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**Chin et al.**

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(54) **MALE ASPARAGUS HYBRID PLANT ‘NJ977’**

(50) Latin Name: *Asparagus officinalis*  
Varietal Denomination: **NJ977**

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(57) **ABSTRACT**

A male *asparagus* (*Asparagus officinalis*) hybrid denoted  
‘NJ977’. The plant has many desirable traits including vig-  
orous plant growth, high yield, good resistance to rust (*Puc-  
cinia asparagi*) and good field tolerance to *asparagus* root  
and crown rot caused by *Fusarium oxysporum* and *Fusarium  
moniliforme*. These desirable traits have been shown to be  
transmissible to its progenies. The invention relates to plants  
and plant parts of ‘NJ977’ plant. The invention further relates  
to hybrid *asparagus* seeds and plants produced by crossing  
the male *asparagus* ‘NJ977’ plant with any female *asparagus*  
plant.

**3 Drawing Sheets**

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Latin name of the genus and species: The Latin name is  
*Asparagus officinalis*.

Variety denomination: The varietal denomination is  
‘NJ977’.

**BACKGROUND OF THE INVENTION**

For an *asparagus* plant to be commercially viable and  
profitable, good yield is essential. It is well known that  
*asparagus* is susceptible to a number of diseases. Among the  
most devastating are rust caused by *Puccinia asparagi* d.c.,  
(Kahn et al. 1952) and crown rot caused by *Fusarium  
oxysporum*, root rot caused by *Fusarium proliferatum* (syn =  
*F. moniliforme*) (Johnston et al., 1979; Guerrero et al., 1999).  
The presence of these diseases adversely impacts the yields  
and therefore the profitability of the product. Accordingly,  
resistance to these diseases is important to commercial suc-  
cess.

This invention herein described relates to a new and dis-  
tinct *asparagus* hybrid, which was developed through cross-  
ing an elite female *asparagus* plant RF50 (Unpatented) 20  
selected from an old *asparagus* field with a homozygous male  
plant 22-34 (U.S. Plant Pat. 18387 P3). The performance of  
this hybrid has been evaluated for over 9 years in fields  
located near New Brunswick and Bridgeton, N.J. It is distin-  
guished particularly as to its desirable traits of vigorous 25  
growth habit, higher yield, good field resistance to rust (*Puc-  
cinia asparagi*) and good field tolerance to root and crown rot  
(*Fusarium oxysporum*) and (*Fusarium moniliforme*).

**BRIEF SUMMARY OF THE DRAWINGS**

The color notations have been selected from observations  
as compared with the Munsell Limit Color Cascade. Colors  
are approximate as color depends on density of growth, hor-  
ticultural practices, such as light level, fertilization rate, print

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resolution and other conditions and, therefore, the color char-  
acteristics of this new variety should be determined with  
reference to the observations described herein, rather than  
from this illustration alone. Furthermore, the coloration is not  
considered to be a distinguishing feature of this new variety.

FIG. 1 shows in color a typical ‘NJ977’ plant of the new  
variety as it appears in a field under normal conditions.

FIG. 2 shows in color a typical ‘NJ977’ flower as it appears  
in a field under normal conditions.

FIG. 3 shows in color a cut-open view of a typical ‘NJ977’  
flower.

**DETAILED DESCRIPTION OF THE INVENTION**

An extensive program of *asparagus* plant development,  
carried out in in trial fields in the vicinity of New Brunswick,  
and Bridgeton, N.J., to compare a large number of new  
hybrids and many of the commercially available elite hybrids  
including Jersey Giant, Jersey Knight has resulted in the  
identification of ‘NJ977’ as an *asparagus* hybrid with many  
desirable traits.

*Asparagus* (*Asparagus officinalis* Linn.) is a dioecious spe-  
cies with individual plants being either male or female in sex.  
In addition to differences in morphology, ‘cultivars’ may also  
differ in local adaptation, yield, disease resistance, and long-  
evity. Desirable cultivars are developed by crossing of elite  
male and female parents. Both male and female parents trans-  
mit traits such as disease resistance, yield, and spear morphol-  
ogy to their progenies. This invention relates to new and  
distinct *asparagus* hybrid designated as ‘NJ977’. Disease  
resistance of the kind found in the ‘NJ977’ plant will allow  
growers to plant the hybrid where rust, *Fusarium*, and stem  
blight now prevent profitable culture of the susceptible vari-  
eties.

*Asparagus* can be clonally propagated by crown division.  
Crown is the structure where shoots and roots join together.



Division or separation at the crown area will allow the propagation of *asparagus*. When propagated by crown division, successive generations of ‘NJ977’ have similar morphological appearance and possess the same desirable characteristics as the original ‘NJ977’ plant.

*Asparagus* can also be clonally propagated by tissue culture. An *asparagus* shoot tip or meristem when cultured on appropriate nutrient medium and appropriate conditions can grow, develop, and regenerate into a plant. Also, *asparagus* plant parts such as a spear segment when cultured on appropriate nutrient medium and appropriate conditions can grow, develop, and regenerate into an *asparagus* plant. Such plant can be efficiently divided and multiplied in appropriate nutrient medium. Successive generations of a ‘NJ977’ plant propagated by such tissue culture has been found to retain the same desirable characteristics as the original ‘NJ977’ plant.

When crossed with different male plants, *asparagus* ‘NJ977’ can transmit many of its desirable traits including vigorous growth habit, higher yield, desirable spear morphology, good levels of resistance to rust (*Puccinia asparagi*) and field tolerance to root and crown rot (*Fusarium oxysporum*) and (*Fusarium moniliforme*) to its progenies.

The following table shows that in yield and disease resistance the progenies of ‘NJ977’ compare very favorably to Jersey Giant (Plant patent #6624) and Jersey Knight, (Plant patent #5551) two of most popular *asparagus* varieties in the world today.

TABLE 1

|                           | Jersey Giant | Jersey Knight | ‘NJ977’  |
|---------------------------|--------------|---------------|----------|
| Yield, LB/Acre            | 4737         | 4445          | 4619     |
| Rust resistance*          | 5.9          | 7             | 7.5      |
| <i>Fusarium</i> tolerance | Tolerant     | Tolerant      | Tolerant |

Data was taken from a trial conducted at an agriculture research center located in Bridgeton, N.J. The trial was planted in 1999. The above data represents the average of the data collected from 3 to 7 year old plants between 2002 and 2006. Rust resistance\*: 0: no resistance, 10: complete resistance

BOTANICAL DESCRIPTION

Data that distinguishes *asparagus* plant ‘NJ977’ from other *asparagus* varieties that have been internally developed, as well as *asparagus* plants that are known and available commercially in the markets have been accumulated and are presented below. The data (averages from 3 clones) is assembled in the following table:

TABLE 2

| <i>ASPARAGUS</i> PLANT: ‘NJ977’                    |  |
|----------------------------------------------------|--|
| Stalk data:                                        |  |
| Number of nodes below first branch: 31.            |  |
| Distance from crown to first branch: 78.95 cm.     |  |
| Number of branches: 50.3.                          |  |
| Distance between first and last branch: 147.96 cm. |  |

TABLE 2-continued

| <i>ASPARAGUS</i> PLANT: ‘NJ977’ |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5                               | Number of cladophyll nodes beyond last branch: 34.67.<br>Length beyond last branch: 20.74 cm.<br>Length of longest headed stalk: 241.65 cm.<br>Largest stalk diameter: 20.33 mm.<br>Mean diameter of three largest stalks: 17.91 mm.<br>Number of stalks: 32.                                                                                                                                                                     |
| 10                              | Mature stalks color, bloom removed: Color 22-10.<br>Flower data:                                                                                                                                                                                                                                                                                                                                                                  |
|                                 | All vegetative and reproduction parts glabrous and appearing non-glandular.<br>Number of flowers per cluster: observed 1-4, typically 2.                                                                                                                                                                                                                                                                                          |
| 15                              | Tepals Observed: 6 in 2 whorls, forming campanulate corolla at anthesis, syntepalous for lowest 1 mm, free above, 5-6.5 mm long, 1.9-2.5 mm wide, dorsally slightly thickened,<br>apex outer surface margin color 24-2,<br>apex outer surface middle (vertical) color 23-9,<br>apex inner surface margin color 23-3,<br>apex inner surface middle (vertical) color 21-7,                                                          |
| 20                              | base outer surface color 29-10,<br>base outer surface middle color 29-10,<br>base inner surface color 23-8,<br>base inner surface middle color 23-8,<br>Typical: straight in bud, recurved apically at anthesis, margin entire, strongly membranous; apex bluntly acute to obtuse, often twisted or                                                                                                                               |
| 25                              | crinkled after anthesis due to drying out of membranous area.<br>Flower width at midpoint: 2.6 mm.<br>Cladophyll data:                                                                                                                                                                                                                                                                                                            |
|                                 | Average number per node: 5.1.<br>Shape: linear, filiform, needle-like; apex acute; base cunneate, margin-entire, color-21-11 throughout.                                                                                                                                                                                                                                                                                          |
| 30                              | Leaf data:                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 | Observed: Main stem leaves scale-like, triangular, at 15 cm to 30 cm from soil level leaves average 13 mm long, 12 mm wide at base, membranous: apex acuminate; base truncate; margin hyaline; Color-28-10 abaxial; 27-10                                                                                                                                                                                                         |
| 35                              | adaxial.<br>Terminal branch leaves scale-like, triangular, average 3 mm long, 1.5 mm wide at base, membranous; apex acuminate; base truncate; margin erose, hyaline. Color: 26-9 abaxial; 26-8 adaxial.<br>Typical: Bracts subtending inflorescence branches triangular, scale-like, membranous, especially towards margins, not keeled or winged, with small hanging appendix from dorsal midvein close to stem; margins entire; |
| 40                              | apex acute.<br>Reproductive Organs                                                                                                                                                                                                                                                                                                                                                                                                |
|                                 | Stamens- 6 in number, each stamen fused to middle of inner side of the base a tepal; length: 4.5-5.5 mm.<br>Filaments-filiform, slightly widened towards base, 3-3.6 mm long,                                                                                                                                                                                                                                                     |
| 45                              | 0.2-0.35 mm wide, about 0.4-0.5 mm wide at base.<br>Anthers elliptic, longitudinally dehiscent, introse to slightly latorose, base sagittate to widely triangular, basifix about 1.8 mm long and about 0.65 mm wide at base.<br>Rudimentary Gynoecium- rudimentary, tricarpellate, with barely visible sutures along ovary.                                                                                                       |
| 50                              | Rudimentary Ovary sessile, elliptic to obovate, 1.8-2.4 mm long, 1.3-1.6 mm wide at anthesis, color 21-11; style 1, rudimentary, barely noticeable, color 24-6; Stigma absent.                                                                                                                                                                                                                                                    |

What is claimed is:

55 1. A new and distinct male *asparagus* hybrid plant ‘NJ977’ as herein shown and described.

\* \* \* \* \*





FIG. 1.





FIG. 2





FIG. 3