



US00PP30957P3

(12) **United States Plant Patent**
Lindeman

(10) **Patent No.:** **US PP30,957 P3**

(45) **Date of Patent:** **Oct. 22, 2019**

(54) **PEPPER PLANT NAMED ‘YY5’**

(50) Latin Name: *Capsicum annuum*
Varietal Denomination: **YY5**

(71) Applicant: **Enza Zaden Beheer B.V.**, Enkhuizen (NL)

(72) Inventor: **Wouter Lindeman**, Woerden (NL)

(73) Assignee: **Enza Zaden Beheer B.V.**, Enkhuizen (NL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/732,241**

(22) Filed: **Oct. 11, 2017**

(65) **Prior Publication Data**
US 2019/0110386 P1 Apr. 11, 2019

(51) **Int. Cl.**
A01H 5/08 (2018.01)
A01H 6/82 (2018.01)

(52) **U.S. Cl.**
USPC **Plt./258**
CPC *A01H 6/822* (2018.05)

(58) **Field of Classification Search**

USPC Plt./258, 263.1
CPC A01H 6/822; A01H 5/08
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

PP28,123 P3 6/2017 Van et al.
2015/0128320 P1 5/2015 Lindeman et al.
2017/0223915 A1 8/2017 Lindeman et al.
2018/0035590 P1 2/2018 Lindeman et al.
2018/0042153 P1 2/2018 Lindeman

OTHER PUBLICATIONS

Wouter et al., “Pepper plant named E20B3752”, Unpublished U.S. Appl. No. 15/731,725 filed Jul. 24, 2017.
Wouter et al., “Pepper plant named ‘RY5’”, Unpublished U.S. Appl. No. 15/732,242, filed Oct. 11, 2017.

Primary Examiner — Keith O. Robinson
(74) *Attorney, Agent, or Firm* — Morrison & Foerster LLP

(57) **ABSTRACT**

A new and distinctive variety of pepper (*Capsicum annuum*) plant named ‘YY5’ that is distinguished by its yellow colored and square shaped fruit.

2 Drawing Sheets

1

Latin name:
Botanical classification: *Capsicum annuum*.
Varietal denomination: The varietal denomination of the claimed pepper variety is ‘YY5’.

BACKGROUND OF THE INVENTION

The bell pepper (*Capsicum annuum*) originated in Mexico and the neighboring areas of Central America. Today, pepper plants can be found growing wild in tropical areas around the world. Soon after Columbus’s discovery of this plant, it was grown worldwide and used as a spice and a medicine. Pepper is grown as a crop in many countries; hot peppers are generally grown in Latin America and China, while the United States prefers bell peppers. Peppers are used for both fresh consumption, and for processing into powders, sauces, and salsas. Many of the new cultivars grown today can be traced back to the early plants.

The genus *Capsicum* and species *annuum* includes most of the peppers grown in the United States. These can be further grouped into two broad categories: chile peppers which are pungent (hot) and sweet peppers which are non-pungent (mild). The United States produces four percent of the world’s *capsicum* peppers (chile peppers and sweet peppers), ranking sixth behind China, Mexico, Turkey, Spain and Nigeria. Bell peppers are the most common sweet pepper and are found in virtually every retail produce department. While peppers are grown commercially in most states, the U.S. pepper industry is largely concentrated in

2

California and Florida, which together accounted for 78% of output in 2000. New Jersey, Georgia, and North Carolina round out the top five producing states (Economic Research Service, USDA, Vegetables and Melons Outlook/VGS-288/Dec. 14, 2001).

Bell peppers are eaten raw, cooked, immature and mature. Often nutritional content is altered by the changes in the way they are consumed. Bell peppers are an excellent source of Vitamin C, Vitamin A, and Calcium. Mature red peppers have more of these qualities than the immature green peppers.

Peppers grown in temperate regions are herbaceous annuals, but are herbaceous perennials in regions where temperatures do not drop below freezing. Pepper plants’ growth habit may be prostrate, compact, or erect, but it is determinate in that after it produces nine to eleven leaves a single stem terminates in flowers. These flowers then become the edible fleshy fruit for which these plants are grown. For fruit to set, the ovaries need to be fertilized. Auxin is then produced by the seeds, which determine fruit cell elongation. The number of seeds fertilized determines the size and shape of the fruit. The seeds develop on the interior and attach to the veins, and fully developed seed is kidney shaped. Pepper fruits are non-climacteric, which means they do not produce ethylene and need to stay on the vine to continue the ripening process. A deep taproot will form if the plant root system is uninjured during transplanting. The spindle root will develop fibrous secondary root systems spreading laterally and downward. On the soil surface the

stem will produce adventitious roots, but not as easily as tomatoes. The leaves of the pepper plant arise singly and are simple, entire, and asymmetrical. Typical of all solanaceous plants, the leaves are arranged alternately on the stem. They are shiny and glabrous and vary in shape from broadly ovate to ovate lanceolate. The flowers develop singly or in twos or threes continuously as the upper structure of the plant proliferates. The corolla is white and five lobed while the anthers are bluish or yellowish in color. The flowers have an open anther formation and will indefinitely self-pollinate. They are also pollinated by insects, which increases the chances of cross-pollination. Unlike tomatoes, whose pollen becomes nonviable in high temperatures, the pepper flowers' pollen is not extremely heat sensitive and it remains viable up to 100° Fahrenheit, allowing fruit to be produced fruit throughout the growing season.

The fruit of a pepper plant is classified as a berry with colors including green, yellow, red, purple, black, brown, white, and orange. Pepper fruit developmental stages are characterized by their colors. Green is the color of an immature fruit, yet green peppers are commonly eaten, and as the fruit matures it changes color. In most commercial cultivars, the color changes are from green to red, green to yellow, or green to orange. In contrast to other pepper varieties, fruits of the purple and white varieties already have these colors as they develop, and therefore do not have a green stage.

Pepper is an important and valuable field crop. Thus, there is a continued need for new pepper varieties that are appealing to consumers and agronomically sound.

In order to meet these needs, the present invention is directed to a new pepper (*Capsicum annuum*) plant variety named 'YY5'. This new pepper plant variety is distinguished by its dark yellow color and square shape.

'YY5' was originally identified as a naturally occurring mutant in screening trials of plants of pepper variety 'RY5' (U.S. Plant patent application Ser. No. 15/732,242), conducted in Ontario, Canada and in Michigan, United States in 2016. The mutant 'YY5' was selected based on its yellow color and propagated vegetatively (i.e., asexually).

Further screening trials of naturally occurring mutants of pepper variety 'RY5' conducted in Ontario, Canada and Michigan, United States identified further 'YY5' peppers. It was subsequently found that when 'RY5', a mutant variant of 'Healey' (not patented) that produces vertical red and yellow striped colored peppers, is propagated vegetatively, a low percentage of the resulting offspring plants are 'YY5'.

All 'YY5' peppers exhibit the yellow color and vegetative propagation via stem cuttings results in offspring peppers that also exhibit the yellow color. Genetically, all 'YY5' peppers appear to have the same mutation. Without wishing to be bound by theory, it is believed that it is a genetic sensitivity in 'Healey' that gives rise to the 'YY5' mutant exhibiting the yellow color.

The pepper plant variety 'YY5' has been asexually reproduced by stem cuttings from farms in Ontario, Canada and Michigan, United States. The distinctive characteristics of pepper plant variety 'YY5' have been found to be stable and are transmitted to new pepper plants when asexually propagated.

In addition to the exemplary aspects and embodiments described above, further aspects and embodiments will become apparent by reference by study of the following descriptions.

SUMMARY OF THE INVENTION

The new pepper plant variety 'YY5' was selected for the solid yellow color and square shape of its fruit. Pepper plant

variety 'YY5' is distinguished from antecedent pepper plant variety 'Healey', in that the fruit of 'YY5' is solid yellow in color, while the fruit of 'Healey' is solid red. In addition, pepper plant variety 'YY5' is distinguished from parental pepper plant variety 'RY5' in that the fruit of 'YY5' is solid yellow in color, while the fruit of 'RY5' has vertical red and yellow stripes. Further, pepper plant variety 'YY5' is distinguished from pepper plant variety 'Bentley' (not patented), which also produces yellow, square-shaped fruit, in that the fruit of 'YY5' is lighter yellow in color and has a shorter square shape, while the fruit of 'Bentley' is darker yellow in color and has a square shape.

BRIEF DESCRIPTION OF THE DRAWINGS

This new pepper plant is illustrated by the accompanying photographs, which show fruit of the plant. The colors shown are as true as can be reasonably obtained by conventional photographic procedures. The photographs are from plants +/-4 months after rooting.

FIGS. 1A and 1B show several yellow fruit of hybrid pepper plant 'YY5', as well as unripe fruit. FIG. 1A shows a side view of ripe yellow fruits of hybrid pepper plant 'YY5', as well as unripe green fruits. FIG. 1B shows a side/bottom view of yellow fruits of hybrid pepper plant 'YY5'.

DETAILED DESCRIPTION OF THE INVENTION

The following detailed descriptions set forth the distinctive characteristics of plants vegetatively propagated from the original mutant 'YY5' pepper plant. The data which define these characteristics, in particular the numerical values, are based on observations taken in a high-tech greenhouse in Enkhuizen, Netherlands in Autumn 2018. Numerical values, color designations and descriptions, and other phenotypical descriptions may deviate from the stated values and descriptions depending upon variation in environmental, seasonal, climatic, and cultural conditions. The following characteristics were observed on plants +/-4 months after rooting. The numerical values provided are representative values measured from these plants. 'YY5' has not been observed under all possible environmental conditions. Color references are primarily to The R.H.S. Colour Chart of The Royal Horticultural Society of London (R.H.S.) (2007 edition). Descriptive terminology follows the *Plant Identification Terminology, An Illustrated Glossary, 2nd edition* by James G. Harris and Melinda Woolf Harris, unless where otherwise defined.

Hybrid pepper plant variety 'YY5' has the following morphologic and other characteristics:

General:

Usage.—Fresh market.

Type of culture.—Covered cultivation (e.g., in greenhouse).

Plant:

Stem diameter.—1 cm.

Shortened internode.—Absent.

Internode length.—6 cm.

Anthocyanin coloration of nodes.—Present.

Intensity of anthocyanin coloration of nodes on stem.—Medium to strong.

Hairiness of nodes on stem.—Medium.

Petiole length.—6 cm.

Petiole diameter.—0.5 cm.

Color of petiole.—RHS 136A.

Leaf shape.—Ovate.

Leaf shape of apex.—Pointed.

Leaf shape of base.—Rounded.
Leaf shape of margin.—Slightly wrinkled.
Undulation of leaf margin.—Weak.
Leaf blistering.—Medium to strong.
Leaf profile in cross section.—Moderately convex. 5
Leaf venation pattern.—Pinnate.
Leaf vein color.—RHS 136A and RHS 137C.
Leaf glossiness.—Medium to strong.
Leaf texture (upper and lower surfaces).—Smooth, slightly wrinkled. 10
Leaf length of blade.—20 cm.
Leaf width of blade.—13 cm.
Intensity of green color of leaf blade.—Medium to dark.
Color of upper leaf surface.—RHS 136A.
Color of lower leaf surface.—RHS 137C.
Flower: 15
Flower bud length.—1 cm.
Flower bud diameter.—0.5 cm.
Flower bud shape.—Balloon.
Color of flower bud.—RHS N999D.
Flower diameter.—3 cm.
Flower depth.—1 cm.
Average number of petals per flower.—6.
Petal color (upper and lower surfaces).—RHS N999D.
Petal length.—1.5 cm.
Petal width.—0.5 cm.
Petal shape of apex.—Pointed.
Petal margin.—Smooth.
Petal texture (upper and lower surfaces).—Smooth.
Pistil length.—0.5 cm.
Stigma size.—0.1 cm.
Stigma shape.—Rounded. 30
Color of stigma.—RHS 4A.
Color of style.—RHS N999D.
Color of ovary.—RHS 149A.
Anther size.—0.3 cm×0.1 cm.
Anther shape.—Linear.
Anthocyanin coloration in anther.—Present.
Color of anther.—RHS 96A and RHS 2C.
Amount of pollen.—Abundant.
Time of beginning of flowering.—Cuttings are taken from the generative part of the plants, so flowers are present from the beginning; plant flowers at trans-plant stage. 40
Fruit:
Color before maturity.—Green (RHS 137C).
Intensity of color before maturity.—Medium.
Anthocyanin coloration before maturity.—Absent. 45
Attitude.—Drooping.
Shape in longitudinal section.—Square.
Shape in cross section (at level of placenta).—Angular to circular.
Situation of pericarp at basal part.—Absent or very weak. 50
Situation of pericarp excluding basal part.—Absent or very weak.
Color at maturity.—Yellow (RHS 14A).
Time of fruit maturity.—Seven weeks after flowering. 55
Number of locules.—Equally three and four.
Capsaicin in placenta.—Absent.
Fruit length.—9.5 cm.
Fruit width.—8.5 cm.
Ratio of length to diameter.—1.12.
Weight of fruit.—180 to 220 grams.
Texture of surface of fruit.—Smooth or very slightly wrinkled. 60
Glossiness of fruit.—Medium.
Stalk attitude.—Semi-drooping.

Stalk cavity.—Present.
Depth of stalk cavity.—0.7 cm.
Stalk length.—6 cm.
Stalk thickness.—1 cm.
Color of stalk.—RHS 139C.
Calyx aspect.—Non-enveloping.
Shape of apex of fruit.—Moderately depressed.
Depth of interlocular grooves.—0.1 to 0.5 cm.
Thickness of fruit flesh.—0.8 cm.
Seed length.—0.4 cm.
Seed width.—0.4 cm.
Color of seed.—RHS 158A.
Average number of seed per fruit.—150 to 200.
Fruit yield.—20 to 25 kg/m² when grown in a heated greenhouse.
Disease/pest resistance:
Tobamovirus (tomato mosaic virus, tobacco mosaic virus, tobacco mild green mosaic virus, and pepper mild mottle virus) pathotype P₀.—Resistant.
Tobamovirus (tomato mosaic virus, tobacco mosaic virus, tobacco mild green mosaic virus, and pepper mild mottle virus) pathotype P₁₋₂₋₃.—Resistant. 20
Tobamovirus (tomato mosaic virus, tobacco mosaic virus, tobacco mild green mosaic virus, and pepper mild mottle virus) pathotype P₁₋₂₋₃.—Susceptible.
Tobamovirus (tomato mosaic virus, tobacco mosaic virus, tobacco mild green mosaic virus, and pepper mild mottle virus) pathotype P₁.—Resistant. 25
Potato virus y pathotype P₀.—Susceptible.

COMPARISON WITH PARENTAL AND RELATED KNOWN VARIETIES

Table 1 below compares the characteristic of the mutant pepper plant variety 'YY5' with the antecedent and parental varieties, 'Healey' and 'RY5'. Column 1 lists the characteristic, column 2 shows the characteristics for mutant pepper plant variety 'YY5', column 3 shows the characteristics for antecedent pepper variety 'Healey', and column 4 shows the characteristics for parental pepper variety 'RY5'. 35

TABLE 1

| Characteristic | 'YY5' | 'Healey' | 'RY5' |
|--------------------|------------------|----------|--|
| Mature fruit color | Yellow (RHS 14A) | Red | Red (RHS 45A) and yellow (RHS 23A) striped |

Table 2 below compares selected characteristics of the mutant pepper plant variety 'YY5' with the pepper variety 'Bentley', which also produces yellow, square-shaped fruit. Column 1 lists the characteristic, column 2 shows the characteristics for mutant pepper plant variety 'YY5', and column 3 shows the characteristics for the pepper variety 'Bentley'. 50

TABLE 2

| Characteristic | 'YY5' | 'Bentley' |
|--------------------|----------------|---------------|
| Mature fruit color | Lighter yellow | Darker yellow |
| Fruit shape | Shorter square | Square |

What is claimed:

1. A new and distinct pepper plant variety named 'YY5', as herein shown and described.

* * * * *

FIG. 1A



FIG. 1B

