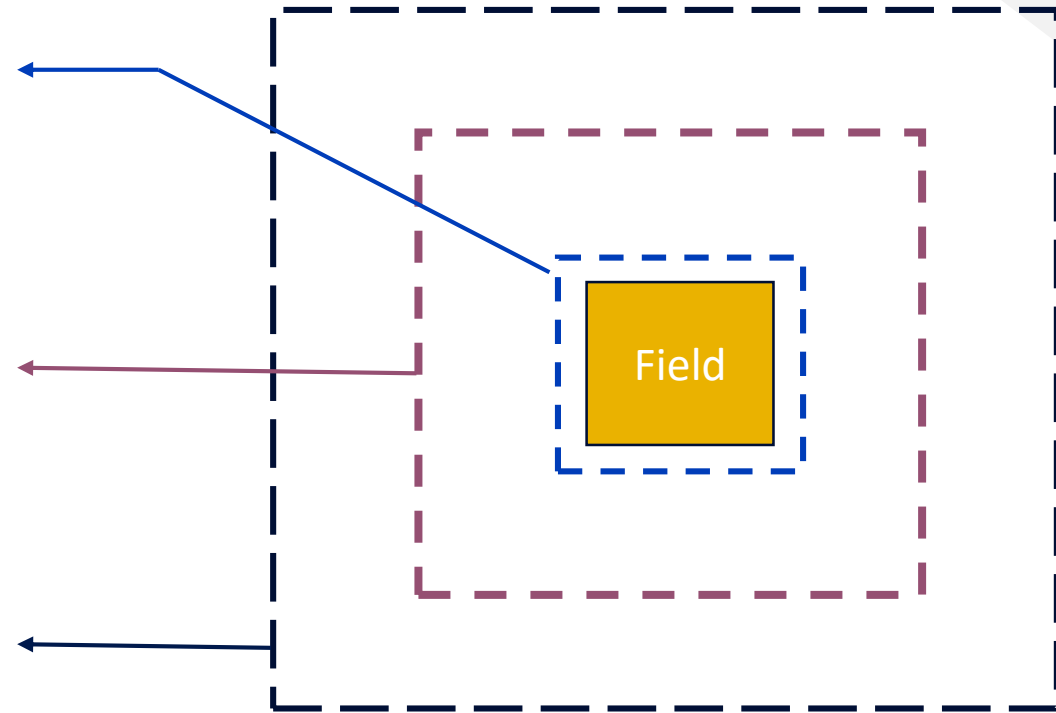
- **332 lbs/ac** can be applied with **100 ft** buffer zone.

At **200 ft** buffer zone, the maximum application rate

- **196.5 lbs/ac** using 110 ppb reference target
- **98.2 lbs/ac** using 55 ppb reference target

At **500 ft** buffer zone, the maximum application rate

- **288.4 lbs/ac** using 110 ppb reference target
- **141.4 lbs/ac** using 55 ppb reference target



Selected Estimated Maximum Application Rates

FFM 1242 (Shallow/Broadcast/TIF): Most popular 1,3-D application method using a Totally Impermeable Film (TIF)

Current mitigation

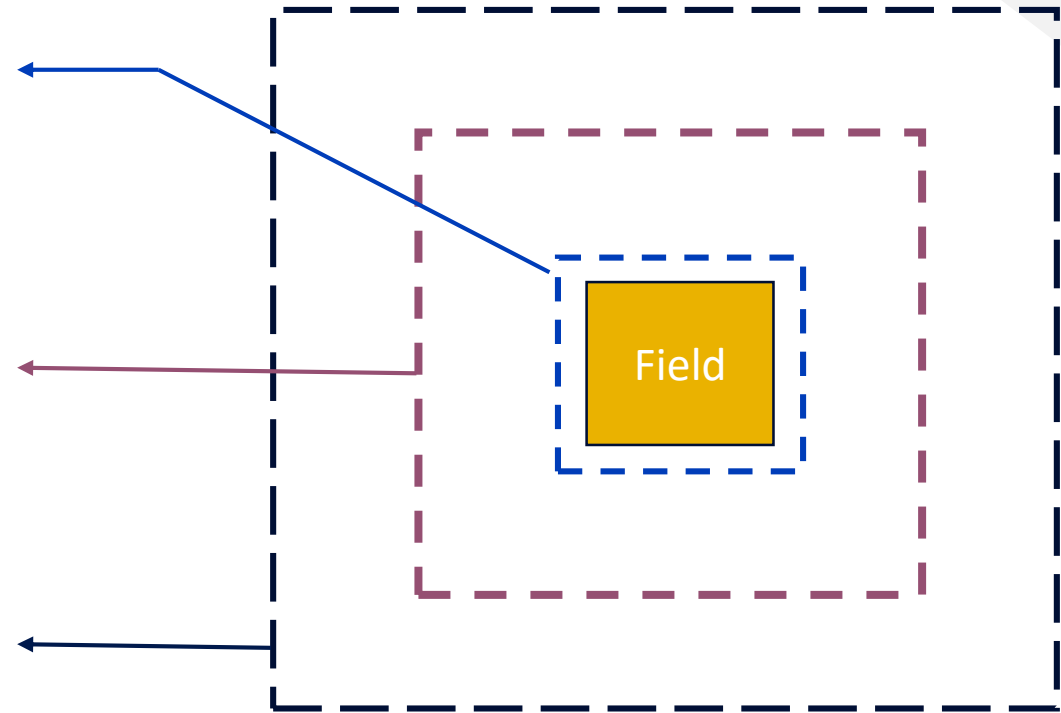
- **332 lbs/ac** can be applied with **100 ft** buffer zone.

At **200 ft** buffer zone, the maximum application rate

- **332 lbs/ac** using 110 ppb reference target
- **332 lbs/ac** using 55 ppb reference target

At **500 ft** buffer zone, the maximum application rate

- **332 lbs/ac** using 110 ppb reference target
- **332 lbs/ac** using 55 ppb reference target



Considerations

- 1,3-D is extensively used:
 - Annual average of 12.6 million pounds applied (2011-2015).
- Growers transitioned to using more 1,3-D as methyl bromide was phased out;
 - There are currently no viable commercial-scale alternatives to 1,3-D.
- Proposed mitigation measures could be costly:
 - DPR is working with CDFA to determine costs associated with mitigation options.
- Goal to address acute health risks.

Implementation Timelines

- DPR is aiming to notice a permanent rulemaking addressing acute and cancer exposures from 1,3-D next summer.
- DPR is evaluating interim mitigation measures for acute effects of 1,3-D.
 - These mitigation measures may include similar requirements to those we anticipate for permanent regulations.
 - These may be in place by early next year.

Public Comments

- DPR is proposing to mitigate acute exposures of 1,3-D to bystanders.
- DPR is seeking feedback on the following:
 1. Proposed mitigation
 - Feasibility and efficacy of buffer zones and application rates
 - Feasibility and efficacy of new methods
 - Feasibility of requiring TIF tarps
 - Other measures to consider
 2. Timing and scope of implementation and factors DPR should consider.
 3. Economic impact and environmental tradeoffs of proposed mitigation.

Supporting Slides

Estimated Buffer Zone Distances and Duration

FFM	Description	Buffer Zone Distance (Rate = 332 lbs/acre)		Buffer Zone Distance (Rate = 332 lbs/acre)	
		Target = 55 ppb		Target = 110 ppb	
		Buffer distance (ft)	Buffer duration (day)	Buffer distance (ft)	Buffer duration (day)
1201	Shallow/Broadcast or Bed/Non-Tarp	3,540	5.2	1,907	3.5
1202	Shallow/Broadcast/Non-TIF Tarp	2,409	5.0	1,239	3.2
1203	Shallow/Bed/Non-TIF Tarp	3,000	4.6	1,560	3.2
1204	Shallow/Broadcast or Bed w/ 3x Irrigation/Non-Tarp	2,347	5.3	1,186	3.7
1205	Shallow/Bed w/ 3x Irrigation/Non-TIF Tarp	2,747	4.6	1,419	3.0
1206	Deep/Broadcast or Bed/Non-Tarp	1,919	6.4	1,001	4.4
1207	Deep/Broadcast/Non-TIF Tarp	1,260	5.7	642	4.2
1209	Chemigation/Bed/Non-TIF Tarp	1,973	3.6	980	2.2
1210	Deep/Strip/Non-Tarp	1,825	6.9	941	4.7
1211	Deep/GPS targeted/Non-tarp	1,919	6.4	1,001	4.4
1242	Shallow/Broadcast/TIF	62	1.7	23	0.7
1243	Shallow/Bed/TIF	726	3.9	346	2.6
1245	Shallow/Bed w/ 3x Irrigation/TIF	319	3.4	118	2.1
1247	Deep/Broadcast/TIF	121	4.0	92	2.8
1249	Deep/Strip/TIF	93	3.8	44	1.8
1259	Chemigation/Bed/TIF	480	3.0	205	1.9
1290	Other label method	3,540	5.2	1,907	3.5

Estimated Maximum Application Rates

FFM	Description	Maximum application rate (lb/ac), BZ=200 or 500 ft for 7 d and a target concentration of 55 ppb		Maximum application rate (lb/ac), BZ=200 or 500 ft for 7 d and a target concentration of 110 ppb	
		200ft	500ft	200ft	500ft
		1201	Shallow/Broadcast or Bed/Non-Tarp	41.7	62.7
1202	Shallow/Broadcast/Non-TIF Tarp	70.5	106.1	140.9	212.5
1203	Shallow/Bed/Non-TIF Tarp	51.9	78.5	103.8	157.2
1204	Shallow/Broadcast or Bed w/ 3x Irrigation/Non-Tarp	69.7	105.3	139.3	211.1
1205	Shallow/Bed w/ 3x Irrigation/Non-TIF Tarp	56.6	85.6	113.2	171.5
1206	Deep/Broadcast or Bed/Non-Tarp	98.2	141.4	196.5	288.4
1207	Deep/Broadcast/Non-TIF Tarp	165	223.8	332	332
1209	Chemigation/Bed/Non-TIF Tarp	75.9	116.3	151.9	232.9
1210	Deep/Strip/Non-Tarp	106	146.7	213.2	303.5
1211	Deep/GPS targeted/Non-tarp	98.2	141.4	196.5	288.4
1242	Shallow/Broadcast/TIF	332	332	332	332
1243	Shallow/Bed/TIF	233.8	331.5	332	332
1245	Shallow/Bed w/ 3x Irrigation/TIF	325.8	332	332	332
1247	Deep/Broadcast/TIF	332	332	332	332
1249	Deep/Strip/TIF	332	332	332	332
1259	Chemigation/Bed/TIF	254.5	332	332	332
1290	Other label method	41.7	62.7	83.5	125.5