

Huckleberry Gold Management Guide

Huckleberry Gold is a product of the cooperative USDA/ARS, University of Idaho potato breeding program at Aberdeen, Idaho in collaboration with the Northwest (Tri-State) Potato Variety Development Program including the USDA/ARS and the Idaho, Washington, and Oregon state experiment stations. It resulted from a 1999 cross between Agria and COA94019-5R. It was selected as a seedling tuber in the field at Aberdeen in 2003, and was evaluated for 7 years in public and industry trials throughout the western U.S.

Huckleberry Gold is a medium-early maturing variety with purple skin and yellow flesh and medium yield potential. Average total yields for Huckleberry Gold were higher than those for Yukon Gold in yield trials conducted in Idaho, Oregon and Washington, while U.S. No. 1 yields were lower than Yukon Gold in Idaho, but higher in Oregon and Washington (Table 1). It has good resistance to tuber malformations and most internal and external defects.

Table 1 Total and U.S. No. 1 yields for Huckleberry Gold as compared to those of Yukon Gold in early harvest trials in Idaho, Oregon and Washington (2006-2010).

Location	Variety	Total Yield	U.S.No. 1 Yield	<6 oz. Yield	6-10 oz Yield	>10 oz. Yield
		(cwt/A)	(cwt/A)	(cwt/A)	(cwt/A)	(cwt/A)
Idaho ¹	Huckleberry Gold	347	264	152	140	67
	Yukon Gold	339	288	108	158	82
Oregon ²	Huckleberry Gold	515	365	163	173	99
	Yukon Gold	448	325	107	141	131
Washington ³	Huckleberry Gold	393	316	137	139	108
	Yukon Gold	351	287	80	101	142

¹Data from 5 trials conducted from 2006-2010 in Aberdeen and Parma, ID.

²Data from 4 trials conducted from 2009-2010 in Corvallis and Klamath Falls, OR.

³Data from 2 trials conducted from 2009-2010 in Othello, WA.

Merit ratings for fresh pack characteristics including culinary evaluations for boiling, baking, and microwave characteristics have been comparable to those for Yukon Gold (Table 2).

Huckleberry Gold tubers have glycoalkaloid, reducing sugar and protein concentrations that are similar to Yukon Gold, but substantially higher antioxidant concentrations and lower vitamin C and sucrose concentrations. It also has moderately low specific gravity.

Table 2 Summary of cooking and culinary evaluations conducted at Washington State University for Huckleberry Gold and Yukon Gold in 2009.

Evaluations ¹	Huckleberry Gold	Yukon Gold
Boiling	18.4	18.3
Baking	19.5	20.0
Microwave	18.3	17.9
Total (75 max)	56.2	56.2

¹A maximum of 25 points were available for each cooking/culinary evaluation category, with a higher score indicating more desirable characteristics.

Table 3 - Biochemical composition and specific gravity for Huckleberry Gold tubers compared with those for Yukon Gold (2006-2010 at Aberdeen, Idaho).

Component	Huckleberry Gold	Yukon Gold
Glycoalkaloids (mg/100g)	2.59	2.76
Reducing sugars (% FWB)	0.06	0.05
Sucrose (% FWB)	0.18	0.24
Protein (%DWB)	5.88	5.44
Vitamin C (mg/100g)	22.58	33.40
Antioxidants (µg/g FWB)	519.20	319.90
Specific Gravity	1.076	1.085

FWB=fresh weight basis; DWB=dry weight basis

Management Guidelines

A limited number of studies on the management of Huckleberry Gold have been conducted in southern Idaho. Results of these studies provide growers with a starting point for developing appropriate management guidelines for their locale.

Seed and Pest management

Optimal seed size for Huckleberry Gold is about 2.5 to 3.0 oz. Seed should be planted at near optimal temperatures (50-55°F) to minimize the potential for soft rot decay. Huckleberry Gold has a tendency to produce some large tubers unless appropriate planting arrangements and spacings are used. In trials conducted at Aberdeen, Idaho, optimal seed piece spacing for 36 inch wide rows was 8 inches (Figure 1). However, it appears that this variety could benefit from using narrower spacings to improve size uniformity and reduce the proportion of large tubers. Research will be conducted in 2012 to determine the response of Huckleberry Gold in bed planted systems, using 14 inch rows. Planting depth should be 5 to 6 inches, with an additional 1 to 2 inches of soil covering at final hilling to minimize tuber greening.

Figure 1 Influence of seed piece spacing in 36 inch wide rows on tuber size distribution for Huckleberry Gold.

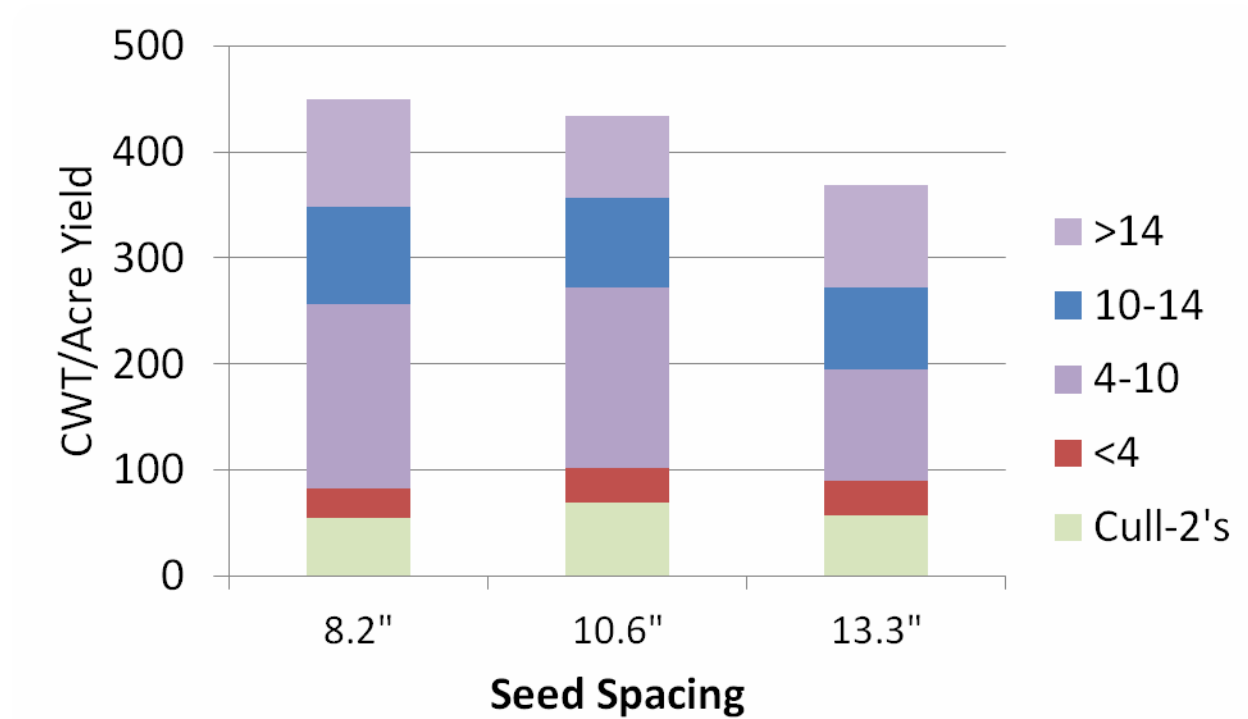


Table 4 - Disease reactions of Huckleberry Gold tubers compared with those of Yukon Gold.

Disease ¹	Huckleberry Gold	Yukon Gold
Common Scab (Streptomyces)	MR	S
Verticillium wilt (Verticillium)	MS	S
Early Blight (Alternaria)Foliar	S	S
Tuber	S	MR
Dry Rot (Fusarium)	MR	MS
Soft Rot (Pectobacterium)	S	MS
PVY ⁰	MS	S
PVX	VR	S
PLRV Foliar Infection	MS	MR
PLRV Net Necrosis	R	S
Late Blight (Phytophthora) Foliar	S	S
Tuber	MR	S

Disease Reactions:

Compared to Yukon Gold, Huckleberry Gold is slightly more resistant to common scab, dry rot, late blight tuber rot, and Verticillium wilt (Table 4). Huckleberry Gold is very resistant to PVX, net necrosis associated with PLRV, and slightly more resistant to PVY than Yukon Gold. It is also slightly more susceptible to tuber early blight and soft rot and more susceptible to PLRV foliar infections. These two varieties have similar susceptibility to foliar early blight, and foliar late blight.

Soils infested with root-knot nematodes or a history of severe early die problems should be fumigated. Routine fungicide applications should also be made to prevent serious early blight infections. Tuber early blight control in fields scheduled for storage can be facilitated by minimizing tuber skinning and bruising during harvest and subsequent handling and avoiding harvesting in wet weather conditions.

Fertilizer Management

To produce an optimal tuber size distribution, total seasonal nitrogen requirements for Huckleberry Gold should be kept fairly low. Results from N response trials at Aberdeen show that near maximum yield of tubers less than 10 oz were obtained with about 80 lb N/acre of fertilizer N. At this rate, petiole nitrate concentrations were about 20,000 ppm at tuber initiation, 10,000 to 15,000 ppm during mid-bulking and 5,000 to 10,000 ppm during late bulking (Figure 3). About 2/3 of the seasonal N supply should be applied prior to planting with the remainder topdressed by row closure. Phosphorus, potassium and micronutrient requirements have not been established for Huckleberry Gold.

Figure 2 Nitrogen effects on tuber size distribution for Huckleberry Gold, Aberdeen, ID.

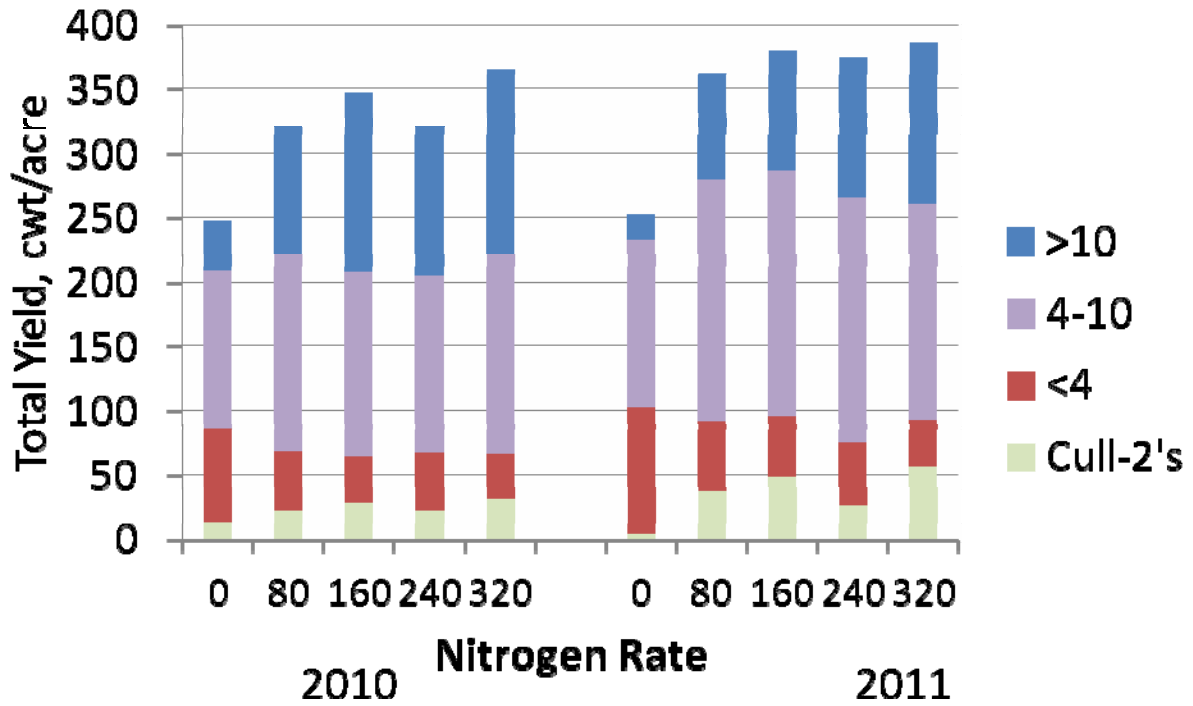
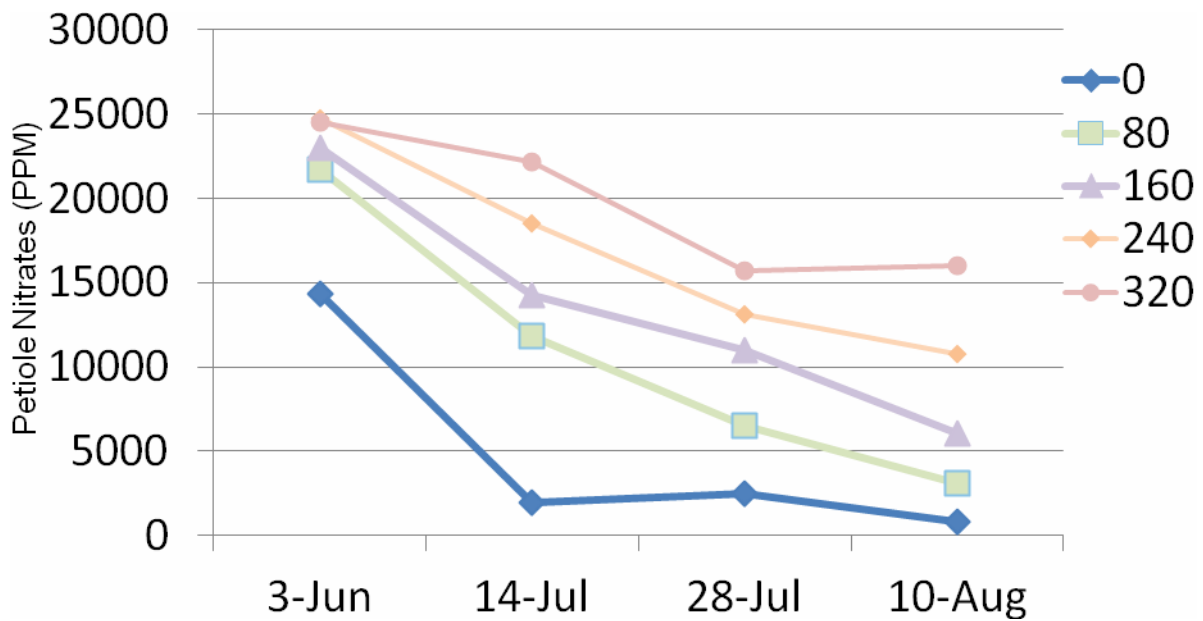


Figure 3 Petiole nitrate concentrations for Huckleberry Gold as influenced by N fertilizer rate, averages for Aberdeen 2010-2011.



Herbicides

Huckleberry Gold has exhibited good resistance to metribuzin when applied at labeled rates. It has an erect, medium-sized vine that matures relatively early in the growing season and competes reasonably well with weeds after row closure during early to mid-tuber bulking.

Irrigation Management

Huckleberry Gold has good resistance to water stress-related tuber defects such as growth cracks and second growth shatter bruise. Available soil moisture (ASM) should be maintained within the range of 65 to 80% for optimal yield and quality. Plant water uptake decreases appreciably in late August, so irrigation application rates need to be adjusted according to soil moisture measurements to avoid developing excessively wet soil conditions that promote disease and enlarged lenticels.

Harvest Management

Soil moisture should be reduced to about 60-65% ASM during tuber maturation and vine kill. Vines should be killed 2-3 weeks before harvest to allow for proper skin maturation and chemical maturity.