

UCD Hard White 'Patwin-515HP' commercially available

Patwin-515HP grain yield across 15 experiments was higher (126 lbs/ac) than the original Patwin-515.

Patwin-515-HP average yield was similar to Blanca Grande-515, but showed higher grain protein content.

Patwin-515HP carries the *GPC-B1* gene for high grain protein content. It remobilizes N from the leaves to the grain more efficiently.

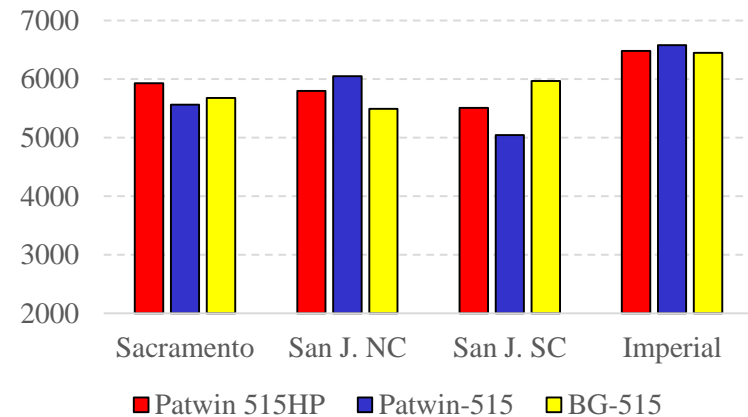
Patwin-515HP showed an average grain protein content of **13.8%** (**1.1% higher** than Patwin-515 **12.7%**).

Patwin-515HP has excellent bread making quality.

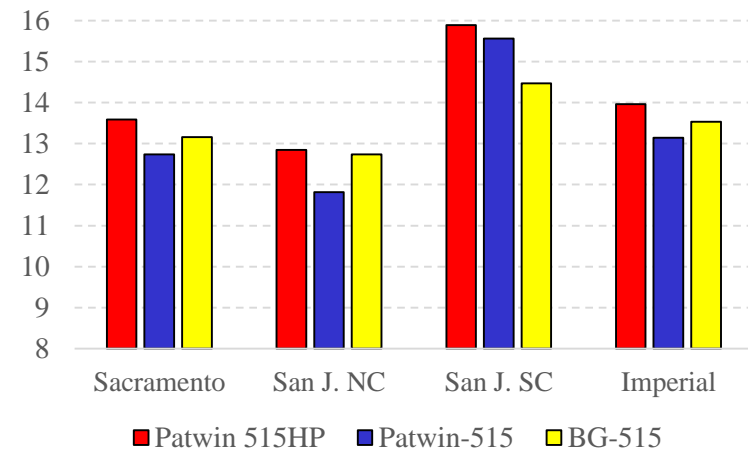
Patwin-515 and **Patwin-515HP** were the most grown HWS varieties in California (10,100 ac) followed by Blanca Grande 515 (8000 ac).

Commercial seed of **Patwin-515HP** and **Patwin-515** is available from Adams Grain

Yield (lb/ac) 2015-2017



Grain Protein (%) 2015-2017

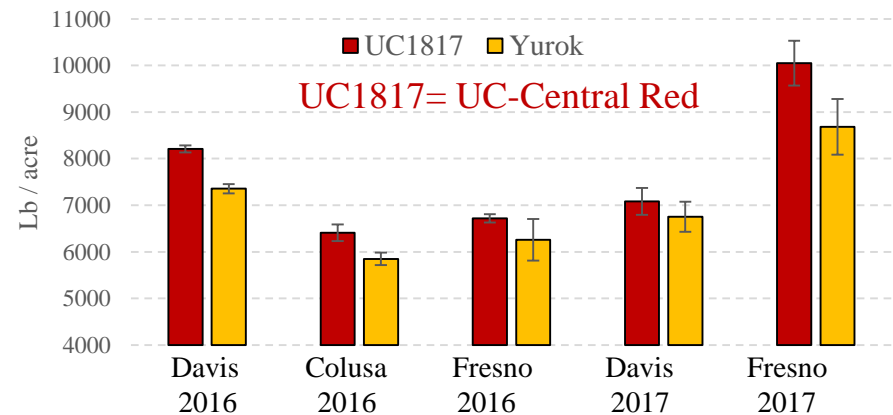


New UCD Hard Red Spring 'UC-Central Red' (UC1817)

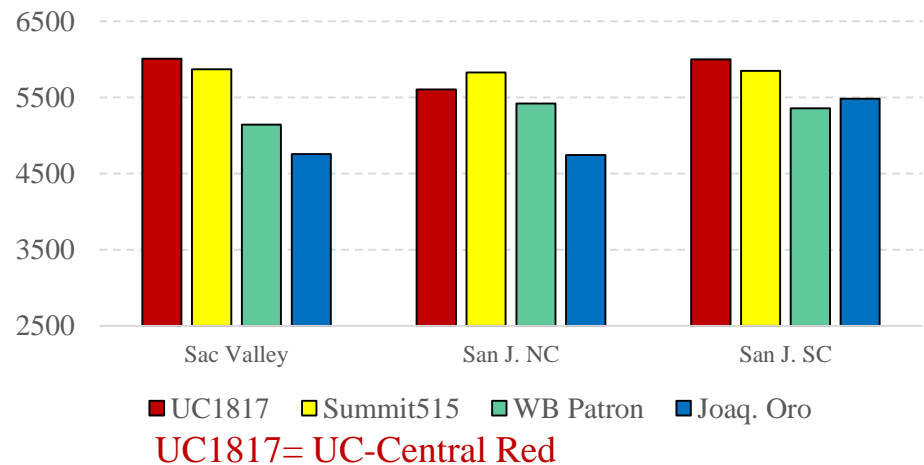
- **UC-Central Red (UC1817)** outperformed Yurok in yield trials from 2015 to 2017.
- **UC-Central Red** average yields from the last three years were similar to Summit 515 and higher than WB Patron and Joaquin Oro.
- **UC-Central Red** has better quality than Yurok
 - 4% higher grain protein content
 - 15% higher grain hardness
 - 4% higher absorption
 - 31% higher falling number
 - 31% higher gluten index
 - 94% and higher development time
 - 130% higher stability.
- **UC-Central Red** showed excellent bread-making quality in CWC and Millers Collaborators tests.
- **UC-Central Red** foundation seed will be available 2018.

UC-Central Red is UCD best hard red wheat!

UC-Central Red (UC1817) grain yield relative to Yurok.

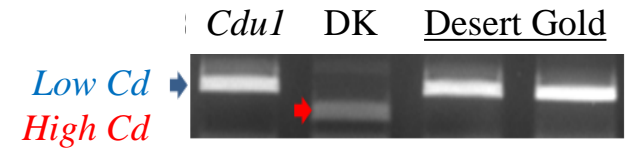
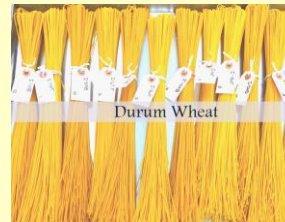


Yield (lb/ac) 2015-2017

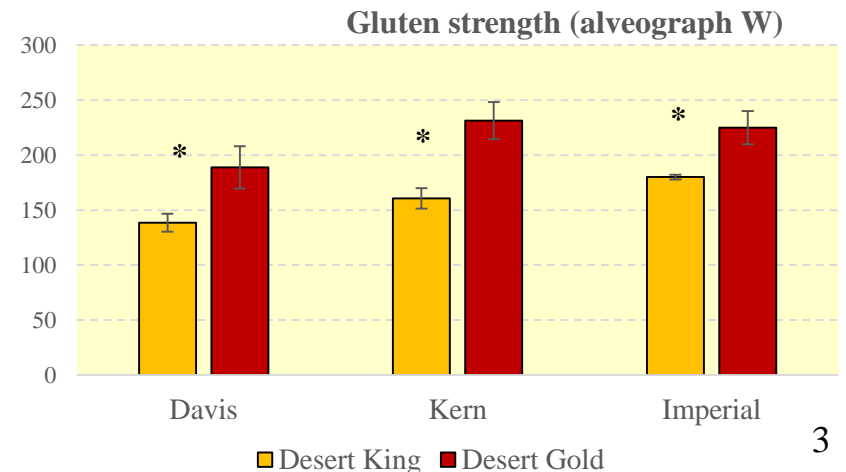
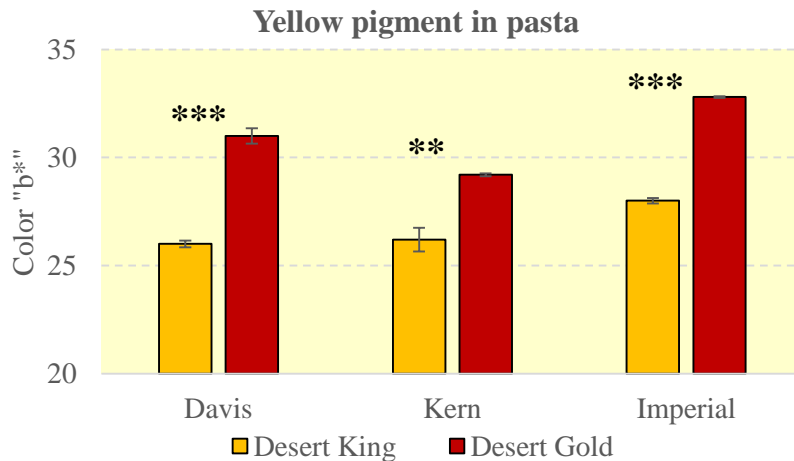
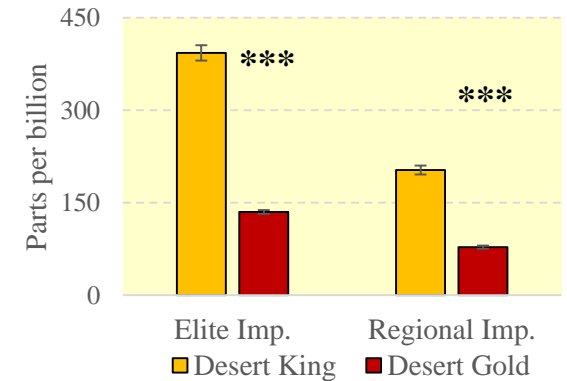


UC low Cadmium durum 'UC-Desert Gold' (UC 1850)

- **UC-Desert Gold** is 97% identical to **Desert King**
- **Desert King** and **DK-HP** planted in **40%** of the 2018 durum acreage
- **UC-Desert Gold** has
 - 50% less cadmium than Desert King (*Cd* transporter *Cdu1*)
 - 16% more yellow pigment (2 genes for increased pigment)
 - Good color stability (deletion *Lpx-B1.1* that degrades pigments)
 - Improved gluten strength (↑W)
 - Same grain yield and resistance to lodging
 - Foundation seed available in 2018.



Cadmium content in the grain



New UCD High Resistant Starch varieties

2017 three UCD high resistant starch varieties were submitted for PVP

2018 Foundation seed will be available

Due to current patents on the *SBEII* gene these will be exclusive releases. **Contact:**

- Lima Grain
- Bay State Milling (BSM)

• **UC-Lassik-RS** (UC1836). HRS. 880-905 % ↑ in resistant starch

Relative to Lassik without the mutations:

- **Agronomic traits:** yield ↓10%, grain protein ↑9%, height ↓5 cm, heading ↓2-5d.
- **Quality:** bread weight ↑11% & volume ↓17%, water abs. ↑28%, hardness ↑11%.

• **UC-Patwin-RS** (UC1837). HWS (*Yr5, Yr15, GPC*). 1030-1100 % ↑ in resistant starch

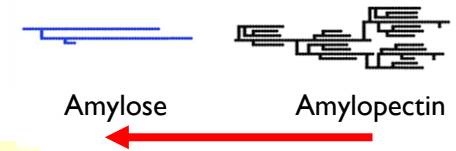
Relative to Patwin-515HP without the mutations:

- **Agronomic traits:** yield ↓12%, grain protein, = height, heading ↑ 5-6 d.
- **Quality:** bread weight ↑16% & volume ↓36%, water abs. ↑35%, hardness ↑28%.

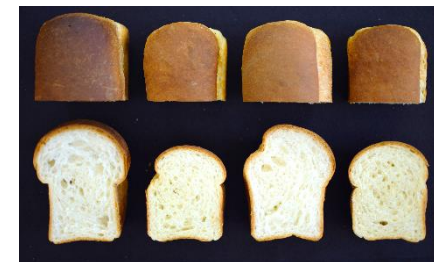
• **UC Desert King-RS** (UC1848). 940 % ↑ in resistant starch

Relative to Desert King without the mutations:

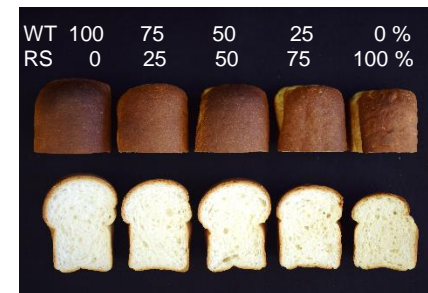
- **Agronomic traits:** yield ↓14%, cd↓55%, grain protein ↑3%, height ↓3cm, heading ↑3-5 d.
- **Quality:** pasta firmness ↑12%, falling number ↑36%, semolina color ↓2-3%, TW ↓4%.



Mutations in the *SBEII* gene increase amylose and resistant starch content in the starch



Patwin Patwin-RS Lassik Lassik-RS



When blended with normal flour (50%) the effects on quality are smaller