

**NO-TILL CORN
RESPONSE
TO POTASSIUM (K)
FERTILIZATION**

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Introduction

- Frequent reports of K deficiency.
 - More often seen in no-till.
 - Do current soil test K recommendations need modification ?
 - Does starter fertilizer containing K prevent deficiencies?
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Procedure

- Long-term plots with wide range of soil test K (VL to EH, 60 to 265 ppm).
 - Response to NPK starter (100/9-23-30) across range of soil test K levels.
 - Corn yield responses measured over 4 yr.
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Soil test K interpretation for corn (Group B soils)

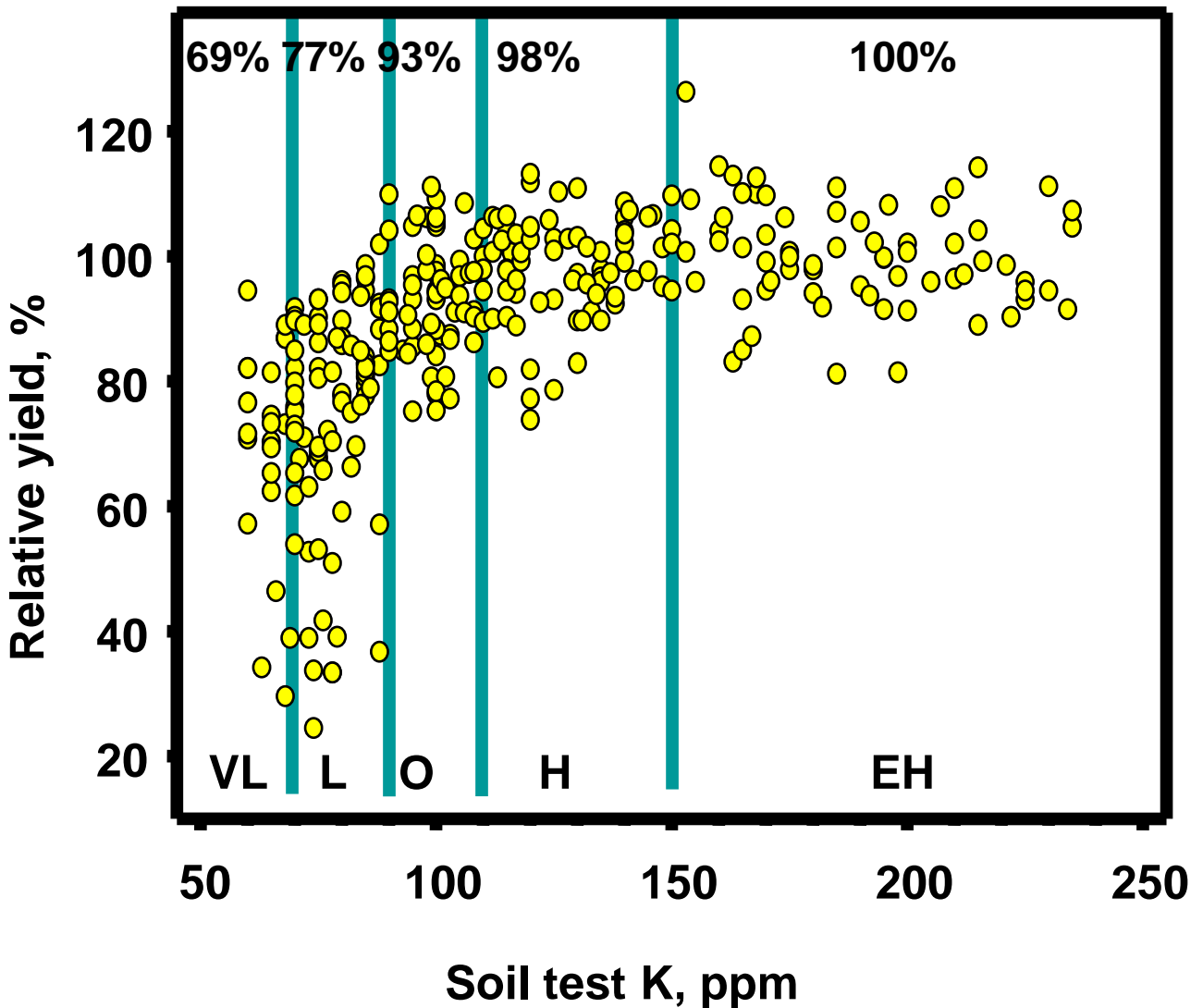
	Soil test K	Recom.*
Category	(ppm)	(lb K ₂ O/acre)
V. low (VL)	< 70	100
Low (L)	70-90	90
Optimum (O)	91-110	60
High (H)	111-150	30
Ex. high (EH)	> 150	0

* 151-170 bu/acre yield goal.

Procedure

- 1993 to 1996.
 - P and K broadcast to some plots (1993 & 1995 – spring disked & chisel plowed) to expand the range of soil test levels.
 - No-till in 1994 and 1996.
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Soil K response relationship relative to current soil test interpretation ranges at Arlington, 1993 to 1996

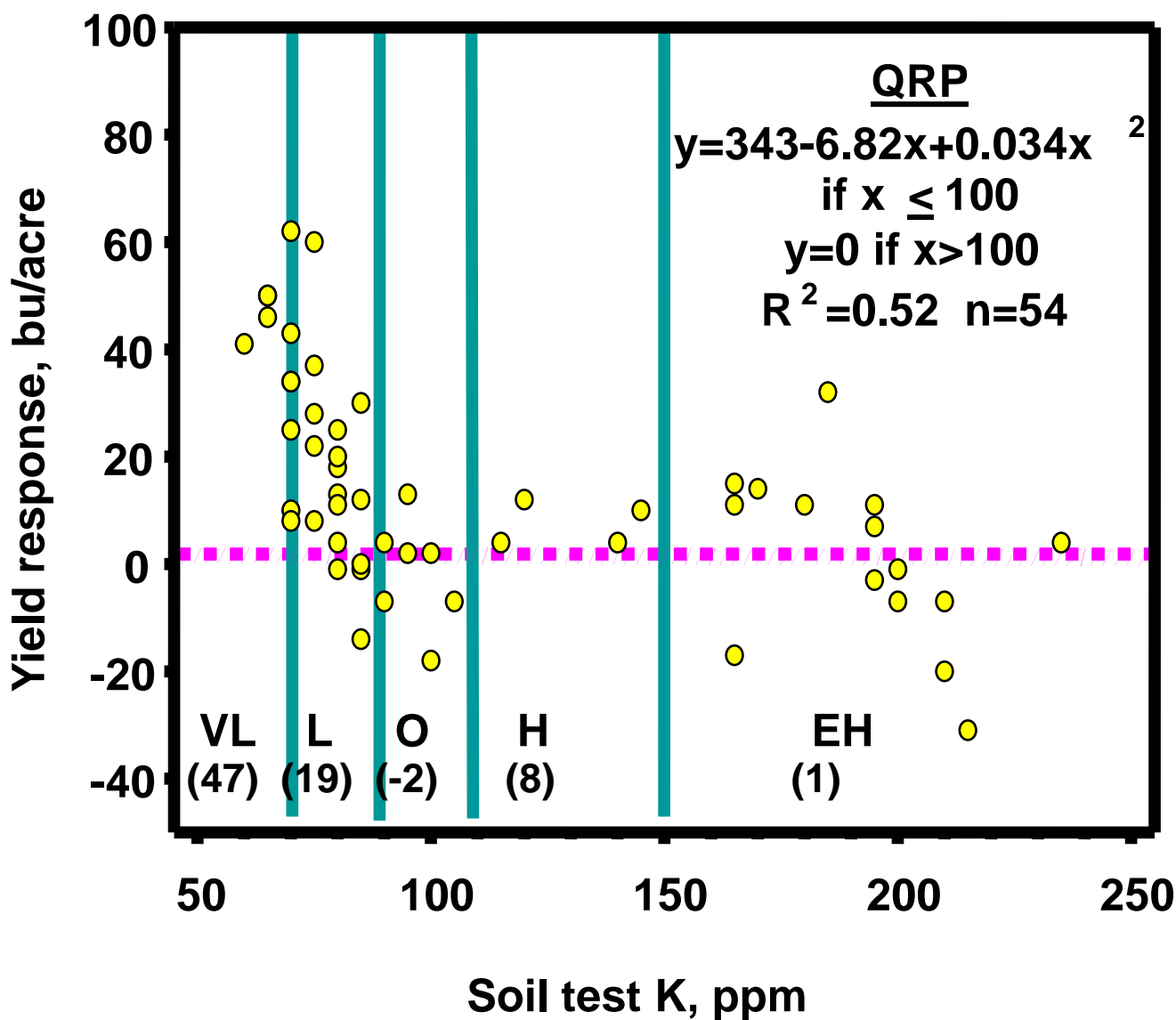


Growing season characteristics

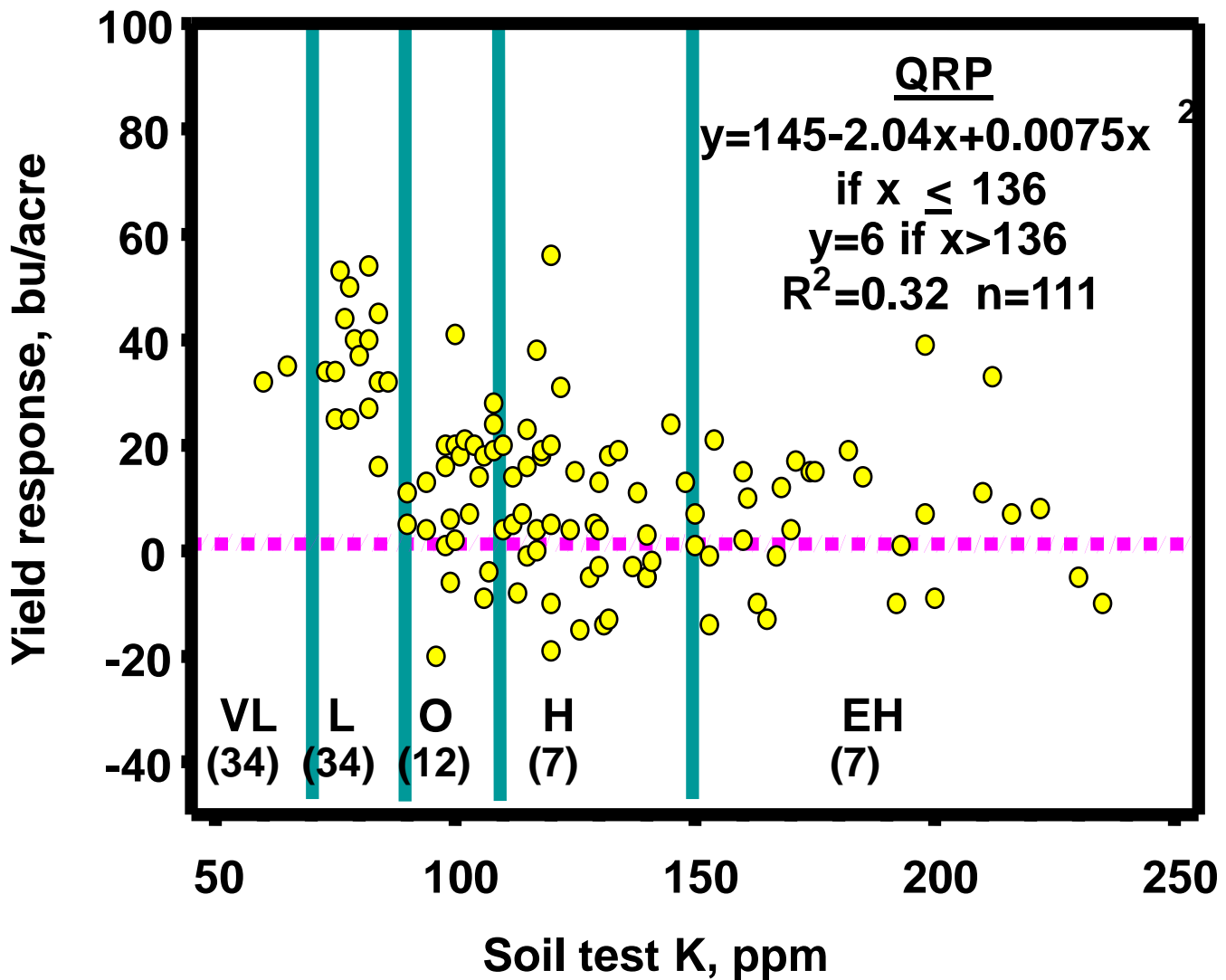
Year	PDRM*	F.F. days	GDD
1993	225	154	2055
1994	228	189	2293
1995	227	145	2413
1996	228	170	2043

* Planting dates: Apr. 30 to May 3; RM=105

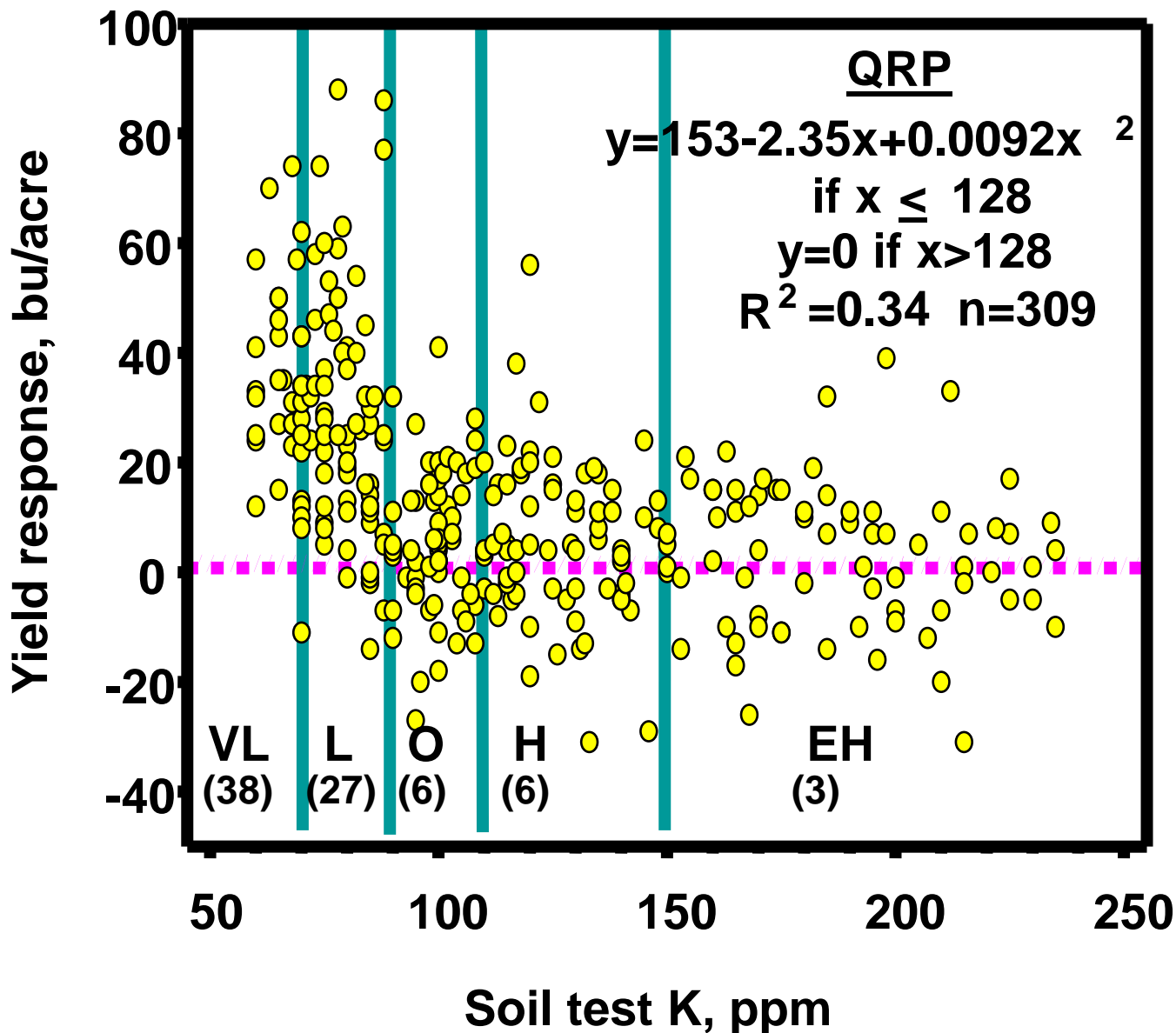
Relationship between soil test K level and yield response to starter fertilizer at Arlington, 1995



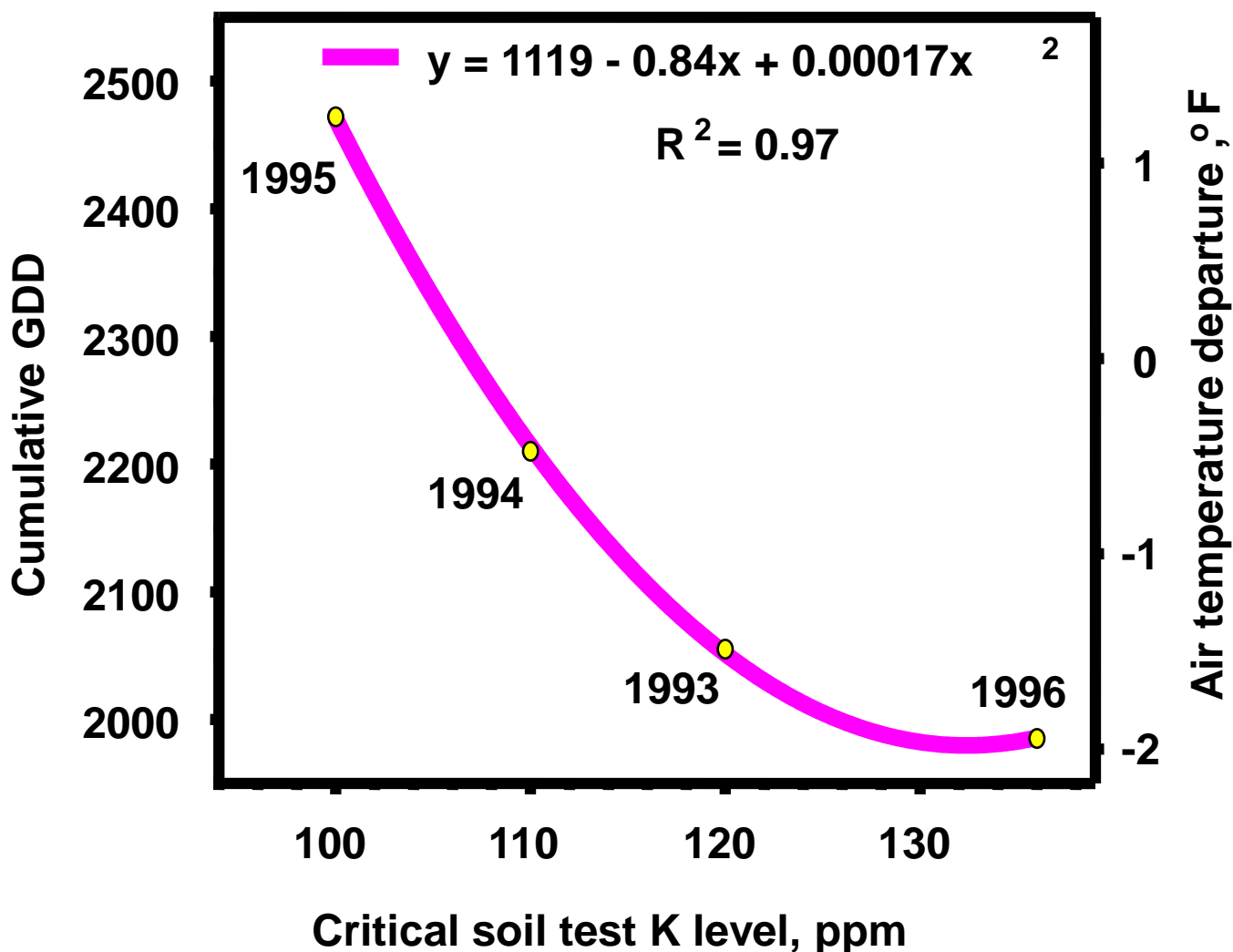
Relationship between soil test K level and yield response to starter fertilizer at Arlington, 1996



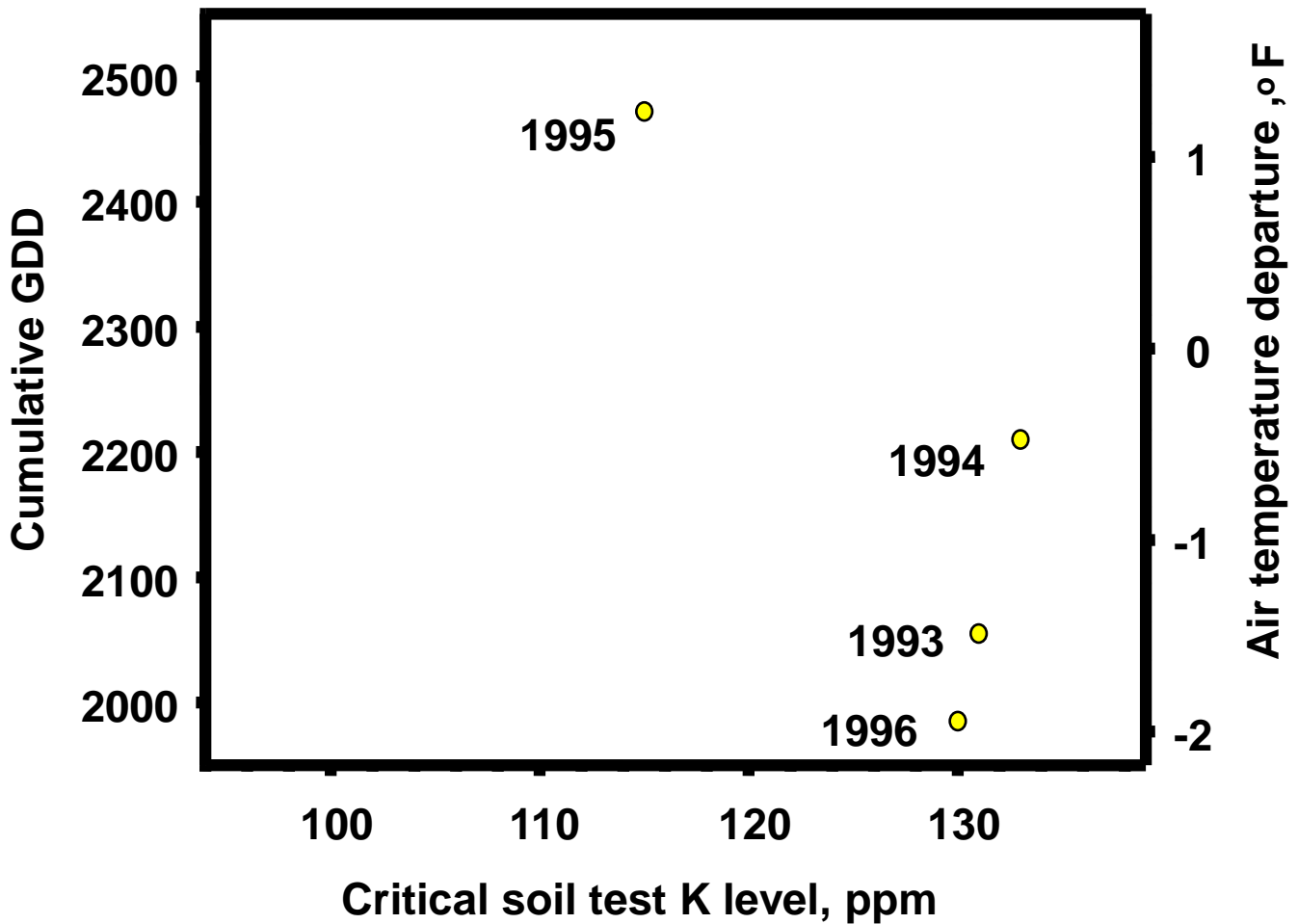
Relationship between soil test K level and yield response to starter fertilizer at Arlington, 1993 to 1996



Relationship between temperature (GDD and departure – May to September) and maximum soil test K level where yield response to starter fertilizer occurred



***Relationship between temperature
(GDD and departure – May to
September) and maximum soil test K
level where yield response occurred***



Summary

- Results support the soil test K categories used for current K fert. recommendations.
 - Little response to increasing soil test K above 110 ppm.
 - Frequency and size of response to starter was influenced by GDD accumulation.
 - Response to starter occurred at higher soil test K levels in cooler growing seasons
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