2003 Chickpea Variety Trial - No-till Hettinger

Variety	Days to First Flower	Duration of Bloom	Days to Matur.	Dis.	Plant Height	1000 Seed Weight	Test Weight	Yield 1999	Yield 2002	Yield 2003	Average 2 yr	Average 3 yr
				0 - 9*	inches	grams	lbs/bu	lbs/ac	lbs/ac	lbs/ac	lbs/ac	lbs/ac
Large Kabuli:												
Sanford	64	17	96	1.2	19	398	61.9	1860	727	1887	1307	1491
CDC Yuma	58	20	96	0.5	18	334	62.3	1773	533	1853	1193	1386
Evans	58	22	96	1.8	18	384	61.7	1620	800	1567	1184	1329
Dwelley	66	14	98	1.0	16	453	60.6	1533	693	1227	960	1151
CDC Xena	57	23	94	1.0	16	433	62.1		1100	1920	1510	
CDC Diva	57	24	95	2.0	15	444	61.8		893	1927	1410	
CDC ChiChi	57	22	93	0	16	328	60.4		667	1920	1294	
Sierra	62	17	96	2.0	17	432	61.2		640	1373	1006	
Small Kabuli:												
CDC Chico	56	23	91	0	16	227	62.7	2307	1153	2060	1606	1840
B-90	60	20	92	0	17	237	63.5	2380	1007	2060	1534	1816
Green Kabuli:												
CDC Verano	56	24	96	0	12	182	61.9		773	1693	1233	
Large Desi:												
CDC Nika	55	22	90	0.2	14	269	62.0		960	2100	1530	
Small Desi:												
Myles	56	22	89	0	14	182	58.2	2667	1027	2220	1624	1971
CDC Anna	57	23	92	0	15	190	61.7		853	2253	1553	
CDC Desiray	56	22	89	0	13	186	58.4		1013	1933	1473	
Trial Mean	58	21	94	0.6	16	312	61.4	2026	816	1866	--	--
C.V. %	2.3	7.1	0.8	61.3	6.0	3.3	1.0	17.9	19.7	9.1	--	--
LSD .05	2	2	1	0.6	1	15	0.9	531	228	243	--	--
LSD .01	3	3	1	0.8	2	20	1.2	720	305	325	--	--

* Disease (ascochyta blight): 0 = none, 9 = dead.
Planting Date: April 24, 2003
Harvest Date: August 14, 2003
Previous Crop: 1998 = field pea, 2001 = fallow, 2002 = barley.

Seeding Date and Rate of Chickpea at Hettinger
1999, 2002 & 2003

Chickpeas are cool season legumes and should be seeded in the early spring. Seed cost of the large kaboli types have been as expensive as $0.50 per pound and current recommended seeding rates are 174,000 seeds per acre (120 - 140 lbs/Ac). Guidelines on planting dates and seeding rates for southwestern North Dakota have generally been adapted from Canadian sources and have not been studied in this area in the past. This study was initiated to determine more specific production practices for southwestern North Dakota and encompasses results from the 1999, 2002 and 2003 growing seasons. The study was also seeded in 2000 and 2001 but were infested with *ascochyta blight* and subsequently destroyed.

Sanford chickpeas were seeded in 1999 and Dwelley chickpeas were seeded in 2002 and 2003. Both varieties are a large *kaboli* types and were seeded at three different rates; 174, 131 and 87 thousand pure live seeds per acre on three different dates; mid-April (April 19, 1999, April 15, 2002 and April 17, 2003), late April/early May (May 3, 1999, April 29, 2002 and May 1, 2003) and in mid-May (May 18, 1999, May 13, 2002 and May 15, 2003). The seed was inoculated with *rhizobia* and treated for seed-borne *ascochyta* with thiabendazole (LSP). The trials were planted no-till into spring wheat stubble in 1999, into summer fallow in 2002 and into barley stubble in 2003. The trials were harvested on August 26, 1999, August 26, 2002 and on August 18, 2003.

Summary

The 1999 growing season was almost ideal for chickpea production with an abundance of moisture and mild temperatures, unlike the 2002 season with hot and dry conditions. The 2003 growing season was also ideal with the exception of a lack of stored soil moisture. Minor levels of ascochyta blight were noted in 1999 and 2003 and were absent in 2002. Average yields over 3 years were less than 20 pounds per acre between seeding rates. The number of pods per plant was the only significant difference between seeding rates for any agronomic characteristic. As plant populations decreased, plants branched more vigorously and put on more pods. This explains the ability of this crop to compensate plant populations with grain yields. Seed size and seed weight tended to decrease with increasing plant populations. Seeding date played a key role in agronomic characteristics, seed quality and yield. The duration of flowering was longer which provided for a higher pod set and consequently, higher yields, when the crop was seeded in mid-April and decreased with each succeeding seeding date. Test weights declined significantly, especially with the mid-May seeding date. Weed infestations tended to increase with lower seeding rates and with later seeding dates (personal observations). There is currently no Post-emergence broadleaf weed control options available. Sulfentrazone (Spartan) appears to have a good fit for broadleaf weed control in chickpea. A relatively minor infection of *Ascochyta blight* was observed throughout the 1999 trial and appeared to be more pronounced on the higher seeding rates and on the first seeding date. Heavy foliage tends to restrict air movement and provides for a more humid environment for disease development. Fungicide applications of azoxystrobin (Quadris) or pyraclostrobin (Headline) are very effective against this disease. As would be expected due to warmer soils, days from planting to seedling emergence was reduced significantly with later seeding dates. The extended germination period of the first seeding date however, did not cause a reduction in plant stand. In conclusion, planting of chickpeas should be curtailed by the end of April and seeding rates as low as 87,000 seeds per acre is sufficient to provide for an adequate stand to maintain yield and seed quality.

Seeding Rate Combined Means (1999, 2002 & 2003)

Seeding Rate	Days to Emerg.	Days to Bloom	Duration of Bloom	Days to Mature	Pods per Plant	Plant Height	1000 Seed Weight	Test Weight	Seed Size		Yield			
									<9mm	>8mm	1999	2002	2003	Avg.
seeds/A	days	days	days	days	#	inches	grams	lbs/bu	%	%	lbs/ac			
174,000	18	59	17	98	14	12	394	60.8	60	7	1911	384	1186	1160
131,000	18	59	17	98	16	12	396	60.7	57	8	1869	437	1142	1149
87,000	18	59	17	98	24	12	400	60.8	65	6	1838	541	1126	1168
C.V. %	0.0	12.2	26.9	4.9	40.2	7.6	6.7	1.2	13.0	19.2	20.7	33.2	39.5	--
LSD .05	1	NS	NS	NS	5	NS	NS	NS	7	1	NS	126	NS	--

Seeding Date Combined Means (1999, 2002 & 2003)

Seeding Date	Days to Emerg.	Days to Bloom	Duration of Bloom	Days to Mature	Pods per Plant	Plant Height	1000 Seed Weight	Test Weight	Seed Size		Yield			
									<9mm	>8mm	1999	2002	2003	Avg.
	days	days	days	days	#	inches	grams	lbs/bu	%	%	lbs/ac			
Mid-April	24	67	21	104	22	14	398	61.2	60	7	2191	499	1556	1415
Late April	19	59	17	98	18	12	398	60.9	60	8	1962	540	1198	1233
Mid-May	12	50	15	91	14	12	394	60.0	62	8	1465	324	700	830
C.V. %	0.0	1.0	5.0	0.8	44.9	6.9	6.4	0.8	14.0	20.7	10.8	29.0	21.2	--

LSD .05	1	1	1	1	6	NS	NS	0.2	NS	NS	227	110	183	--