

2008 VARIETAL RECOMMENDATION

KELBY

AgriPro requests that “Kelby” hard red spring wheat be considered for variety recommendation in the state of Montana. We move that Kelby be recommended for crop reporting districts 1, 4 and 5 under dryland and district 2 under irrigation.

Kelby was developed by AgriPro and released to AgriPro Associates in 2006. Certified seed was available to growers in 2007. PVP was issued in 2006. Kelby was derived from the cross “N97-0117/3/N92-0098//Sumai 3/Dalen”. It is a hollow stemmed, semidwarf, hard red spring variety that has shown good adaptation across the northern plains including several areas in Montana.

Kelby has been tested in Montana State Trials (19 station years, Tables 1-5) and in the FHB nursery near Manhattan, MT during the 2006 and 2007 seasons. Its best performances have been in dryland trials in the Triangle area, Kalispell and under irrigation at Bozeman. Its yields have been above the check means in these areas. Kelby would provide growers with an alternative early maturing variety that maintains very good test weight and protein levels. Its test weight has averaged 0.9 lbs higher all other check varieties. Its heading has been the earliest, equal to Hank and Corbin. Protein has averaged slightly above all checks at .3% above Reeder.

The disease resistance of Kelby has been well documented from testing in North Dakota and Minnesota (Table 9). Kelby has the Asian background (Sumai3) for fusarium resistance. Its scab rating is intermediate which would make it a good choice for use under irrigation. It is resistant to stem and leaf rust and has good tolerance to leaf spotting diseases. Based on Bozeman data from 2006, it is moderately susceptible to stripe rust.

Kelby has acceptable overall breadmaking quality (Table 7). It has good flour yield but shorter mixing time and slightly weaker mixing strength compared to Reeder.

TABLE 1. 2006-2007 GRAIN YIELD (BU/AC) SUMMARY OF KELBY COMPARED TO SELECTED VARIETIES, MSU DATA

ID	PEDIGREE	DISTRICT 5				DISTRICT 6				DISTRICT 6				DISTRICT 4				DISTRICT 5			
		HAVRE		YRS	AVE	SIDNEY DRY		YRS	ADJ1	SIDNEY IRR		YRS	AVE	MOCCASIN		YRS	AVE	CONRAD DRY		YRS	AVE
		2006	2007			2006	2007			2006	2007			2006	2007			2006	2007		
AGRIPRO6	KELBY	29.3	37.5	2	33.4	50.4	49.3	2	49.9	67.9	30.6	2	49.3	38.1	40.2	2	39.2	58.8	39.7	2	49.2
CI 13596	FORTUNA	34.0	32.1	2	33.0	49.0	49.2	2	49.1	60.3	40.3	2	50.3	32.1	34.5	2	33.3	43.7	32.9	2	38.3
PI574642	MCNEAL	27.4	34.8	2	31.1	52.7	53.8	2	53.3	69.5	46.4	2	58.0	34.2	43.0	2	38.6	51.3	36.6	2	43.9
PI592761	ERNEST	26.6	32.7	2	29.6	48.9	46.7	2	47.8	69.8	35.0	2	52.4	22.8	38.2	2	30.5	54.6	39.4	2	47.0
ND 695	REEDER	28.8	35.6	2	32.2	59.7	52.1	2	55.9	83.7	44.1	2	63.9	34.5	42.0	2	38.2	62.0	35.0	2	48.5
BZ992588	CONAN	31.9	35.8	2	33.9	46.0	48.8	2	47.4	72.1	37.5	2	54.8	32.8	37.7	2	35.3	53.1	36.2	2	44.7
BZ992322	HANK	33.3	34.5	2	33.9	55.0	53.6	2	54.3	69.1	40.3	2	54.7	37.2	42.3	2	39.8	59.6	33.1	2	46.4
PI632252	OUTLOOK	31.8	35.5	2	33.6	57.4	55.7	2	56.5	69.4	42.6	2	56.0	31.5	44.6	2	38.1	63.8	33.6	2	48.7
PI633974	CHOTEAU	32.1	36.1	2	34.1	52.3	52.1	2	52.2	71.3	35.5	2	53.4	33.9	43.0	2	38.4	67.3	37.8	2	52.6
PI642366	VIDA	34.3	42.3	2	38.3	60.6	56.2	2	58.4	77.4	35.7	2	56.6	35.5	44.3	2	39.9	64.7	37.6	2	51.1
AGRIPRO1	NORPRO	30.9	35.4	2	33.2	57.2	53.6	2	55.4	74.3	29.5	2	51.9	31.7	41.3	2	36.5	58.0	34.8	2	46.4
AGRIPRO3	FREYR	30.7	33.7	2	32.2	55.0	51.4	2	53.2	76.6	31.9	2	54.3	33.7	39.0	2	36.4	55.6	33.5	2	44.6
BZ996434	CORBIN	29.4	42.8	2	36.1	54.4	55.7	2	55.1	67.4	29.1	2	48.2	33.5	41.7	2	37.6	56.2	37.0	2	46.6
AVERAGE		30.8	36.1	2	33.4	53.7	52.2	2	53.0	71.5	36.8	2	54.1	33.2	40.9	2	37.1	57.6	35.9	2	46.8

ID	PEDIGREE	DISTRICT 3				DISTRICT 3			DISTRICT 1				DISTRICT 2				DISTRICT 2				OVERALL			
		HUNTLEY DRY		YRS	AVE	HUNTLEY IRR		YRS	AVE	KALISPELL		YRS	AVE	BOZ DRY		YRS	AVE	BOZ IRR		YRS	AVE	AVE	YEARS	RANK1
		2006	2007			2006	2007			2006	2007			2006	2007			2006	2007					
AGRIPRO6	KELBY	37.9	40.1	2	39.0	69.7	1	69.7	77.9	46.8	2	62.4	47.7	50.1	2	48.9	49.5	59.1	2	54.3	48.5	19	9	
CI 13596	FORTUNA	41.3	54.7	2	48.0	70.3	1	70.3	41.4	51.6	2	46.5	53.3	40.5	2	46.9	55.6	37.7	2	46.7	45.0	19	13	
PI574642	MCNEAL	57.1	55.9	2	56.5	89.2	1	89.2	51.3	52.9	2	52.1	47.3	42.7	2	45.0	33.0	41.3	2	37.2	48.4	19	10	
PI592761	ERNEST	50.0	60.1	2	55.1	84.3	1	84.3	50.2	45.5	2	47.9	48.7	37.1	2	42.9	48.4	42.2	2	45.3	46.4	19	12	
ND 695	REEDER	52.5	61.4	2	56.9	77.6	1	77.6	75.1	62.8	2	68.9	65.4	46.4	2	55.9	56.2	57.0	2	56.6	54.3	19	2	
BZ992588	CONAN	41.7	55.4	2	48.5	70.5	1	70.5	56.5	46.1	2	51.3	55.2	41.0	2	48.1	63.7	52.2	2	58.0	48.1	19	11	
BZ992322	HANK	47.3	61.4	2	54.3	92.2	1	92.2	74.0	55.9	2	64.9	56.8	44.7	2	50.7	60.6	56.2	2	58.4	53.0	19	3	
PI632252	OUTLOOK	56.5	63.4	2	59.9	94.0	1	94.0	63.0	55.8	2	59.4	54.9	43.0	2	48.9	48.4	54.4	2	51.4	52.6	19	4	
PI633974	CHOTEAU	53.5	61.9	2	57.7	87.9	1	87.9	74.2	47.2	2	60.7	59.3	39.8	2	49.5	54.8	54.1	2	54.4	52.3	19	5	
PI642366	VIDA	54.0	67.2	2	60.6	88.2	1	88.2	54.5	64.3	2	59.4	64.8	47.7	2	56.3	53.7	58.0	2	55.9	54.8	19	1	
AGRIPRO1	NORPRO	54.8	65.3	2	60.1	86.9	1	86.9	70.7	48.3	2	59.5	47.2	42.4	2	44.8	39.1	59.2	2	49.1	50.6	19	8	
AGRIPRO3	FREYR	49.8	55.0	2	52.4	81.4	1	81.4	68.5	54.1	2	61.3	61.5	36.8	2	49.2	64.4	57.5	2	61.0	51.1	19	7	
BZ996434	CORBIN	51.2	62.7	2	57.0	88.3	1	88.3	44.8	53.0	2	48.9	60.8	40.8	2	50.8	74.5	49.5	2	62.0	51.2	19	6	
AVERAGE		49.8	58.8	2	54.3	83.1	1	83.1	61.7	52.6	2	57.2	55.6	42.5	2	49.1	54.0	52.2	2	53.1	50.5	19	0	

TABLE 2. 2006-2007 GRAIN TEST WEIGHT (LB/BU) SUMMARY OF KELBY COMPARED TO SELECTED VARIETIES, MSU DATA

ID	PEDIGREE	DISTRICT 5				DISTRICT 6				DISTRICT 6				DISTRICT 4				DISTRICT 5			
		HAVRE		YRS	AVE	SIDNEY DRY		YRS	ADJ1	SIDNEY IRR		YRS	AVE	MOCCASIN		YRS	AVE	CONRAD DRY		YRS	AVE
		2006	2007			2006	2007			2006	2007			2006	2007			2006	2007		
AGRIPRO6	KELBY	57.4	59.3	2	58.3	61.2	62.8	2	62.0	60.5	61.3	2	60.9	60.8	61.0	2	60.9	61.9	61.8	2	61.9
CI 13596	FORTUNA	56.5	56.8	2	56.6	59.3	61.4	2	60.4	59.5	60.4	2	60.0	60.5	58.4	2	59.4	60.3	58.8	2	59.5
PI574642	MCNEAL	51.9	54.8	2	53.4	57.3	60.9	2	59.1	57.3	58.3	2	57.8	57.8	59.1	2	58.4	58.9	57.1	2	58.0
PI592761	ERNEST	54.1	57.3	2	55.7	59.5	61.3	2	60.4	59.0	60.9	2	60.0	59.2	58.7	2	58.9	58.7	59.4	2	59.1
ND 695	REEDER	53.9	56.6	2	55.3	59.7	61.8	2	60.7	60.8	60.8	2	60.8	59.6	59.4	2	59.5	60.0	59.1	2	59.6
BZ992588	CONAN	54.9	57.3	2	56.1	59.8	61.3	2	60.6	56.7	60.2	2	58.4	59.0	58.1	2	58.6	59.1	59.6	2	59.3
BZ992322	HANK	53.0	54.6	2	53.8	58.3	60.6	2	59.4	56.5	58.8	2	57.6	57.1	53.3	2	55.2	58.0	55.9	2	56.9
PI632252	OUTLOOK	52.0	55.6	2	53.8	57.6	60.7	2	59.2	58.3	59.3	2	58.8	56.0	57.7	2	56.8	56.9	54.5	2	55.7
PI633974	CHOTEAU	53.7	55.5	2	54.6	59.6	62.0	2	60.8	58.2	60.1	2	59.1	60.4	59.2	2	59.8	59.6	59.8	2	59.7
PI642366	VIDA	53.1	56.3	2	54.7	59.1	61.3	2	60.2	58.8	56.3	2	57.6	58.3	58.7	2	58.5	58.3	58.8	2	58.5
AGRIPRO1	NORPRO	51.7	55.3	2	53.5	59.9	62.1	2	61.0	60.0	58.7	2	59.4	58.3	57.2	2	57.7	56.8	58.3	2	57.5
AGRIPRO3	FREYR	55.3	57.1	2	56.2	60.8	62.0	2	61.4	59.7	59.3	2	59.5	61.1	59.7	2	60.4	60.5	58.4	2	59.4
BZ996434	CORBIN	54.5	57.6	2	56.0	59.8	61.6	2	60.7	59.0	59.3	2	59.1	59.0	56.9	2	58.0	59.3	57.8	2	58.5
AVERAGE		54.0	56.5	2	55.2	59.4	61.5	2	60.5	58.8	59.5	2	59.2	59.0	58.2	2	58.6	59.1	58.4	2	58.8

ID	PEDIGREE	DISTRICT 3				DISTRICT 3			DISTRICT 1				DISTRICT 2				DISTRICT 2				OVERALL			
		HUNTLEY DRY		YRS	AVE	HUNTLEY IRR		YRS	AVE	KALISPELL		YRS	AVE	BOZ DRY		YRS	AVE	BOZ IRR		YRS	AVE	AVE	YEARS	RANK1
		2006	2007			2006	2007			2006	2007			2006	2007			2006	2007					
AGRIPRO6	KELBY	63.2	63.6	2	63.4	64.4	1	64.4	61.9	59.3	2	60.6	61.0	57.0	2	59.0	59.8	58.5	2	59.2	60.9	19	1	
CI 13596	FORTUNA	62.2	62.2	2	62.2	63.7	1	63.7	58.3	57.5	2	57.9	61.7	56.1	2	58.9	60.3	59.0	2	59.7	59.6	19	4	
PI574642	MCNEAL	61.1	62.1	2	61.6	63.5	1	63.5	58.4	56.2	2	57.3	56.2	53.8	2	55.0	56.2	57.2	2	56.7	57.8	19	11	
PI592761	ERNEST	62.7	62.5	2	62.6	63.4	1	63.4	61.4	58.8	2	60.1	60.1	55.1	2	57.6	57.5	58.2	2	57.9	59.4	19	5	
ND 695	REEDER	62.6	63.5	2	63.0	64.1	1	64.1	60.8	57.0	2	58.9	62.3	56.8	2	59.6	60.1	59.8	2	60.0	59.9	19	3	
BZ992588	CONAN	62.1	62.6	2	62.4	63.2	1	63.2	61.1	58.0	2	59.6	59.9	55.3	2	57.6	59.3	58.7	2	59.0	59.3	19	6	
BZ992322	HANK	61.0	62.2	2	61.6	62.5	1	62.5	56.6	55.2	2	55.9	56.0	53.0	2	54.5	56.2	56.8	2	56.5	57.1	19	13	
PI632252	OUTLOOK	61.3	61.6	2	61.5	62.6	1	62.6	58.6	55.2	2	56.9	56.4	52.1	2	54.3	54.2	57.1	2	55.7	57.3	19	12	
PI633974	CHOTEAU	62.1	63.5	2	62.8	63.9	1	63.9	61.6	58.3	2	60.0	58.7	54.8	2	56.8	57.9	56.9	2	57.4	59.2	19	7	
PI642366	VIDA	62.8	62.6	2	62.7	63.4	1	63.4	60.6	58.0	2	59.3	57.5	54.9	2	56.2	57.5	56.2	2	56.9	58.6	19	9	
AGRIPRO1	NORPRO	62.4	63.5	2	62.9	63.8	1	63.8	60.5	57.8	2	59.2	55.0	53.6	2	54.3	53.2	57.5	2	55.3	58.2	19	10	
AGRIPRO3	FREYR	62.8	63.5	2	63.1	63.9	1	63.9	62.0	59.5	2	60.8	61.0	53.7	2	57.4	59.8	59.2	2	59.5	60.0	19	2	
BZ996434	CORBIN	63.0	63.3	2	63.2	64.0	1	64.0	58.4	58.0	2	58.2	60.4	54.9	2	57.7	61.9	56.9	2	59.4	59.2	19	8	
AVERAGE		62.3	62.8	2	62.5	63.6	1	63.6	60.0	57.6	2	58.8	58.9	54.7	2	56.8	58.0	57.9	2	57.9	59.0	19	0	

TABLE 4. 2006-2007 PLANT HEIGHT (INCHES) SUMMARY OF KELBY COMPARED TO SELECTED VARIETIES, MSU DATA

ID	PEDIGREE	DISTRICT 5				DISTRICT 6				DISTRICT 6				DISTRICT 4				DISTRICT 5			
		HAVRE				SIDNEY DRY				SIDNEY IRR				MOCCASIN				CONRAD DRY			
		2006	2007	YRS	AVE	2006	2007	YRS	ADJ1	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE
AGRIPRO6	KELBY	22.6	23.2	2	22.9	26.9	28.5	2	27.7	26.0	26.2	2	26.1	33.4	30.5	2	31.9	30.0	25.0	2	27.5
CI 13596	FORTUNA	27.9	29.1	2	28.5	34.2	37.6	2	35.9	35.4	39.3	2	37.3	39.8	40.0	2	39.9	42.0	34.0	2	38.0
PI574642	MCNEAL	24.2	25.9	2	25.0	30.6	31.8	2	31.2	30.5	34.7	2	32.6	36.0	36.2	2	36.1	33.0	28.0	2	30.5
PI592761	ERNEST	28.5	29.8	2	29.1	35.2	36.8	2	36.0	36.3	38.3	2	37.3	39.0	39.5	2	39.2	39.0	36.0	2	37.5
ND 695	REEDER	25.4	27.1	2	26.2	28.2	31.2	2	29.7	30.2	33.3	2	31.8	33.8	35.4	2	34.6	35.0	25.0	2	30.0
BZ992588	CONAN	21.7	24.3	2	23.0	27.0	29.7	2	28.3	29.1	30.9	2	30.0	32.8	34.1	2	33.4	33.0	25.0	2	29.0
BZ992322	HANK	23.8	24.4	2	24.1	27.6	27.0	2	27.3	27.5	29.5	2	28.5	33.1	35.3	2	34.2	33.0	27.0	2	30.0
PI632252	OUTLOOK	26.1	26.4	2	26.3	30.0	32.4	2	31.2	30.8	32.3	2	31.6	33.6	35.2	2	34.4	34.0	26.0	2	30.0
PI633974	CHOTEAU	26.0	24.2	2	25.1	28.7	31.0	2	29.9	28.8	28.6	2	28.7	34.6	33.7	2	34.1	33.0	25.0	2	29.0
PI642366	VIDA	26.9	26.5	2	26.7	30.2	32.5	2	31.4	30.7	34.7	2	32.7	34.7	37.0	2	35.8	34.0	27.0	2	30.5
AGRIPRO1	NORPRO	24.6	23.1	2	23.9	27.7	29.9	2	28.8	27.5	28.6	2	28.0	33.4	33.3	2	33.4	29.0	24.0	2	26.5
AGRIPRO3	FREYR	26.5	27.6	2	27.0	30.6	33.2	2	31.9	31.2	30.3	2	30.8	37.1	36.2	2	36.7	35.0	30.0	2	32.5
BZ996434	CORBIN	23.2	27.3	2	25.3	29.5	30.1	2	29.8	28.7	29.0	2	28.8	34.5	35.2	2	34.8	33.0	29.0	2	31.0
AVERAGE		25.2	26.1	2	25.6	29.7	31.7	2	30.7	30.2	32.0	2	31.1	35.1	35.5	2	35.3	34.1	27.8	2	30.9

ID	PEDIGREE	DISTRICT 3				DISTRICT 3			DISTRICT 1				DISTRICT 2				DISTRICT 2				OVERALL							
		HUNTLEY DRY				HUNTLEY IRR			KALISPELL				BOZ DRY				BOZ IRR				AVE	YEARS	RANK1					
		2006	2007	YRS	AVE	2006	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE				
AGRIPRO6	KELBY	27.7	30.3	2	29.0	32.7	1	32.7	34.6	30.0	2	32.3	27.7	29.8	2	28.7	27.8	30.2	2	29.0	28.6	19		13				
CI 13596	FORTUNA	38.9	42.5	2	40.7	45.6	1	45.6	46.3	39.3	2	42.8	38.2	38.7	2	38.5	38.0	40.6	2	39.3	38.3	19		1				
PI574642	MCNEAL	34.7	34.6	2	34.6	40.2	1	40.2	39.9	32.2	2	36.0	31.5	31.1	2	31.3	31.4	34.0	2	32.7	32.6	19		5				
PI592761	ERNEST	39.0	41.8	2	40.4	44.6	1	44.6	44.9	35.0	2	40.0	39.4	36.4	2	37.9	37.4	40.1	2	38.8	37.7	19		2				
ND 695	REEDER	31.3	35.4	2	33.3	41.3	1	41.3	39.1	32.6	2	35.9	33.7	32.6	2	33.2	32.9	33.6	2	33.3	32.5	19		6				
BZ992588	CONAN	29.3	32.6	2	30.9	35.0	1	35.0	35.7	29.5	2	32.6	29.9	29.5	2	29.7	29.7	32.0	2	30.8	30.0	19		11				
BZ992322	HANK	30.7	32.2	2	31.5	35.8	1	35.8	37.5	30.5	2	34.0	29.2	31.2	2	30.2	29.4	31.3	2	30.3	30.3	19		10				
PI632252	OUTLOOK	32.9	35.3	2	34.1	40.5	1	40.5	38.2	32.3	2	35.3	32.2	30.6	2	31.4	32.9	34.2	2	33.5	32.4	19		7				
PI633974	CHOTEAU	31.3	32.9	2	32.1	36.3	1	36.3	36.6	30.6	2	33.6	30.6	30.5	2	30.6	29.9	33.2	2	31.5	30.8	19		9				
PI642366	VIDA	32.6	36.2	2	34.4	39.8	1	39.8	38.2	31.7	2	35.0	33.1	31.6	2	32.4	32.1	34.6	2	33.3	32.9	19		4				
AGRIPRO1	NORPRO	30.1	34.3	2	32.2	36.2	1	36.2	35.7	29.1	2	32.4	29.3	30.0	2	29.7	29.6	31.0	2	30.3	29.8	19		12				
AGRIPRO3	FREYR	33.7	36.4	2	35.0	40.2	1	40.2	37.9	33.6	2	35.7	34.2	32.6	2	33.4	33.8	34.6	2	34.2	33.4	19		3				
BZ996434	CORBIN	32.3	34.3	2	33.3	39.2	1	39.2	35.7	32.1	2	33.9	31.4	31.6	2	31.5	31.5	33.5	2	32.5	31.6	19		8				
AVERAGE		32.7	35.3	2	34.0	39.0	1	39.0	38.5	32.2	2	35.3	32.3	32.0	2	32.2	32.0	34.1	2	33.0	32.4	19		0				

TABLE 5. 2006-2007 GRAIN PROTEIN (%) SUMMARY OF KELBY COMPARED TO SELECTED VARIETIES, MSU DATA

ID	PEDIGREE	DISTRICT 5				DISTRICT 6				DISTRICT 6				DISTRICT 4				DISTRICT 5			
		HAVRE				SIDNEY DRY				SIDNEY IRR				MOCCASIN				CONRAD DRY			
		2006	2007	YRS	AVE	2006	2007	YRS	ADJ1	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE
AGRIPRO6	KELBY	17.2	16.6	2	16.9	14.9	13.5	2	14.2	14.4	16.8	2	15.6	14.3	12.6	2	13.5	13.4	15.2	2	14.3
CI 13596	FORTUNA	16.5	15.6	2	16.0	13.2	12.7	2	13.0	13.9	16.0	2	15.0	14.1	12.9	2	13.5	13.6	15.1	2	14.4
PI574642	MCNEAL	18.0	17.3	2	17.7	13.7	12.9	2	13.3	13.3	15.9	2	14.6	14.4	11.9	2	13.2	13.1	15.3	2	14.2
PI592761	ERNEST	18.7	17.0	2	17.8	14.0	12.6	2	13.3	14.3	15.1	2	14.7	14.0	13.7	2	13.9	13.4	15.4	2	14.4
ND 695	REEDER	17.2	16.9	2	17.1	13.9	12.6	2	13.3	14.0	15.4	2	14.7	14.6	12.9	2	13.8	13.9	15.1	2	14.5
BZ992588	CONAN	18.0	16.6	2	17.3	13.8	12.6	2	13.2	13.7	14.8	2	14.3	14.0	12.8	2	13.4	13.8	15.2	2	14.5
BZ992322	HANK	17.7	16.7	2	17.2	12.8	11.2	2	12.0	14.4	15.6	2	15.0	13.6	12.7	2	13.2	14.2	15.9	2	15.1
PI632252	OUTLOOK	18.4	16.4	2	17.4	12.9	11.8	2	12.4	13.1	14.5	2	13.8	15.3	11.6	2	13.5	13.9	15.8	2	14.9
PI633974	CHOTEAU	17.8	16.9	2	17.3	14.1	12.6	2	13.4	13.6	16.2	2	14.9	12.8	12.7	2	12.8	13.7	15.2	2	14.5
PI642366	VIDA	17.9	16.5	2	17.2	13.0	11.9	2	12.5	13.6	15.3	2	14.5	13.5	11.5	2	12.5	13.9	14.9	2	14.4
AGRIPRO1	NORPRO	17.5	17.1	2	17.3	13.5	11.5	2	12.5	12.9	15.6	2	14.3	12.8	11.9	2	12.4	13.2	15.0	2	14.1
AGRIPRO3	FREYR	16.9	16.3	2	16.6	13.0	12.3	2	12.7	13.3	15.2	2	14.3	12.7	12.1	2	12.4	13.2	15.5	2	14.4
BZ996434	CORBIN	18.3	16.5	2	17.4	14.0	11.5	2	12.8	13.2	14.8	2	14.0	14.5	13.7	2	14.1	13.1	15.6	2	14.4
AVERAGE		17.7	16.7	2	17.2	13.6	12.3	2	12.9	13.7	15.5	2	14.6	13.9	12.5	2	13.2	13.6	15.3	2	14.5

ID	PEDIGREE	DISTRICT 3				DISTRICT 3			DISTRICT 1				DISTRICT 2				DISTRICT 2				OVERALL					
		HUNTLEY DRY				HUNTLEY IRR			KALISPELL				BOZ DRY				BOZ IRR				AVE YEARS RANK1					
		2006	2007	YRS	AVE	2006	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007	YRS	AVE	2006	2007
AGRIPRO6	KELBY	14.8	12.2	2	13.5	12.6	1	12.6	15.8	17.0	2	16.4	15.5	16.7	2	16.1	14.2	16.1	2	15.2	14.9	19	1			
CI 13596	FORTUNA	13.5	10.3	2	11.9	11.9	1	11.9	16.8	16.0	2	16.4	14.3	16.9	2	15.6	13.5	15.5	2	14.5	14.3	19	10			
PI574642	MCNEAL	13.1	10.4	2	11.8	12.1	1	12.1	16.4	16.5	2	16.5	14.5	17.3	2	15.9	14.0	15.7	2	14.9	14.5	19	7			
PI592761	ERNEST	13.2	10.6	2	11.9	12.4	1	12.4	16.3	17.1	2	16.7	14.9	17.5	2	16.2	14.8	16.0	2	15.4	14.8	19	2			
ND 695	REEDER	14.4	10.6	2	12.5	12.1	1	12.1	16.4	16.4	2	16.4	15.1	16.3	2	15.7	14.4	15.8	2	15.1	14.6	19	4			
BZ992588	CONAN	13.8	11.3	2	12.6	12.3	1	12.3	15.1	16.8	2	16.0	14.9	17.4	2	16.2	14.8	15.7	2	15.3	14.6	19	5			
BZ992322	HANK	12.8	9.8	2	11.3	12.1	1	12.1	15.5	17.0	2	16.3	14.7	17.5	2	16.1	14.8	15.4	2	15.1	14.4	19	9			
PI632252	OUTLOOK	12.6	10.2	2	11.4	10.7	1	10.7	15.0	16.7	2	15.9	14.0	16.7	2	15.4	13.7	14.9	2	14.3	14.1	19	11			
PI633974	CHOTEAU	14.2	10.3	2	12.3	11.7	1	11.7	16.0	17.1	2	16.6	15.5	17.1	2	16.3	15.0	16.2	2	15.6	14.7	19	3			
PI642366	VIDA	12.7	9.4	2	11.1	11.0	1	11.0	16.4	15.6	2	16.0	14.6	16.2	2	15.4	14.2	16.0	2	15.1	14.1	19	12			
AGRIPRO1	NORPRO	12.7	10.1	2	11.4	13.2	1	13.2	17.5	17.3	2	17.4	15.9	16.4	2	16.2	15.5	15.2	2	15.4	14.5	19	8			
AGRIPRO3	FREYR	13.2	10.0	2	11.6	11.9	1	11.9	16.2	16.0	2	16.1	14.3	16.4	2	15.4	13.8	14.9	2	14.4	14.1	19	13			
BZ996434	CORBIN	13.1	9.6	2	11.4	10.7	1	10.7	17.2	17.0	2	17.1	14.9	17.5	2	16.2	14.7	16.2	2	15.5	14.5	19	6			
AVERAGE		13.4	10.4	2	11.9	11.9	1	11.9	16.2	16.7	2	16.4	14.9	16.9	2	15.9	14.4	15.7	2	15.0	14.5	19	0			

Table 6. Effects of Fusarium Head Blight on Spring Wheat Varieties in 2006 and 2007, Manhattan, MT – MSU Data.

VARIETY	FHB reaction	Grain Yield	Grain Yield	Grain Yield	Test Wt	Test Wt	Test Wt	DON	DON	DON	Scab Heads	Scab Heads	Scab Heads
		2007	2006	2 yr Aver	2007	2006	2 yr Aver	<0.20	<0.20	<0.20	Aug 08, 2007	Aug 06, 2006	2 yr Aver
		Bu/ac	Bu/ac	Bu/ac	Lb/bu	Lb/bu	Lb/bu	ppm	ppm	ppm	%	%	%
VOLT	Tolerant	88.4	86.7	87.4	63.3	61.6	62.3	1.0	0.00	0.43	9.3	3.8	6.2
FREYR	Sumai3	90.1	85.0	87.2	62.4	60.6	61.4	0.50	0.06	0.25	6.8	10.7	9.0
KUNTZ	Sumai3	81.2	90.5	86.5	62.2	60.4	61.2	0.83	0.00	0.36	16.0	12.4	13.9
KNUDSON	Sumai3	86.8	80.7	83.3	61.3	59.2	60.1	0.63	0.15	0.36	5.1	6.1	8.1
MT0550	Sumai3	88.8	78.9	83.1	63.1	60.7	61.8	0.37	0.16	0.25	1.8	7.7	5.2
KELBY	Sumai3	83.0	78.5	80.5	62.8	60.7	61.6	0.50	0.25	0.36	15.7	16.0	15.9
CHOTEAU		77.9	na	77.9	60.8	na	60.8	2.83	na	2.83	21.5	na	21.5
EXPRESSO		77.4	76.0	76.6	60.6	59.2	59.8	5.07	1.98	3.30	18.0	33.5	26.8
GRANITE	Tolerant	75.5	74.5	74.9	62.8	61.8	62.2	0.73	0.11	0.38	5.6	26.8	7.0
ALSEN	Sumai3	74.4	67.7	70.6	63.1	61.2	62.0	0.27	0.00	0.11	3.4	8.1	6.3
GLENN	Sumai3	74.1	67.3	70.2	64.7	63.1	63.8	0.33	0.00	0.14	1.3	4.9	3.3
VIDA		71.4	68.2	69.5	58.5	56.9	57.6	1.13	1.61	1.41	6.8	29.3	19.7
MT0551		na	66.8	66.8	na	59.9	59.9	na	1.33	1.33	na	12.9	12.9
HOWARD		62.2	68.9	66.0	60.7	59.6	60.1	1.33	0.89	1.08	16.3	26.8	22.3
HANK B		65.5	53.0	58.4	56.3	52.1	53.9	6.70	9.40	8.24	39.3	67.5	51.8
HANK A		60.5	52.9	56.1	55.3	51.7	53.2	7.90	10.3	9.28	32.5	66.4	55.4
EXPLORER		45.4	61.0	54.3	54.2	56.6	55.6	2.67	2.00	2.11	5.2	21.9	14.8
Mean		75.2	72.3	73.5	60.8	59.1	59.8	2.03	1.77	1.88	12.8	21.3	17.6
Variety	LSD	10.9	5.7	5.83	3.52	0.8	1.57	1.03	0.83	0.67	11.3	13.7	10.2
Year	p>			0.005			0.0008			NS			0.001
Year x Var	p>			0.0001			NS			0.0001			0.002
	CV%	8.68	5.6	7.03	3.47	0.9	2.33	30.6	33.20	31.7	52.8	45.1	51.0

TABLE 7. 2006 Advanced Spring Wheat Yield Trial Mill & Bake, MSU Data

Location: Means Across Locations

Whole Grain Analysis		Flour Analysis				Mixograph Analysis			Bake Analysis					
Pedigree	Class	Wheat Protein, % (12% <i>m.b.</i>)	Single Kernel Hardness	Flour Protein, % (14% <i>m.b.</i>)	Flour Yield, %	Flour Ash, %	Wheat Ash, %	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
KELBY	HRS	15.22	81.68	65.03	13.25	0.44	1.58	2.75	3.15	62.93	4.35	72.38	1042.50	4.00
KUNTZ	HRS	13.90	86.25	66.50	12.33	0.46	1.62	4.25	4.58	63.40	7.58	74.98	1045.00	4.00
FORTUNA	HRS	14.38	74.38	68.70	12.85	0.48	1.61	3.75	3.73	63.18	5.30	72.50	1123.75	4.00
MCNEAL	HRS	15.09	92.38	63.95	13.33	0.49	1.75	5.75	6.08	64.40	9.53	76.35	1207.50	4.00
ERNEST	HRS	15.41	75.65	67.93	13.68	0.45	1.69	4.75	4.33	64.58	8.55	74.28	1187.50	3.50
SCHOLAR	HRS	15.49	84.30	68.13	13.80	0.48	1.65	3.75	3.28	64.15	4.90	73.35	1151.25	3.50
REEDER	HRS	14.77	80.68	65.33	13.20	0.42	1.59	3.50	3.80	62.95	5.05	73.03	1147.50	3.50
THATCHER	HRS	15.67	83.08	63.70	13.90	0.49	1.80	4.75	4.43	64.03	7.18	73.73	1206.25	4.00
CONAN	HRS	15.22	80.33	65.83	13.25	0.44	1.75	4.00	5.05	63.58	7.08	73.28	1171.25	4.00
HANK	HRS	14.79	73.93	66.45	13.65	0.46	1.68	4.25	6.70	64.15	9.68	74.60	1173.75	3.75
OUTLOOK	HRS	15.12	96.13	65.53	13.70	0.49	1.76	4.50	5.10	63.85	5.85	73.55	1186.25	4.00
CHOTEAU	HRS	15.00	74.78	65.75	13.58	0.42	1.60	3.75	3.80	63.83	5.18	73.15	1191.25	3.50
NORPRO	HRS	14.88	92.90	62.55	13.08	0.49	1.66	4.00	3.88	63.45	6.05	73.28	1096.25	3.25
KNUDSON	HRS	14.62	83.70	66.80	13.18	0.50	1.64	5.50	6.65	66.10	15.60	79.55	1115.00	3.75
FREYR	HRS	14.12	83.53	67.70	12.58	0.44	1.58	4.00	4.40	63.38	6.75	73.33	1075.00	3.75
CORBIN	HRS	15.40	73.03	67.80	13.65	0.48	1.70	3.75	5.28	64.73	10.25	75.18	1127.50	3.50
WPB GERMANY	HRS	13.93	89.98	66.30	12.33	0.48	1.62	5.00	5.88	62.78	10.43	75.73	995.00	4.00
NURSERY MIN		13.9	73.0	62.6	12.3	0.42	1.58	2.8	3.2	62.8	4.4	72.4	995	3.3
NURSERY MAX		15.7	96.1	68.7	13.9	0.50	1.80	5.8	6.7	66.1	15.6	79.6	1208	4.0
NURSERY AVE		14.9	82.7	66.1	13.3	0.46	1.66	4.2	4.7	63.8	7.6	74.2	1132	3.8

TABLE 8. AgriPro Over Year Quality Summary of Kelby compared to Norpro and Reeder.

Year-Loc	Flour/Wheat Quality					Mixogram			Baking Quality				Crumb		Comment
	Wht Prot	Flr Prot	Norris Hrd	Flr Yld	Ash	Peak Time	Peak Ht	Tol.	Bakr Abs	BakePk Time	Loaf Vol	Grain R	Tex R	Color R	
	14%m	14%m		%	14%m	min	N.U.	mm	%	min	cc	R	R	R	
KELBY															
2006 - ARPR	16.3	14.8	69	69.9	0.429	3.00	5.0	1415	66.5	2.80	975	5	4	4	
2005 - MI	15.6	14.4	91	69.7		2.50	5.0	814	70.0	2.20	860	5	4	5	
2005 - ARPR	15.4	14.1	58	70.8	0.500	2.75	5.0	919	67.0	2.60	1005	4	2	3	
2004 - BKPR	15.0	13.8	90	70.8	0.428	3.00	5.0	1206	68.0	3.00	990	4	3	3	
2003 - BKPR	15.0	13.9	67	70.8	0.411	3.00	5.0	987	68.0	2.70	1040	4	3	3	
2002 - MW	15.2	14.0	61	65.2	0.423	5.75	5.0	1212	68.0	6.10	1125	4	3	3	
Average:	15.4	14.2	73	69.5	0.438	3.33	5.0	1092	67.9	3.23	999	4	3	4	
NORPRO															
2006 - ARPR	14.6	13.1	84	69.3	0.406	3.50	5.0	1086	65.5	3.20	985	3	3	2	
2005 - MI	14.5	13.3	100	69.0		3.00	5.0	839	67.0	2.50	975	4	3	3	
2005 - ARPR	14.5	12.9	65	69.2	0.583	2.50	5.3	943	64.5	2.80	860	5	4	3	
2004 - BKPR	14.3	12.8	104	71.4	0.466	2.75	5.3	1361	66.0	2.70	895	4	3	3	
2003 - BKPR	14.5	12.8	85	70.3	0.440	2.75	5.5	828	65.5	2.60	1035	3	3	3	
2002 - MW	14.4	13.4	86	66.3	0.487	4.25	5.3	1072	68.0	5.00	1035	3	3	3	
Average:	14.5	13.1	87	69.3	0.476	3.13	5.2	1022	66.1	3.13	964	4	3	3	
KELBY															
2007 - ARPR	15.1	14.1	77	68.1	0.466	3.50	5.0	1317	68.0	2.90	1200	5	2	3	
2006 - ARPR	16.3	14.8	69	69.9	0.429	3.00	5.0	1415	66.5	2.80	975	5	4	4	
2005 - MI	15.6	14.4	91	69.7		2.50	5.0	814	70.0	2.20	860	5	4	5	
2005 - ARPR	15.4	14.1	58	70.8	0.500	2.75	5.0	919	67.0	2.60	1005	4	2	3	
2004 - BKPR	15.0	13.8	90	70.8	0.428	3.00	5.0	1206	68.0	3.00	990	4	3	3	
2003 - BKPR	15.0	13.9	67	70.8	0.411	3.00	5.0	987	68.0	2.70	1040	4	3	3	
2002 - MW	15.2	14.0	61	65.2	0.423	5.75	5.0	1212	68.0	6.10	1125	4	3	3	
Average:	15.4	14.2	73	69.3	0.443	3.36	5.0	1124	67.9	3.19	1028	4	3	3	
REEDER															
2007 - ARPR	13.7	12.8	74	69.8	0.444	4.00	5.0	1206	65.5	3.40	1155	6	2	3	
2006 - ARPR	15.0	14.2	68	70.7	0.412	4.00	5.0	1167	66.0	3.40	1060	5	3	3	
2005 - MI	14.5	13.5	71	71.8		3.00	5.0	846	68.0	2.40	935	6	3	5	B,weak
2005 - ARPR	15.0	13.7	47	69.4	0.474	3.00	5.0	890	66.0	2.60	1105	7	3	5	SS
2004 - BKPR	14.9	13.6	83	69.4	0.401	3.25	5.0	1269	68.0	3.10	1045	5	3	4	
2003 - BKPR	14.7	13.7	53	70.6	0.389	3.00	5.3	877	67.0	3.00	995	5	3	4	
2002 - MW	15.1	14.2	54	69.2	0.443	4.00	5.3	1165	67.5	5.80	1110	6	2	3	
Average:	14.7	13.7	64	70.1	0.427	3.46	5.1	1060	66.9	3.39	1058	6	3	4	

TABLE 9. 2004-6 OVER YEAR AGRIPRO SUMMARY OF E. ND/MN SITES

(Data presented to show lodging and disease information on Kuntz and Kelby.)

VARIETY	YIELD - BU/A ³				TEST		HEAD. ²	HT.	LOD.	FOLIAR		SEED		FUSARIUM		WORTH
	04	05	06	AVG	WT.	PROT. %				DIS.	SCORE	DAMAGED KERNELS	LEAF RUST			
														1-9	1-9	
KUNTZ	79.8	60.5	73.6	71.3	61.3	13.4	5.0	4.6	1.0	4.2	3.8	9.7	3.5	3.8		
KNUDSON	79.3	60.9	65.2	68.5	61.2	13.8	5.0	5.8	2.2	3.2	4.1	6.8	2.0	4.4		
FREYR	75.2	60.3	68.4	68.0	61.3	14.6	4.6	6.8	2.9	4.2	3.4	3.9	3.9	4.7		
GLENN ¹	77.2	57.8	68.0	67.7	62.9	15.2	3.3	7.5	na	4.1	4.0	9.2	2.2	4.7		
NORPRO	80.5	52.4	69.0	67.3	59.9	14.2	5.7	4.9	1.5	3.5	5.3	19.1	3.4	4.4		
STEELE ND	71.9	56.1	71.1	66.4	61.5	14.9	4.6	7.2	5.7	4.1	4.0	10.9	2.0	6.0		
KELBY	76.0	55.3	64.3	65.2	61.4	15.1	3.2	4.2	2.3	3.6	4.4	4.1	2.9	4.1		
LARS	74.7	53.5	65.3	64.5	58.6	13.2	6.3	4.0	1.0	4.8	6.3	27.7	5.3	4.5		
ALSEN	71.6	53.4	66.9	64.0	62.1	15.0	4.2	6.2	1.8	5.2	3.6	3.2	4.8	4.6		
GRANGER	70.0	53.2	65.6	62.9	61.2	14.4	3.4	8.2	5.2	4.7	4.1	5.4	4.0	6.4		
GRANITE	75.5	50.4	60.4	62.1	62.5	15.7	7.2	6.3	1.0	5.1	4.8	23.0	4.8	5.5		
OKLEE	69.6	55.6	59.5	61.6	61.8	15.0	3.2	6.6	3.7	5.6	3.3	5.4	5.6	5.5		
REEDER	69.2	46.5	67.7	61.1	59.9	14.3	4.4	7.2	2.7	6.0	4.6	14.9	6.6	5.6		
MEAN	73.9	54.5	65.8	64.7	61.0	14.4	4.6	6.3	2.4	4.7	4.3	11.1	4.0	5.1		
NO. OF LOCS.	5	5	5	15	15	15	17	8	4	9	20	13	7	21		

¹Not tested in 2004, data adjusted for averages

²Heading: 1= v. early (no days to heading taken); Height: 1 = short (4 rating=70 cm/s); Lodging: 1 = no lodging; Foliar disease: 1 = no disease; Leaf rust: 1 = resistant

³Locations: Argusville, ND; Valley City, ND; Maddock, ND; Park River, ND; Breckenridge, MN; Crookston, MN

TABLE OF PAIRED T-TEST RESULTS - MSU TRIALS

GRAIN YIELD (BU/AC)

REFERENCE MEAN: KELBY 48.5 (N= 19)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
CI 13596	FORTUNA	45.0	19	-3.5	-1.3	.216
PI574642	MCNEAL	48.4	19	-.0	.0	.993
PI592761	ERNEST	46.4	19	-2.1	-.8	.427
ND 695	REEDER	54.3	19	5.8	3.0	.008
BZ992588	CONAN	48.1	19	-.3	-.2	.860
BZ992322	HANK	53.0	19	4.5	2.4	.026
PI632252	OUTLOOK	52.6	19	4.1	1.7	.100
PI633974	CHOTEAU	52.3	19	3.9	2.0	.057
PI642366	VIDA	54.8	19	6.3	2.5	.021
AGRIPRO1	NORPRO	50.6	19	2.1	1.0	.335
AGRIPRO3	FREYR	51.1	19	2.6	1.3	.199
BZ996434	CORBIN	51.2	19	2.7	.9	.376

GRAIN TEST WEIGHT (LB/BU)

REFERENCE MEAN: KELBY 60.9 (N= 19)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
CI 13596	FORTUNA	59.6	19	-1.3	-4.7	.000
PI574642	MCNEAL	57.8	19	-3.1	-10.6	.000
PI592761	ERNEST	59.3	19	-1.5	-7.3	.000
ND 695	REEDER	59.9	19	-1.0	-3.2	.006
BZ992588	CONAN	59.3	19	-1.6	-7.4	.000
BZ992322	HANK	57.1	19	-3.7	-10.3	.000
PI632252	OUTLOOK	57.2	19	-3.6	-9.7	.000
PI633974	CHOTEAU	59.2	19	-1.6	-6.8	.000
PI642366	VIDA	58.5	19	-2.3	-8.5	.000
AGRIPRO1	NORPRO	58.2	19	-2.7	-5.7	.000
AGRIPRO3	FREYR	60.0	19	-.9	-3.4	.003
BZ996434	CORBIN	59.2	19	-1.6	-4.9	.000

HEADING DATE (JULIAN DAYS:170= June 19)

REFERENCE MEAN: KELBY 169.7 (N= 19)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
CI 13596	FORTUNA	171.8	19	2.0	5.2	.000
PI574642	MCNEAL	173.7	19	4.0	12.3	.000
PI592761	ERNEST	172.4	19	2.7	6.7	.000
ND 695	REEDER	171.7	19	2.0	6.2	.000
BZ992588	CONAN	171.8	19	2.0	8.4	.000
BZ992322	HANK	170.4	19	.7	3.0	.007
PI632252	OUTLOOK	174.7	19	4.9	15.5	.000
PI633974	CHOTEAU	172.1	19	2.4	8.4	.000
PI642366	VIDA	172.9	19	3.2	10.1	.000
AGRIPRO1	NORPRO	172.4	19	2.7	8.4	.000
AGRIPRO3	FREYR	171.4	19	1.6	5.5	.000
BZ996434	CORBIN	170.4	19	.7	2.5	.024

(CONT'D) TABLE OF PAIRED T-TEST RESULTS - MSU TRIALS

PLANY HEIGHT (INCHES)

REFERENCE MEAN: KELBY 28.6 (N= 19)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
CI 13596	FORTUNA	38.3	19	9.7	18.5	.000
PI574642	MCNEAL	32.6	19	4.1	9.0	.000
PI592761	ERNEST	37.7	19	9.1	17.4	.000
ND 695	REEDER	32.5	19	3.9	7.9	.000
BZ992588	CONAN	30.0	19	1.4	4.1	.000
BZ992322	HANK	30.3	19	1.7	5.2	.000
PI632252	OUTLOOK	32.4	19	3.8	9.1	.000
PI633974	CHOTEAU	30.8	19	2.2	9.0	.000
PI642366	VIDA	32.8	19	4.3	9.9	.000
AGRIPRO1	NORPRO	29.8	19	1.2	3.6	.002
AGRIPRO3	FREYR	33.4	19	4.8	17.0	.000
BZ996434	CORBIN	31.6	19	3.1	9.0	.000

GRAIN PROTEIN (%)

REFERENCE MEAN: KELBY 14.9 (N= 19)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
CI 13596	FORTUNA	14.3	19	-.6	-3.7	.002
PI574642	MCNEAL	14.5	19	-.4	-2.3	.030
PI592761	ERNEST	14.8	19	-.1	-.7	.477
ND 695	REEDER	14.6	19	-.3	-2.2	.045
BZ992588	CONAN	14.6	19	-.3	-2.0	.057
BZ992322	HANK	14.4	19	-.5	-2.0	.061
PI632252	OUTLOOK	14.1	19	-.8	-3.2	.005
PI633974	CHOTEAU	14.7	19	-.3	-1.6	.122
PI642366	VIDA	14.1	19	-.8	-3.7	.002
AGRIPRO1	NORPRO	14.5	19	-.5	-1.8	.088
AGRIPRO3	FREYR	14.1	19	-.9	-5.2	.000
BZ996434	CORBIN	14.5	19	-.4	-1.5	.164