PROJECT TITLE: Evaluation of oat grain proteins under irrigated and dryland conditions.

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OBJECTIVE: To compare grain proteins of new oat varieties and lines with grain proteins of oat varieties currently being grown.

RESULTS: A ten-year summary of grain proteins of oats grown under dryland fallow conditions is shown in Table 1. A ten-year summary of grain proteins of oats grown under dryland continuous crop conditions is shown in Table 2. A ten-year summary of grain proteins of oats grown under irrigated conditions is shown in Table 3. Rodney, Ajay, and Park had the highest relative grain protein contents under all conditions studied, while Monida, Calibre, Appaloosa, and Cayuse generally had the lowest grain protein contents. The hulless oat Paul had higher protein than any hulled varieties.

SUMMARY: Oat grain proteins have been determined on all lines and varieties in all oat variety trials since 1986. This data has indicated oat varieties with higher protein contents relative to other varieties.

FUTURE PLANS: Oat grain proteins will continue to be determined on all lines and varieties in all oat variety trials at the Eastern Agricultural Research Center. Protein results of recrop oat trials and regional oat trials will be available in other reports in this publication in future years.

Table 1. Relative protein contents of oat varieties compared to Otana when grown under dryland conditions at EARC from 1987-1996

Cultivar	# of years	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Ave	as % of Otana
Paul*	3	--	--	--	--	--	--	--	12.5	17.9	15.8	15.40	133.9
Rodney	5	--	12.1	--	14.7	--	--	--	10.9	15.1	11.0	12.76	104.9
Ajay	9	--	13.8	15.6	15.0	14.1	11.9	12.3	11.4	14.3	10.5	13.21	103.4
Park	10	14.6	12.8	15.3	14.7	14.0	12.3	11.9	11.4	14.7	10.3	13.20	101.8
Prairie	2	--	--	--	--	--	--	--	--	14.2	9.7	11.95	101.3
Otana	10	14.7	12.7	15.8	14.2	13.8	12.1	11.9	10.9	14.3	9.3	12.97	100.0
Valley	9	14.2	11.9	15.1	15.1	14.1	12.1	11.6	11.4	14.0	--	13.28	99.3
Newdak	6	--	--	--	--	13.3	11.7	11.4	11.3	14.0	10.0	11.95	99.2
Robert	7	--	13.5	15.1	14.0	14.3	11.9	11.0	10.7	--	--	12.93	99.0
Rio Grande	10	14.4	12.2	15.9	13.9	14.4	11.1	10.4	11.2	13.5	10.2	12.72	98.1
Border	10	14.0	11.8	14.9	14.8	13.4	11.9	11.4	11.1	13.3	10.4	12.70	97.9
Ogle	10	14.1	13.1	15.6	13.8	13.4	11.9	10.6	11.1	14.0	8.5	12.61	97.2
Derby	5	--	--	--	--	--	11.9	11.1	10.9	13.8	9.0	11.34	96.9
Cayuse	10	13.8	12.0	15.1	14.0	14.0	10.9	11.4	10.4	13.1	9.7	12.44	95.9
Whitestone	3	--	--	--	--	--	--	--	10.5	13.1	9.4	11.00	95.7
Appaloosa	10	13.6	12.3	15.4	14.2	13.6	11.4	10.6	10.2	13.3	9.5	12.41	95.7
Calibre	9	14.0	11.9	14.1	14.4	13.6	11.1	11.5	10.4	13.6	--	12.73	95.2
Celsia	2	--	--	--	--	--	--	--	--	13.2	9.2	11.20	94.9
Monida	10	13.1	12.5	14.8	13.4	12.8	10.2	10.8	9.5	13.4	9.0	11.95	92.1

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety Otana.

* hulless oat

Table 2. Relative protein contents of oat varieties compared to Otana when grown under dryland continuous cropping conditions at EARC from 1986-1996.

Cultivar	# of years	1986	1987	1989	1990	1991	1992	1993	1994	1995	1996	Ave	as % of Otana
Paul*	3	--	--	--	--	--	--	--	15.4	17.6	16.7	16.57	142.0
Rodney	3	--	--	--		--	--	--	13.9	12.9	11.5	12.77	109.4
Ajay	5	--	--	--	--	--	12.9	13.6	13.4	13.8	10.7	12.88	106.6
Park	9	14.6	15.5	16.2	14.4	15.3	13.0	13.6	13.7	13.4	--	14.41	104.1
Rio Grande	5	--	--	--	--	--	13.0	12.8	12.9	13.0	10.9	12.52	103.6
Newdak	5	--	--	--	--	--	12.4	13.7	13.0	12.6	10.2	12.38	102.5
Valley	7	--	14.8	15.8	--	14.6	12.7	13.9	13.5	12.9	--	14.03	101.8
Border	10	13.5	15.5	15.6	14.0	14.5	12.7	12.9	13.2	12.3	9.9	13.41	100.1
Otana	10	13.9	15.3	15.5	14.2	14.6	12.2	13.2	12.9	12.8	9.3	13.39	100.0
Ogle	9	13.4	14.7	15.6	13.9	14.1	12.2	13.0	12.8	13.0	--	13.63	98.5
Whitestone	3	--	--	--	--	--	--	--	12.2	12.3	9.9	11.47	98.3
Appaloosa	10	12.3	14.6	15.9	14.0	14.4	12.1	12.3	13.3	12.0	10.1	13.10	97.8
Calibre	8	12.9	14.2	13.8	14.1	14.3	12.6	13.3	13.0	--	--	13.53	96.8
Cayuse	10	12.8	14.1	15.4	13.8	14.1	11.8	12.4	12.5	12.2	9.6	12.87	96.1
Monida	10	12.7	14.3	14.6	13.5	14.3	11.9	12.2	12.6	12.6	9.4	12.81	95.7
Robert	7	--	--	15.4	13.8	14.7	13.0	12.9	12.6	13.3	--	13.67	90.8

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety Otana.

No continuous cropped trials were harvested in 1988 due to severe drought.

* hulless oat

Table 3. Relative protein contents of oat varieties compared to Otana when grown under irrigated conditions at EARC from 1987-1996

Cultivar	# of years	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Ave	as % of Otana
Paul*	3	--	--	--	--	--	--	--	13.6	17.9	14.8	15.43	134.2
Rodney	5	--	14.9	--	13.8	--	--	--	12.2	14.1	11.8	13.36	107.6
Park	9	13.7	15.0	14.3	13.8	13.6	13.2	13.1	12.5	13.4	--	13.62	101.8
Otana	10	13.8	14.2	14.8	13.4	13.8	12.7	12.6	12.3	12.8	9.4	12.98	100.0
Ajay	9	--	14.6	14.5	13.4	13.4	12.8	12.5	12.1	12.6	9.6	12.83	99.6
Newdak	6	--	--	--	--	13.2	12.5	12.1	12.1	13.0	9.9	12.13	98.9
Valley	9	13.2	14.8	14.0	13.1	13.2	12.6	12.1	12.0	13.5	--	13.17	98.4
Rio Grande	10	13.1	14.1	13.4	12.1	13.2	12.4	12.1	11.6	12.4	9.7	12.41	95.6
Ogle	9	13.0	14.4	13.9	12.4	12.7	11.8	12.2	11.3	12.8	--	12.72	95.1
Whitestone	3	--	--	--	--	--	--	--	10.9	12.9	8.7	10.83	94.2
Robert	8	--	14.4	13.5	12.4	13.0	11.6	11.7	11.0	12.2	--	12.48	93.6
Border	10	12.2	13.4	13.7	12.5	13.2	12.3	12.0	10.8	12.4	8.7	12.12	93.4
Appaloosa	10	13.0	13.5	13.0	12.1	12.6	11.7	11.9	11.6	12.4	8.8	12.06	92.9
Monida	10	12.3	13.7	13.4	12.4	12.8	11.9	11.6	10.7	12.2	8.7	11.97	92.2
Cayuse	10	12.6	13.1	12.9	12.5	12.8	11.6	11.2	11.3	12.5	9.1	11.96	92.1
Calibre	8	12.7	14.0	14.1	9.2	13.7	11.7	12.3	11.1	--	--	12.35	91.8

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety Otana.

*hulless oat