U.S. Department of Agriculture
Agricultural Marketing Service, Science & Technology Program
Plant Variety Protection Office

US Plant Variety Protection Report
Potato Variety 'Columbine Gold' PV Number: 202100351

Owner / Applicant / Organization

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Experimental Name: Columbine Gold

Variety Name:

Crop Kind: Potato

Filing Date : 05/24/2021

Application Status: Application Submitted and Ready for Preliminary Review and Filing Letter

Application Status Code: AS

ST470 Main

1. Genus and Species name of crop

Solanum tuberosum L.

2. Family name (Botanical)

Solanaceae

3.Is the variety a first generation hybrid?

Yes

4. Does the variety contain any Transgenes?

No

5. Does the owner specify that seed of this variety be sold only as a class of certified seed? (see section 83(a) of the plant variety protection act)

No

6. Has the variety (including any harvested material) or a hybrid produced from this variety been sold, disposed of, transferred, or used in the U.S. or other countries?

No

7. Is the variety or any component of the variety protected by intellectual property right? (plant breeder's right or patent)

No

Exhibit A - Origin and Breeding History

1. Genealogy (back to and including public and commercial varieties, lines, or clones used) and the breeding method(s).

AC05175-3P/Y was derived from a cross of AC99331-2R/Y and COA99261-1RY made by the USDA-ARS at Aberdeen, Idaho. See attachment for pedigree tree.

2. Give the details of subsequent stages of selection and multiplication.

It was initially field selected at the San Luis Valley Research Center in 2007. Multiplication of AC05175-3P/Y tubers for initial selection and research
trials and subsequent seed increase was via vegetative means using tubers and /or tissue cultured disease tested seed stocks.

Selection criteria: dark purple skin color, freedom from skin blemishes, yellow flesh color, tuber shape, early vine maturity, resistance to grade defects. MS 10/3/2022

3. Is the variety uniform?

Yes

How did you test for uniformity?

AC05175-3P/Y has been observed for more than 14 yeas of field screening and/or tissue culture production. No variants have been observed during this time, indicating that AC05175-3P/Y is uniform.

4. Is the variety stable?

Yes

How did you test for stability? Over how many generations?

AC05175-3P/Y has been observed for more than 14 years of field screening and/or tissue culture production. No variants have been observed during this time, indicating that AC05175-3P/Y is stable.

5. Are genetic variants observed or expected during reproduction and multiplication?

No

Exhibit A Attached Files List

File Name	Last Modified On
Columbine Gold Pedigree Tree.pdf	3/3/2021 5:36:55 PM

Exhibit A (continued)

Figure 1. Pedigree of Columbine Gold

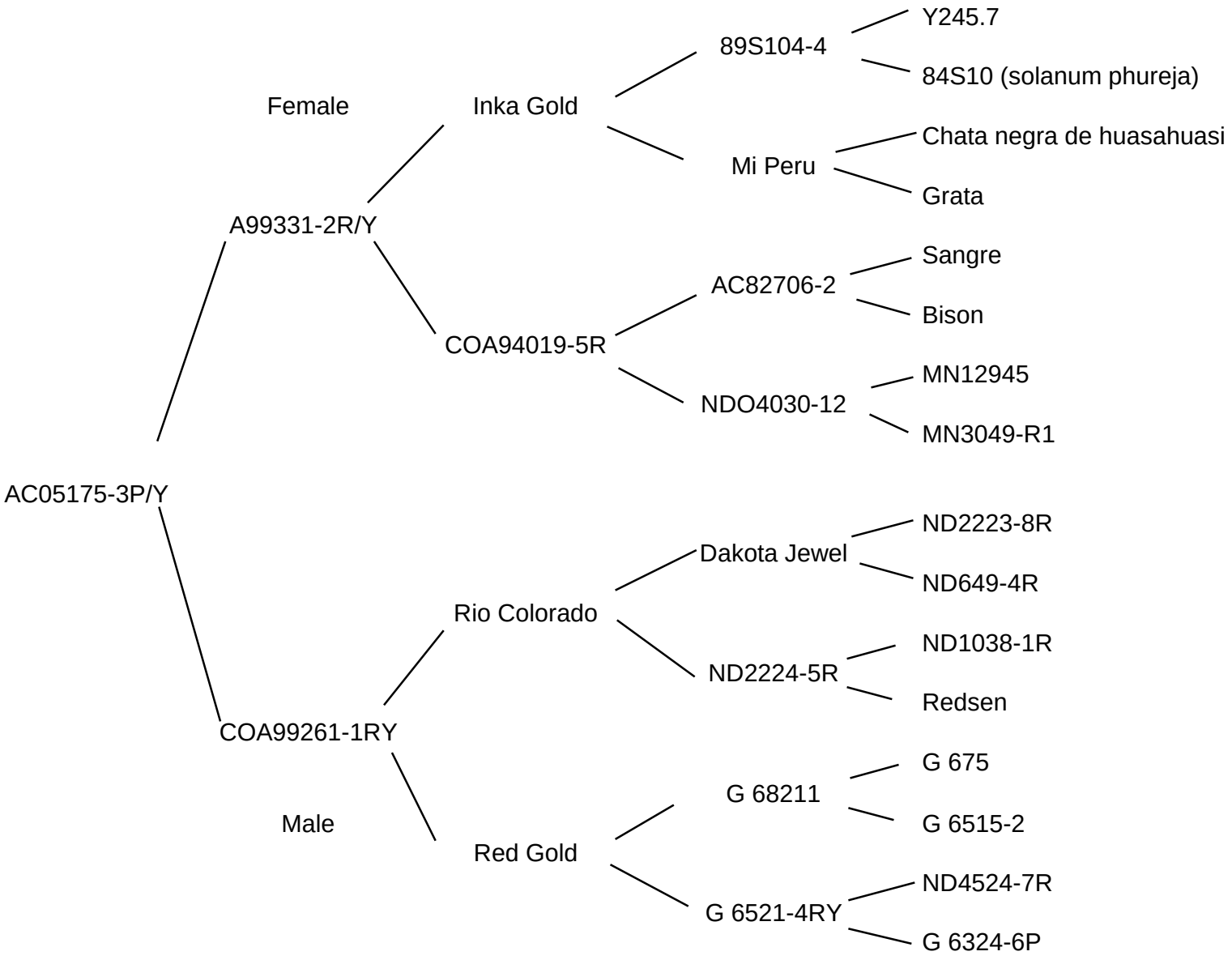

Exhibit B - Statement of Distinctness

1. Based on overall morphology. Applicant's new variety Columbine Gold **is most similar to Comparison Variety** Yukon Gold , ,

2. Application Variety Traits

See attached document for statement of distinctness.

3. Comparison Variety1 Additional Comments?

4. Comparison Variety2 Additional Comments?

5. Comparison Variety3 Additional Comments

Exhibit B Attached Files List

File Name	Last Modified On
Exhibit B Statement of Distinctness Columbine Gold.pdf	3/3/2021 6:04:52 PM

Exhibit B

Statement of Distinctness

Columbine Gold is compared to Yukon Gold, the most similar yellow table stock reference cultivar grown in our trials. **Columbine Gold** most clearly differs from Yukon Gold in the following traits:

Trait	**Columbine Gold**	Yukon Gold	Evidence
Stem Anthocyanin Coloration	Medium	Weak	Figure 1
Stem Wings	Absent	Weak	Figure 1
Leaf Silhouette	Open	Medium	Figure 2
Terminal Leaf Shape	Narrowly Ovate	Elliptical	Figure 3
Flower Color	Violet	Purple	Figure 4
Predominate Skin Color	Dark Purple-Black	Yellow	Figure 5
Specific Gravity	1.071 +/-0.003	1.089 +/-0.003	Table 1

Exhibit B (continued)

Statement of Distinctness

Figure 1. Stem Anthocyanin Coloration, Stem Wings: Columbine Gold (top) and Yukon Gold (bottom).

Exhibit B (continued)

Statement of Distinctness

Figure 2. Leaf Silhouette: Columbine Gold (left) and Yukon Gold (right).

Exhibit B (continued)

Statement of Distinctness

Figure 3. Terminal Leaf Shape: Columbine Gold (left) and Yukon Gold (right).

Exhibit B (continued)

Statement of Distinctness

Figure 4. Flower Color: Columbine Gold (left) and Yukon Gold (right).

Exhibit B (continued)

Statement of Distinctness

Figure 5. Predominate Skin Color: Columbine Gold (left) and Yukon Gold (right).

Exhibit B (continued)

Statement of Distinctness

Table 1.

Specific Gravity Analysis

Trial	**Columbine Gold**	Yukon Gold
1	1.074	1.093
2	1.074	1.089
3	1.069	1.087
4	1.072	1.084
5	1.068	1.093
6	1.068	1.088
7	1.069	1.088
Number	7	7
Mean	1.071	1.089
SD	0.003	0.003
Max	1.074	1.093
Min	1.068	1.084

Exhibit C

Potato

A . Location

I. Location

1 . Breeding Location

Center, Colorado

2 . Breeding Latitude (Decimal Degrees)

3 . Breeding Longitude (Decimal Degrees)

4 . Trial Location

Center, Colorado 81125

5 . Trial Location Latitude (Decimal Degrees)

6 . Trial Location Longitude (Decimal Degrees)

7 . Area of Adaptation

B . Market Characteristics

1 . Market Class

Yellow-flesh Tablestock

C . Light Sprout Characteristics

1 . Light Sprout General Shape

Ovoid

2 . Light Sprout Base Pubescence of Base

Absent

3 . Light Sprout Base Anthocyanin Coloration

Other

purple/black

4 . Light Sprout Base Intensity of Anthocyanin Coloration

Very Strong

5 . Light Sprout Tip Habit

Intermediate

6 . Light Sprout Tip Pubescence

Absent

7 . Light Sprout Tip Anthocyanin Coloration

Other

purple/black

8 . Light Sprout Tip Intensity of Anthocyanin Coloration if Present

Strong

9 . Light Sprout Root Initials Frequency

Abundant

D . Plant Characteristics

1 . Growth Habit

Semi-erect (30-45° with ground)

2 . Type

Stem (foliage open, stems clearly visible)

3 . Maturity Days After Plant at Vine Senescence

4 . Regional Area

Pacific North West (WA, OR, ID, CO, CA)

5 . Maturity Class

Very Early (<100 DAP)

E . Stem Characteristics Measured at Early First Bloom

1 . Stem Anthocyanin Coloration

Medium

2 . Stem Wings

Absent

F . Leaf Characteristics

1 . Leaf Color Observed when Fully Developed Leaves are Located on the Middle 1/3 of Plant

Medium Green

2 . Leaf Color Chart

2.a. Leaf Color Chart

Royal Horticulture Society Color Chart

2.b. Leaf Color Chart Value

137A

3 . Leaf Pubescence Length

Short

4 . Leaf Silhouette

Medium

5 . Petioule Anthocyanin Coloration

Medium

6 . Leaf Stipules Size

Small

7 . Terminal Leaflet Shape

Narrowly ovate

8 . Terminal Leaflet Tip Shape

Acuminate

9 . Terminal Leaflet Base Shape

Obtuse

10 . Terminal Leaflet Margin Waviness

Slight

11 . Average Number of Primary Leaflet Pairs

4.2

12 . Primary Leaflet Pairs Range

Primary Leaflet Pairs Range From

3

Primary Leaflet Pairs Range To

5

13 . Primary Leaflet Tip Shape

Acuminate

14 . Primary Leaflet Size

Medium

15 . Primary Leaflet Shape

Narrowly ovate

16 . Primary Leaflet Base Shape

Obtuse

17 . Average Number of Secondary and Tertiary Leaflet Pairs

6.4

18 . Number of Secondary and Tertiary Leaflet Pairs Range

Number of Secondary and Tertiary Leaflet Pairs Range From

4

Number of Secondary and Tertiary Leaflet Pairs Range To

9

19 . Average Number of Inflorescence per Plant

2.2

20 . Number of Inflorescence per Plant Range

Number of Inflorescence per Plant Range From

1

Number of Inflorescence per Plant Range To

5

21 . Average Number of Florets per Inflorescence

5.6

22 . Number of Florets per Inflorescence Range

Number of Florets per Inflorescence Range From

1

Number of Florets per Inflorescence Range To

16

23 . Corolla Inner Surface Color Chart

23.a. Corolla Inner Surface Color Chart

Royal Horticulture Society Color Chart

23.b. Corolla Inner Surface Color Chart Value

87A

24 . Outer Surface Color Chart

24.a. Outer Surface Color Chart

Royal Horticulture Society Color Chart

24.b. Outer Surface Color Chart Value

87C

25 . Corolla Inner Surface Color

Violet

26 . Corolla Shape

Pentagonal

G . Inflorescence Characteristics

1 . Calyx Anthocyanin Coloration

Weak

2 . Anther Color Chart

2.a. Anther Color Chart One

Royal Horticulture Society Color Chart

2.b. Anther Color Chart Value

14A

3 . Anther Shape

Narrow cone

4 . Pollen Production

5 . Stigma Shape

Capitate

6 . Stigma Color Chart

6.a. Stigma Color Chart One

Royal Horticulture Society Color Chart

6.b. Stigma Color Chart Value

137A

7 . Berry Production

H . Tuber Characteristics

1 . Predominant Skin Color

Dark purple-black

2 . Predominant Skin Color Chart

2.a. Predominant Skin Color Chart

Royal Horticulture Society Color Chart

2.b. Predominant Skin Color Chart Value

79A

3 . Secondary Skin Color

Absent

4 . Secondary Skin Color Chart

4.a. Secondary Skin Color Chart

4.b. Secondary Skin Color Chart Value

5 . Secondary Skin Color Distribution

6 . Skin Texture

Smooth

7 . Tuber Shape

Round

8 . Tuber Thickness

Medium thick

9 . Tuber Average Length (mm)

58

10 . Tuber Length Range (mm)

Tuber Length From (mm)

35

Tuber Length Range To (mm)

81

11 . Tuber Length Standard Deviation

8

12 . Tuber Length Average Weight of Sample (g)

141

13 . Potato Average Tuber Width (mm)

66

14 . Tuber Width Range (mm)

Tuber Width From (mm)

52

Tuber Width To (mm)

81

15 . Tuber Width Standard Deviation

6

16 . Tuber Width Average Weight of Sample (g)

141

17 . Average Tuber Thickness (mm)

54

18 . Tuber Thickness Range (mm)

Tuber Thickness From (mm)

44

Tuber Thickness To (mm)

75

19 . Tuber Thickness Standard Deviation

5

20 . Tuber Thickness Average Weight of Sample (g)

141

21 . Tuber Eye Depth

Intermediate

22 . Tuber Lateral Eyes

4

23 . Average Number of Eyes per Tuber

7

24 . Number of Eyes per Tuber Range

Number of Eyes per Tuber From

5

Number of Eyes per Tuber To

11

25 . Distribution of Tuber Eyes

Predominantly apical

26 . Prominence of Tuber Eyebrows

Medium prominence

27 . Predominant Tuber Flesh Color

White

28 . Primary Tuber Flesh Color Chart

28.a. Primary Tuber Flesh Color Chart

Royal Horticulture Society Color Chart

28.b. Primary Tuber Flesh Color Chart Value

10B

29 . Secondary Tuber Flesh Color

Absent

30 . Secondary Tuber Flesh Color Chart

30.a. Secondary Tuber Flesh Color Chart

30.b. Secondary Tuber Flesh Color Chart Value

31 . Number of Tubers per Plant

I . Disease Characteristics

1 . Late Blight (Phytophthora)

Not Tested

2 . Early Blight (Alternaria)

Susceptible

3 . Soft Rot (Erwinia)

Moderately Resistant

4 . Common Scab (Streptomyces)

Not Tested

5 . Powdery Scab (Spongospora)

Susceptible

6 . Dry Rot (Fusarium)

Moderately Resistant

7 . Leaf Roll Virus (PLRV)

Not Tested

8 . Virus X (PVX)

Not Tested

9 . Virus Y (PVY)

Susceptible

10 . Virus M (PVM)

Not Tested

11 . Virus A (PVA)

Not Tested

12 . Golden Nematode (Globodera)

Not Tested

13 . Root Knot Nematode (Meloidogyne)

Not Tested

14 . Other Diseaase

14.a. Other Disease

Not Tested

14.b. Other Disease (Specify)

15 . Physiological Disorder

J . Pest Characteristics

1 . Colorado Potato Beetle (Leptinotarsa)

Not Tested

2 . Green Peach Aphid (Myzus)

Not Tested

3 . Other Pest Characteristics

K . Gene Traits

1 . Insertion of Genes

No

L . Chief Market Other Quality Characteristics

I. Chief Market Quality Characteristics

1 . Specific Gravity ((wt. air/(wt. air – wt. water))

1.070-1.079

2 . Total Glycoalkaloid Content (mg/100 grams fresh tuber)

1.98

II. Chief Market Other Quality Characteristics

1 . Describe any Other Quality Characteristics that May Aid in Identification

M . Chemical Identification

1 . Chemical Identification

N . Molecular Markers

1 . Isozymes

No

O . DNA Profile

1 . DNA Profile

No

P . Additional Comments and Characteristics

1 . Additional Comments and Characteristics

Exhibit D - Additional Descriptive Information

Additional descriptive question / text:

Additional descriptive answer / information in detail:

Exhibit D Attached Files List

File Name	Last Modified On

Exhibit E - Statement of the Basis of Ownership

1. Does the applicant own all rights to the variety?

Yes

2. Is the applicant a U.S. national or a U.S. based entity?

Yes

3. Is the applicant the original owner?

Yes

4. Additional explanation on ownership (Trace ownership from original breeder to current owner):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.