RESPONSE OF WHEAT TO PREPLANT AND POSTEMERGENCE APPLICATIONS OF 2,4-D AND DICAMBA

James Martin, Charles Tutt, and Dottie Call
Plant & Soil Sciences Department
University of Kentucky, Princeton, KY 42445
PH: (270) 365-7541, Ext. 203; Email: jamartin@uky.edu

Introduction:

2,4-D and Clarity (dicamba) are growth regulator herbicides that injure wheat when applied at the wrong time. Historically these herbicides have been applied to wheat in Feekes growth stage 5 or when plants are fully tillered and just prior to jointing and are approximately 4 to 8 inches in height. This usually occurs around March to early April in Kentucky, and will vary depending on environment and location.

Some wheat growers have expressed an interest in using growth regulator herbicides in the fall when certain problem weeds are more easily managed, but they are concerned with the risk of crop injury.

The objective of this research was to evaluate wheat response to fall burndown and fall postemerence applications of 2,4-D and Clarity. Field trials referenced as 2005, 2006, and 2008 were conducted during 2004-2005, 2005-2006, and 2007-2008 growing seasons, respectfully. Wheat was planted with a no-till planter into corn stalks during the second to third week of October. The specific herbicide treatments and application timings are listed in Table 1.

Summary of Results:

- The only burndown treatment that limited wheat yield was the PRE treatment of 2,4-D ester applied at the high rate of 2 pt/A in the 2005 study.
- Fall sprays of 2,4D ester at 1 or 2 pt/A to wheat with 1 to 2 tillers caused crop injury in the form of increased abnormal seedheads and limited wheat yield in most instances, except for the low rate in 2008.
- Fall sprays of 2,4D ester at 6 oz/A with Harmony Extra at 0.5 oz/A to wheat with 1 to 2 tillers increased the number of abnormal seedheads in 2006, but did not limit grain yield.
- Clarity at 4 oz/A did not cause crop injury or limit wheat yield, regardless of application timing.

Conclusions:

These results support why 2,4-D should not be applied in the fall to emerged wheat with 1 to 2 tillers. The high rate of 2,4-D ester (2 pt/A) at planting can occasionally reduce wheat yield. However applications at two weeks ahead of planting appeared to be safe to wheat. This research helps support the use of dicamba in fall sprays. However Clarity applied at 4 oz/A to 1- to 2- tillering wheat may occasionally increase number of abnormal seedheads.

Table 1. **Effect of 2,4-D and Dicamba on Yield Parameters of Wheat. (UKREC 2005, 2006, & 2008) [1]**

Treatment			Head Count (Heads/Ft^2)			Abnormal Heads (%)			Test Wt (lb/Bu)			Yield (Bu/A)		
Chemical [2]	Rate/A	Timing [3]	2005	2006	2008	2005	2006	2008	2005	2006	2008	2005	2006	2008
2,4-D ester	1 pt/A	2 WK EPP	90	78	–	19	13	–	60.0	53.4	–	124.8	72.6	–
2,4-D ester	2 pt/A	2 WK EPP	88	88	–	25	10	–	59.6	54.7	–	127.5	76.7	–
Clarity	4 oz/A	2 WK EPP	90	79	–	21	11	–	60.4	51.1	–	123.7	72.0	–
2,4-D ester	1 pt/A	PRE	92	89	95	21	16	8	60.9	53.1	61	129.0	78.9	134.6
2,4-D ester	2 pt/A	PRE	83	83	87	21	8	9	61.1	55.0	66	116.1 *	82.5	132.5
Clarity	4 oz/A	PRE	89	89	97	16	11	5	60.2	55.0	66	126.7	87.8	133.4
2,4-D ester	1 pt/A	FALL POST	83	73 *	101	44 *	45 *	19 *	53.6 *	46.6 *	64	116.1 *	57.3 *	126.8
2,4-D ester	2 pt/A	FALL POST	91	67 *	106	48 *	43 *	23 *	50.9 *	52.7	60	115.1 *	53.3 *	98.2 *
Clarity	4 oz/A	FALL POST	90	78	98	20	15	19 *	61.5	52.7	66	126.1	80.4	143.7
2,4-D ester + Harmony Extra + NIS	6 oz/A 0.5 oz/A 0.125%	FALL POST	–	78	114	–	31 *	10	–	52.4	66	–	81.4	143.1
Non-treated Check			87	86	99	19	14	6	60.7	54.3	66	136.0	79.4	140
LSD (0.05)			NS	10	NS	15	10	NS	2.4	4	NS	14.4	12.7	25.4

[1] An asterisk indicates a significant difference relative to non-treated check. Some treatments were not evaluated in certain years and are represented with a dash (-).

[2] Weedone Solventless LV4 at 1 pt/A (2,4-D ester at 0.475 lb ae/A)
Weedone Solventless LV4 at 2 pt/A (2,4-D ester at 0.95 lb ae/A)
Clarity 4 oz/A (dicamba at 0.125 lb ai/A)

[3]

APPLICATION TIMINGS	2004-2005	2005-2006	2007-2008
2 WK EPP (2 week early preplant)	10/3/04	09/29/05	-------
PRE (preemergence at planting)	10/23/04	10/12/05	10/12/07
FALL POST (1–2 tiller wheat)	12/04/04	11/30/05	11/27/07