Table 3: Three-year grain-yield (bu / a) summary (1996-98) for selected varieties grown in the Kansas IntraState Nursery average across central and western Kansas locations.

Central Kansas Locations

	1998	1997	1996	Ave
Betty	51	56	52	53
Heyne	55	64	46	55
Jagger	53	61	49	54
2137	55	61	59	58
Karl 92	53	53	52	53

Western Kansas Locations

	1998	1997	1996	Ave
Betty	65	55	44	55
Heyne	66	53	36	52
Jagger	72	56	33	54
2137	70	56	56	61

Table 4: Test weight (lbs / bu) patterns for selected varieties grown in the Kansas Variety Performance (VPT) and Kansas IntraState Nursery (KIN) in 1997 and 1998.

	VPT	KIN	Ave
Betty	59.0	59.0	59.0
Heyne	59.5	60.5	60.0
2137	59.0	59.0	59.0
Jagger	59.0	60.0	59.5
Karl 92	59.0	60.0	59.5

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Betty Hard White Wheat

Betty is a new, hard white winter wheat variety developed cooperatively by the Kansas Agricultural Experiment Station and the Agriculture Research Service, United States Department of Agriculture. Betty is named after the late Betty Goertzen. Betty Goertzen, along with her husband Kenneth have developed high-quality winter wheat for the southern plains for more than 30 years. A parent in the pedigree of Betty is 'Plainsman V' developed by the Goertzens. Foundation seed of Betty was distributed to registered seed growers in the fall of 1998. Foundation seed[1] and registered seed will be available for fall planting in 1999.

Origin & Development. Betty was selected from an off-type plant in the breeders seed increase field of 'Jagger' the pedigree is believed to be KS82W418 / Stephens. The original plants were taller, later in maturity with white chaff color compared to Jagger. Several off-type plants were discovered to have hard, white seed. Betty was increased in K-State greenhouses in 1992 and tested in K-State yield trials from 1993 to present. It was tested in the Kansas IntraState Nursery (1996-98), the Southern Regional Performance nursery in 1996-97 and in the Kansas Variety Performance Test from 1997 to present.

[1]In 1999 Foundation seed will only be distributed to category 1 & 2 growers within the Kansas Crop Improvement Association.

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Agronomic Characteristics. Betty is an awned, white chaffed tall semidwarf hard white wheat. Betty has a prostrate growth habit in the fall and is relatively slow growing in the spring, especially compared to Jagger. We consider it to have poor growing characteristics for fall and winter grazing. We consider Betty to have average winterhardiness, similar to Newton. Compared to Jagger, Betty is 4 to 5 inches taller and is 4 days later in heading and maturity. Betty has only average straw strength and should not be grown where lodging is a production problem.

Betty has good tolerance to aluminum toxicity caused by low soil pH and has a coleoptile length similar to Jagger, which is longer than most semidwarfs but shorter that standard-height varieties.

Resistance to Pests. Betty is resistant to wheat soil borne mosaic virus, spindle streak mosaic virus, and has good tolerance to powdery mildew, speckled leaf blotch, glume blotch, and tan spot. It is moderately susceptible to stem rust, and leaf rust. Betty is susceptible to wheat streak mosaic virus and Hessian fly.

Area of Adaptation. Because the level of rust resistance is not sufficient to protect Betty in central Kansas we recommend Betty be grown in western Kansas where losses from leaf rust are less. Betty should not be grown in eastern Kansas because it does not have good tolerance to pre-harvest sprouting.

Milling and baking properties. Betty has good milling properties and excellent baking properties. Betty has high protein concentration with medium strong mixing time and tolerance rating. Its baking properties have been judged as improved over both Karl 92 and Jagger by the Wheat Quality Council in 1997 and 1998. In preliminary tests, Betty does not appear to have acceptable noodle quality and should be considered primarily as a bread wheat variety.

Performance Data. Betty was tested in both the Kansas Intrastate Nursery (KIN) and the Kansas Variety Performance Test (VPT) as KS84063-2W. Betty has been tested 3 years in the KIN (Table 3) and two years in the VPT (Table 2). In central and western Kansas tests, Betty has yielded as much grain as Jagger, but less than 2137. Betty has comparable test weight patterns (Table 4) to the top hard red wheat varieties grown in Kansas. Because Betty does not have good resistance to leaf rust, it is being recommended for production in western Kansas where leaf rust is not a major production risk.

Table 2: Average yields (bu / a) for selected varieties in the 1997-98 Kansas VPT

	1997	1998	Ave.
Betty	67.7	60.7	62.3
Heyne	—	65.7	—
2137	69.5	68.5	69.0
Jagger	65.5	69.5	67.5
Karl 92	58.0	65.5	61.7

Table 1: Agronomic & pest resistance characteristics for Betty and other currently popular varieties.

	Reaction to pests											Relative agronomic characteristics					
	SBM[2]	SSM[3]	WSM[4]	BYD[5]	Leaf rust	Stem rust	Speckled leaf blotch	Glume blotch	Tan spot	Powdery mildew	Hessian fly	Maturity	Test weight	Winter hardiness	Coleoptile length	Lodging resistance	Shattering resistance
Betty	1[1]	2	6	6	7	6	3	5	3	3	9	3	4	5	5	3	5
Heyne	1	2	3	7	3	2	4	5	5	4	9	3	4	6	4	3	4
Arlin	5	4	7	8	7	2	7	7	7	7	8						
Oro Blanco	1	4	8	7	8	7	7	7	5	7	8						
Karl 92	1	3	9	8	9	6	5	3	3	3	9	1	3	3	5	3	4
Jagger	1	2	4	5	6	3	3	5	3	7	9	1	4	6	4	2	6
2137	1	4	3	5	6	6	3	7	4	4	2	3	4	5	5	2	6
Ike	1	5	9	6	9	3	8	6	7	5	1						

[1] Ratings based on a 1-9 scale where 1 = resistant and 9 = susceptible. Except for Matutity where 0 means earliest and 9 latest.

[2]SBM–Soilborne mosaic

[3]SSM–Spindle streak mosaic

[4]WSM–Wheat streak mosaic

[5]BYD–Barley yellow dwarf