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Matterhorn, A Great New Northern Bean for Michigan
Michigan State University Extension Service
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Issued September 1998
2 pages

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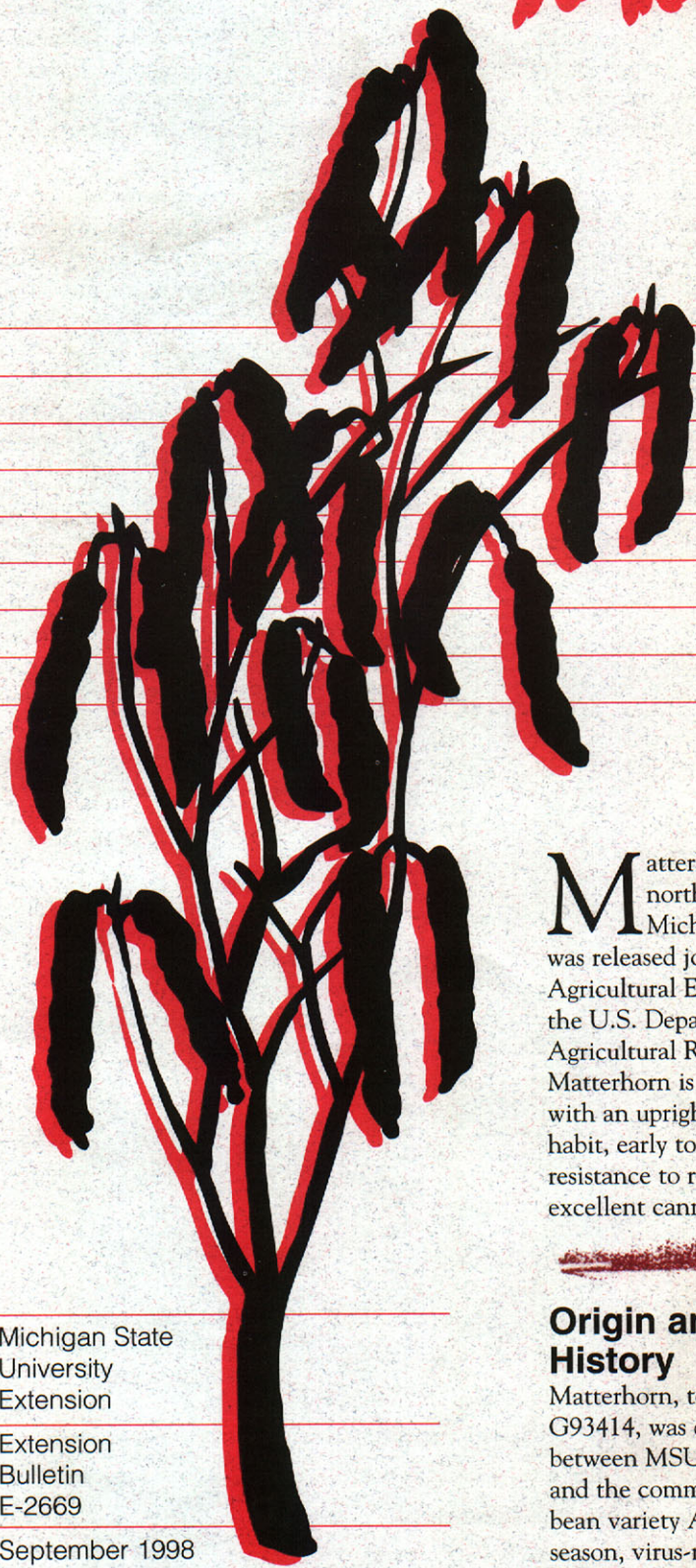
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**NEW from
MSU**

Matterhorn

A NEW GREAT
NORTHERN BEAN

for Michigan



- Upright, short vine growth habit similar to Alpine.
- Taller and more lodging resistant than Starlight.
- Three days earlier in maturity than Alpine.
- Outyielded Alpine by 5% over 23 locations in five years.
- Resistant to mosaic virus, rust and root rot.
- Improved dry seed quality compared with Alpine.

Matterhorn is a new great northern bean variety from Michigan State University. It was released jointly by the Michigan Agricultural Experiment Station and the U.S. Department of Agriculture Agricultural Research Service. Matterhorn is a high-yielding variety with an upright, short vine growth habit, early to midseason maturity, resistance to rust and mosaic virus, and excellent canning quality.

Origin and Breeding History

Matterhorn, tested as MSU No. G93414, was derived from a cross between MSU breeding line X90012 and the commercial great northern bean variety Alpine. X90012 is a mid-season, virus-resistant great northern

bean breeding line; Alpine is an indeterminate, short vine variety with mid-season maturity possessing marginal seed and canning quality but lacking mosaic virus resistance. The cross was designed to incorporate virus resistance into the popular Alpine great northern bean variety. The cross was made in 1991 and advanced to the F6 generation prior to entry in yield trials. A virus-resistant breeding line was entered into yield trials in 1993 with the code number G93414.

Yield Performance

Matterhorn was tested extensively for yield and agronomic traits for five seasons (1993-97) over 26 locations (Table 1). It averaged 26 cwt/acre and outyielded all commercial great northern bean varieties by 5 percent. In the absence of disease such as blight and

Michigan State
University
Extension

Extension
Bulletin
E-2669

September 1998

white mold, Matterhorn has produced yields in excess of 39 cwt/acre and has out-yielded the Alpine parent by 5 percent (1.3 cwt/acre) over 23 locations.

Agronomic Features

Matterhorn exhibits an erect, short vine growth habit, averaging 18 inches in height with the pods positioned high in the plant canopy. It has excellent resistance to lodging compared with Alpine, with a score of 1.5 vs. 2 on a 1 to 5 scale where 1 is the most erect.

Matterhorn is an early to midseason variety, maturing 90 days after planting with a range in maturity from 89 to 92 days, depending on season and location. It matures three days earlier than Alpine.

Matterhorn has demonstrated uniform maturity and excellent dry-down across a broad range of environments and fits a niche for an erect, high-yielding, midseason great northern bean variety in Michigan.

Disease Resistance

Matterhorn carries the single dominant hypersensitive I gene resistance to bean common mosaic virus (BCMV) but is sensitive to the temperature-insensitive necrosis-inducing strains of BCMV that cause the black root reaction. Matterhorn carries the *Ur-3* rust resistance gene, which conditions resistance to all local rust races prevalent in Michigan. Matterhorn has shown tolerance to white mold equivalent to that of Alpine, so chemical control is recommended when

weather or growing conditions favor disease development.

Quality Characteristics

Matterhorn has a round great northern bean seed averaging 36 g per 100 seeds and ranging from 34 to 39 g per 100 seeds. The seed is equivalent in size, shape and color to that of Alpine but has not demonstrated the brown pod staining observed in Alpine in certain years and locations. Matterhorn has been rated by a team of panelists as acceptable in canning quality. Matterhorn scored 2.8 and Alpine scored 2.4 on a 5-point scale where 3 is average. Data on cooked color, texture hydration and drained weight ratios showed no differences between Matterhorn and other acceptable commercial great northern bean varieties.

Table 1. Matterhorn great northern bean — comparison of agronomic, disease, performance and canning characteristics.

Traits	Matterhorn	Alpine	Starlight
Agronomic traits			
Days to flower	42	43	41
Days to mature	90	93	95
Height (cm)	45	50	50
Lodging score (1-5)	1.5	2.0	3.0
Selection index (1-9)	6.0	5.0	4.0
Seed size (g/100 seeds)	36	35	42
Yield (percent)	100	95	96
Disease resistance			
BCMV	R	S	S
Anthracoise	S	S	S
Rust race 53	R	R	R
Common blight	S	S	T
White mold	S	S	S
Canning quality			
Color L-scale	48	46	46
Texture (kg/100 g)	88	86	90
Washed drained ratio	1.4	1.6	1.6
Hydration ratio	1.7	1.6	1.5
Organoleptic rating (1-5)	2.8	2.4	2.2

Lodging: 1 = erect, 5 = prostrate

Selection index: 1 = worst, 5 = average, 9 = best, based on adaption

Diseases: R = resistant T + tolerant, S = susceptible

White mold: 1 = resistant, 5 = susceptible

Organoleptic rating: 1 = worst, 5 = best on general cooked appearance

Release and Research Assessment

Matterhorn is released as a public, non-exclusive variety by the Michigan Agricultural Experiment Station and the Agricultural Research Service. A research fee will be assessed on each unit (hundred-weight) of either foundation or certified seed sold.

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