

# SorghumYield® App, A New Tool for Prediction

## Sorghum Yields: On-Farm Validation

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### Introduction

Sorghum yield estimation before harvest can be erratic and labor-intensive, but producers often like to know about their yield potential before the end of the season.

### Objective

To validate an on-farm Sorghum app (Android and iOS) for estimating sorghum yield after flowering with high accuracy.

### Materials and Methods

The foundational concept was developed by Ciampitti *et al*, 2014. A strong relationship between sorghum head imagery and grain number allowed to estimate the final number of grains, primary component from the final yield.

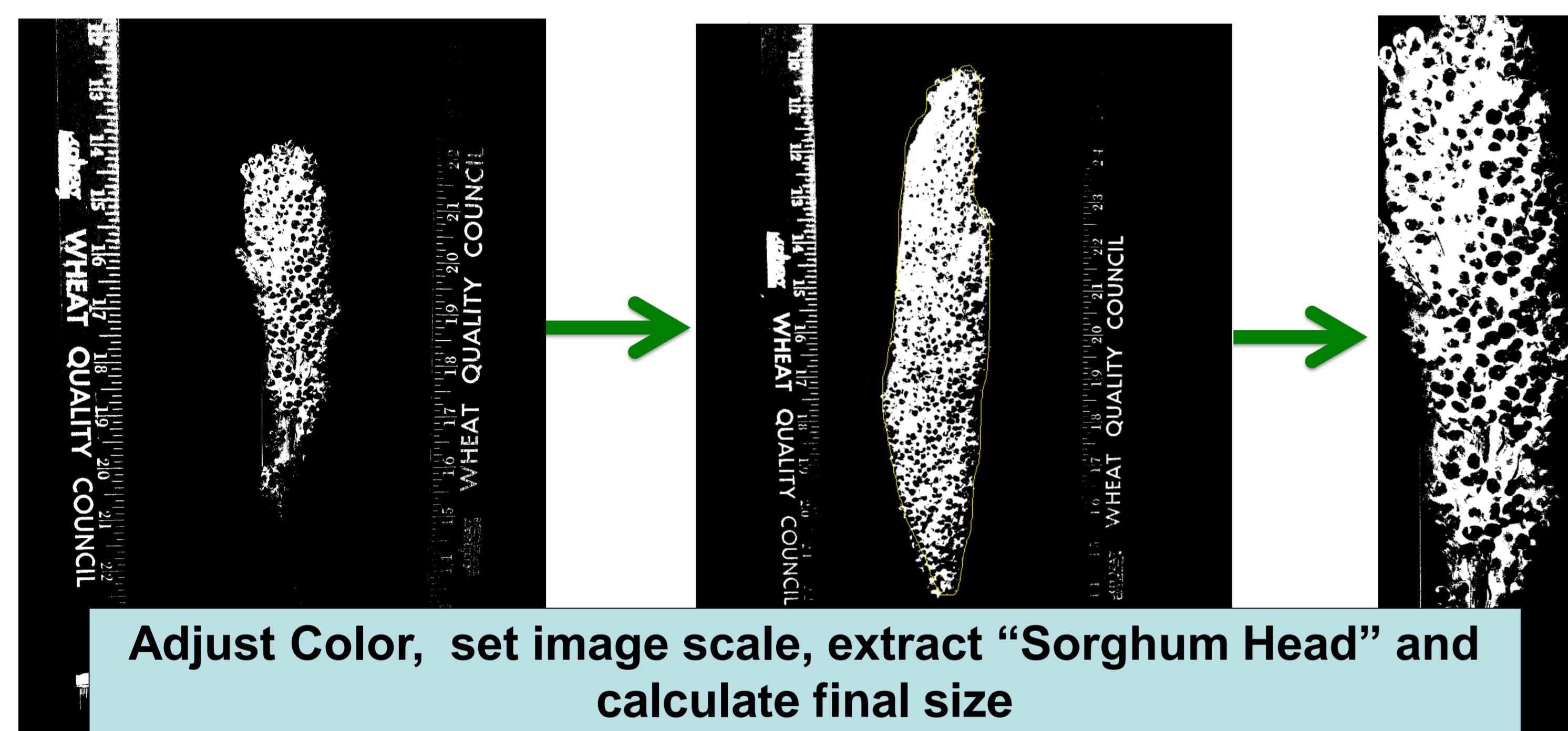


Fig. 1. Determination of sorghum head size via imagery.

During the 2015 growing season, on-farm measurements were gathered to validate the SorghumYield® App. The validation procedure was based on +1,700 pictures of sorghum heads. Grain number estimation was performed via imagery, SorghumYield® App.

### How does it work?

The App presents the following five steps:

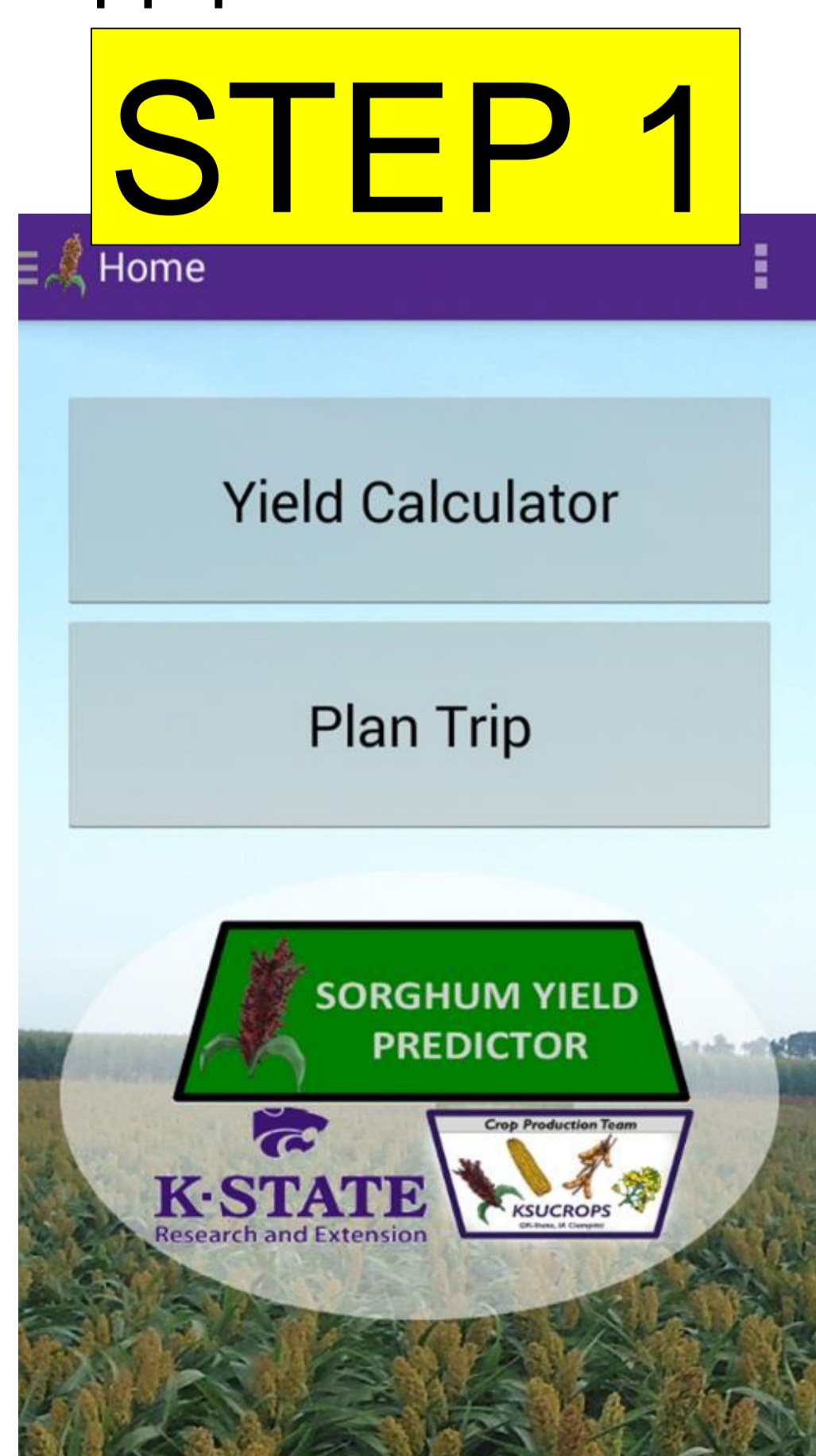


Fig. 2. Starting screen.

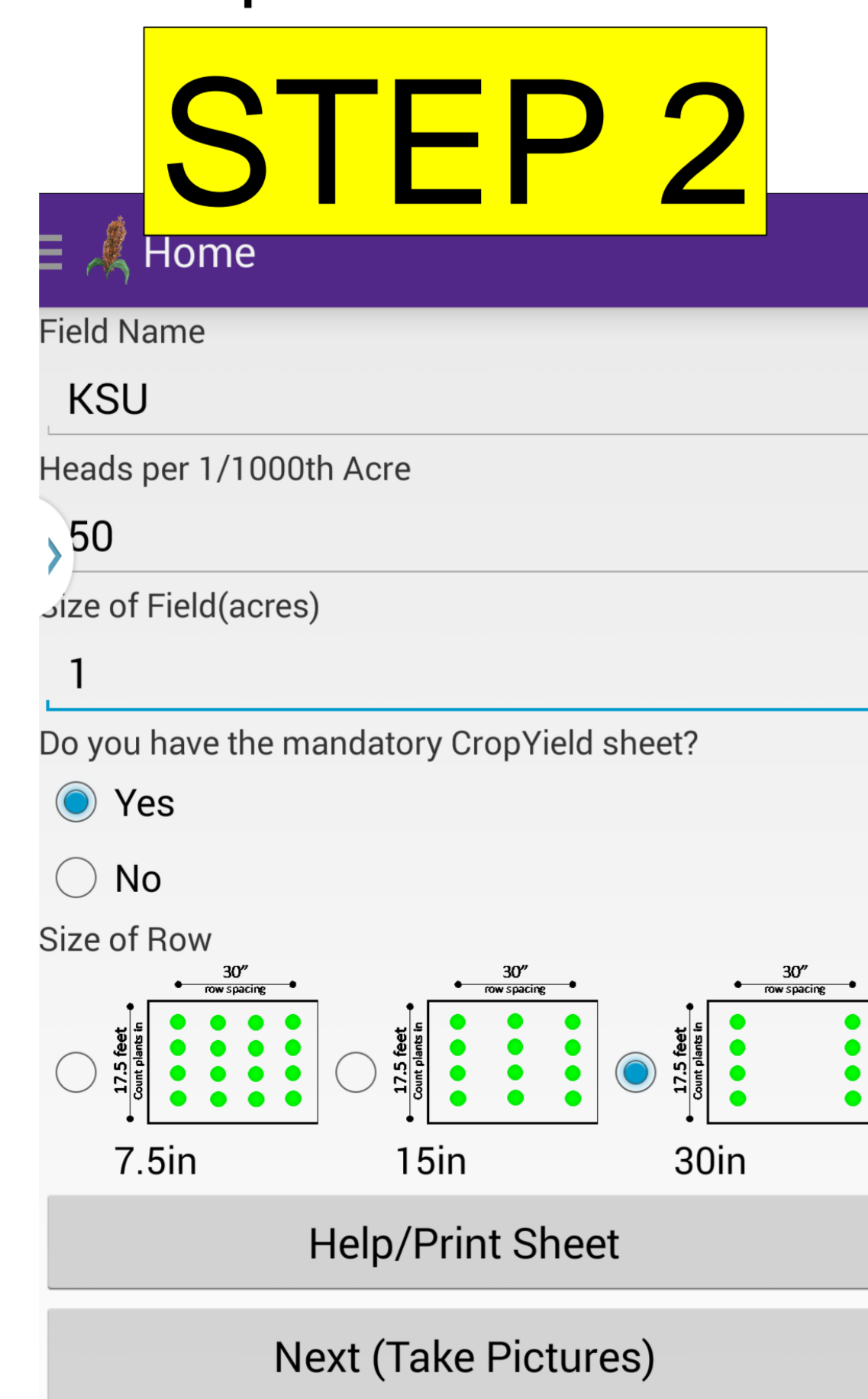


Fig. 3. Set field information: heads per area, row spacing.



Fig. 4. Sorghum field two weeks after flowering.

### Main SorghumYield® App Steps (continued)

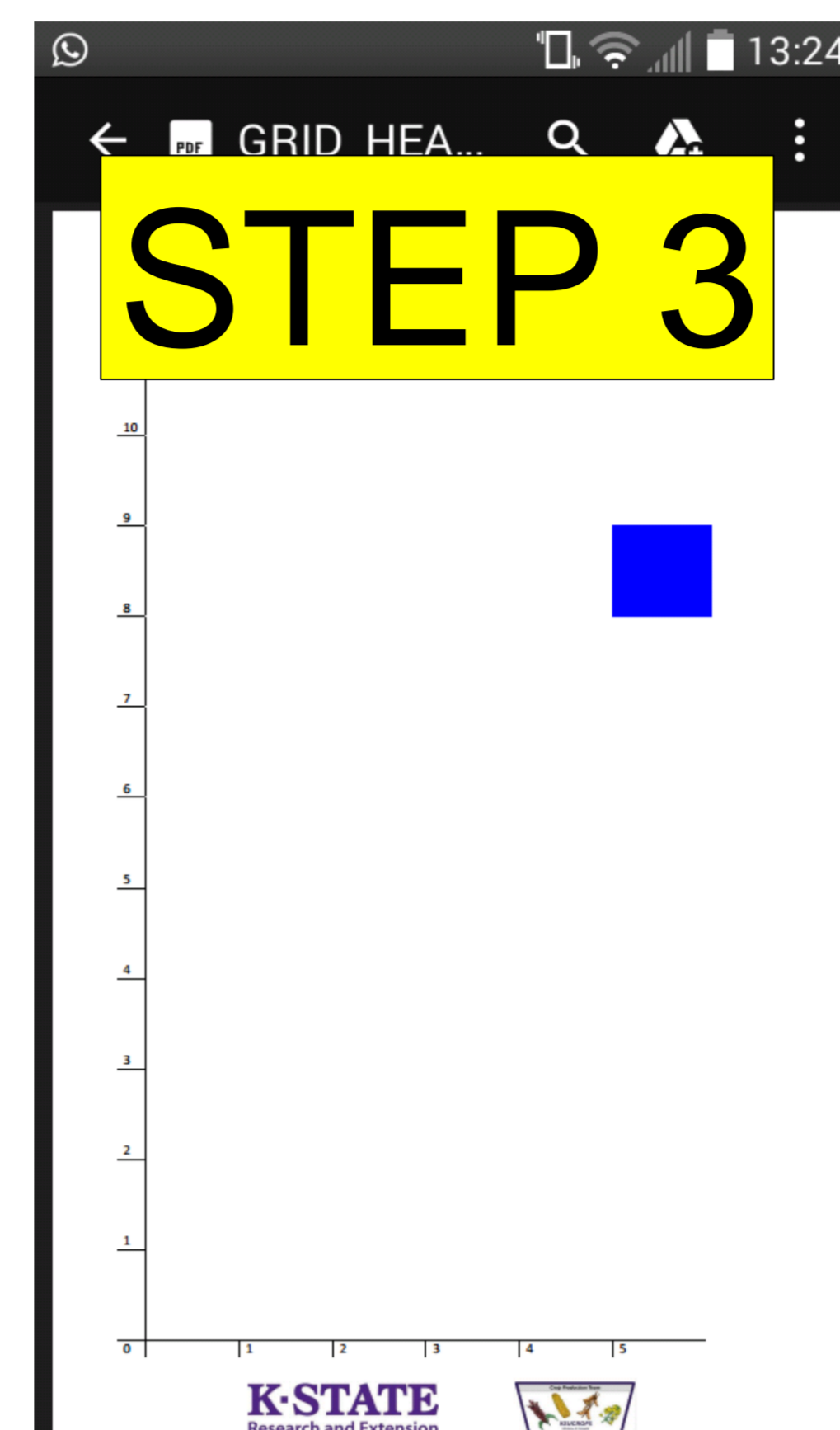


Fig. 5. Download the sheet designed to collect imagery from sorghum heads.



Fig. 6. Taking pictures from representative sorghum heads.

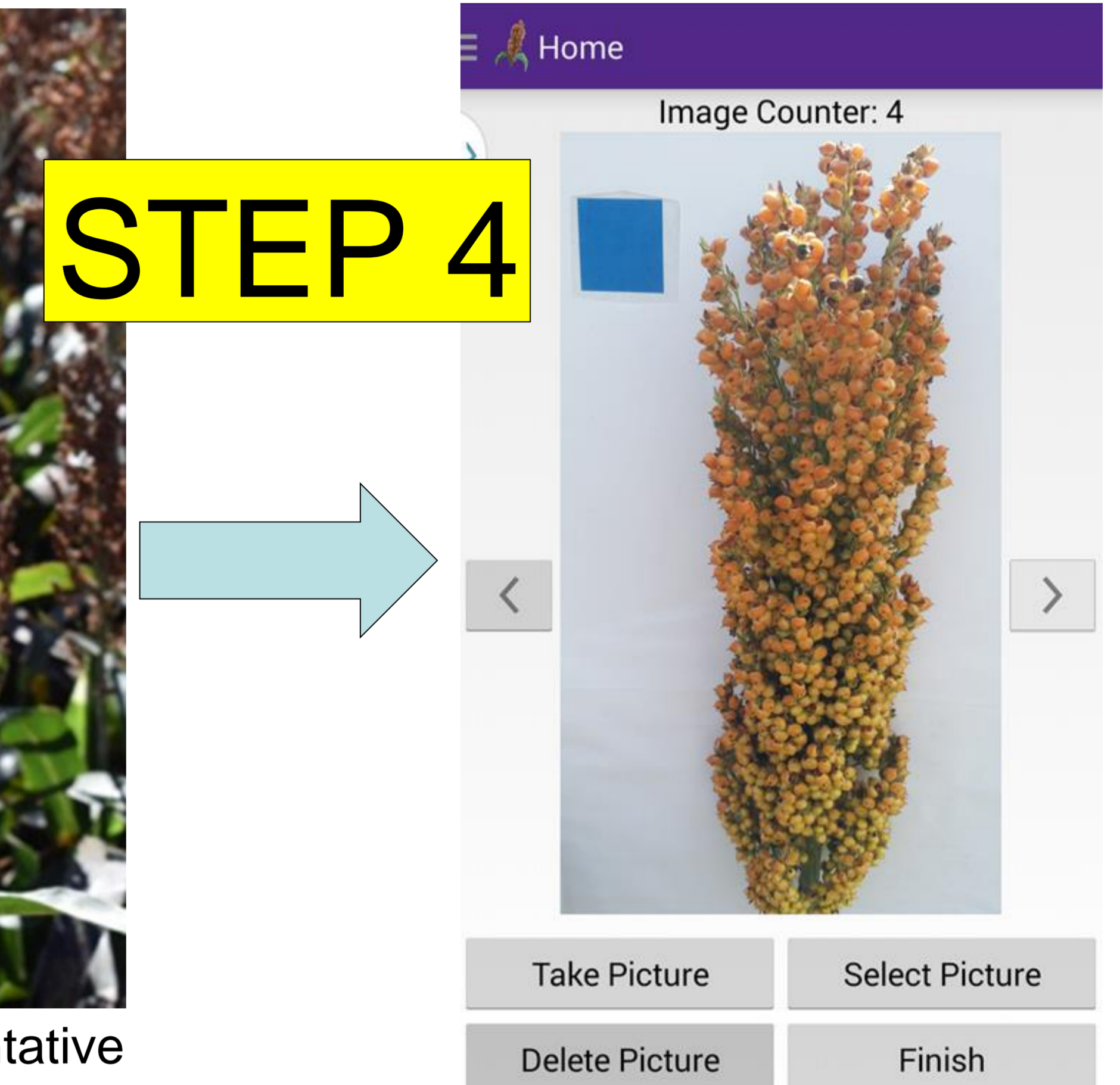


Fig. 7. Check the pictures to be sure there's nothing else besides the head (fingers, leaves).

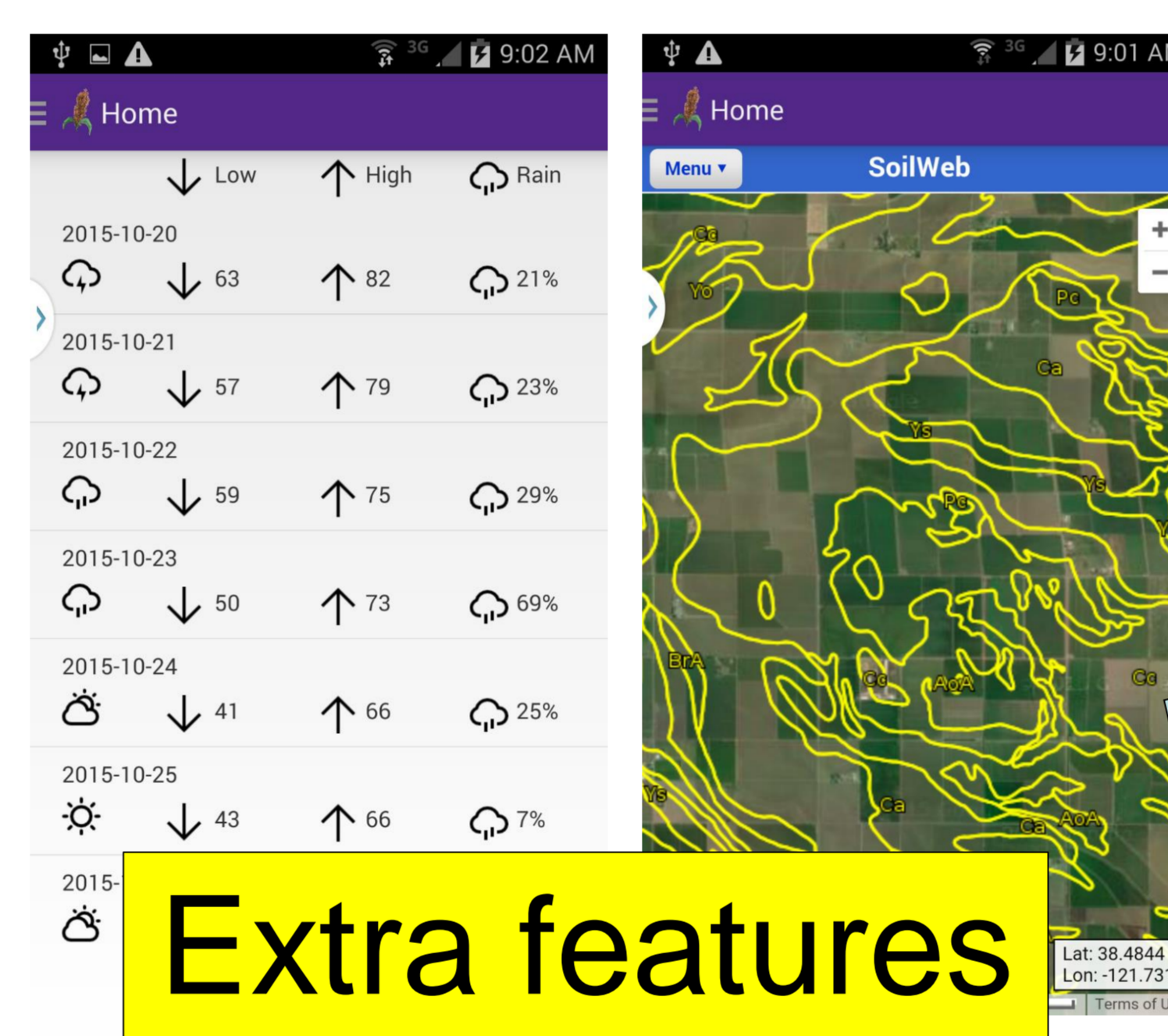


Fig. 10. Check the weather forecast and soil information for your field.

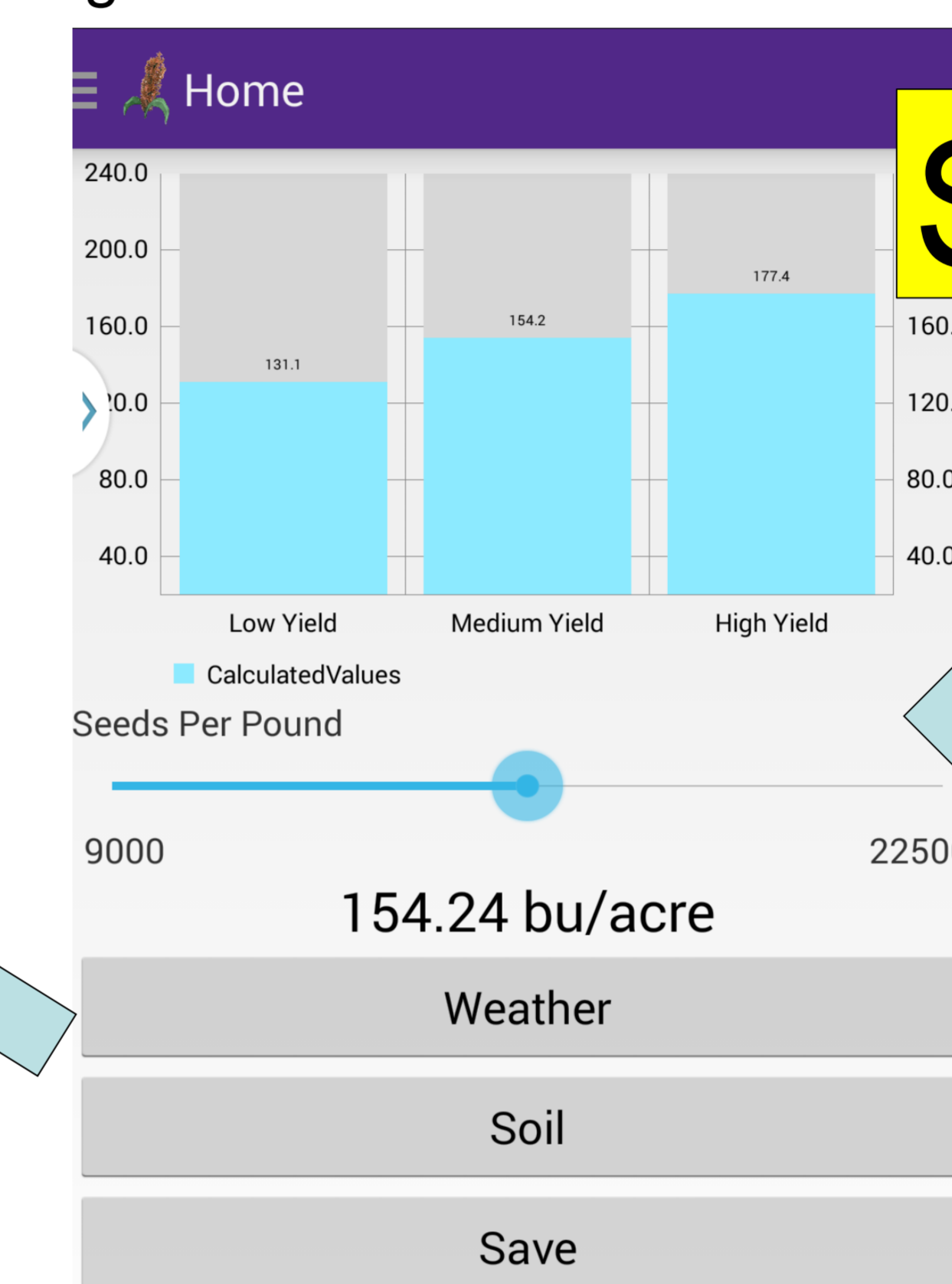


Fig. 9. Final Yield is obtained after the seed weight selection was finalized.

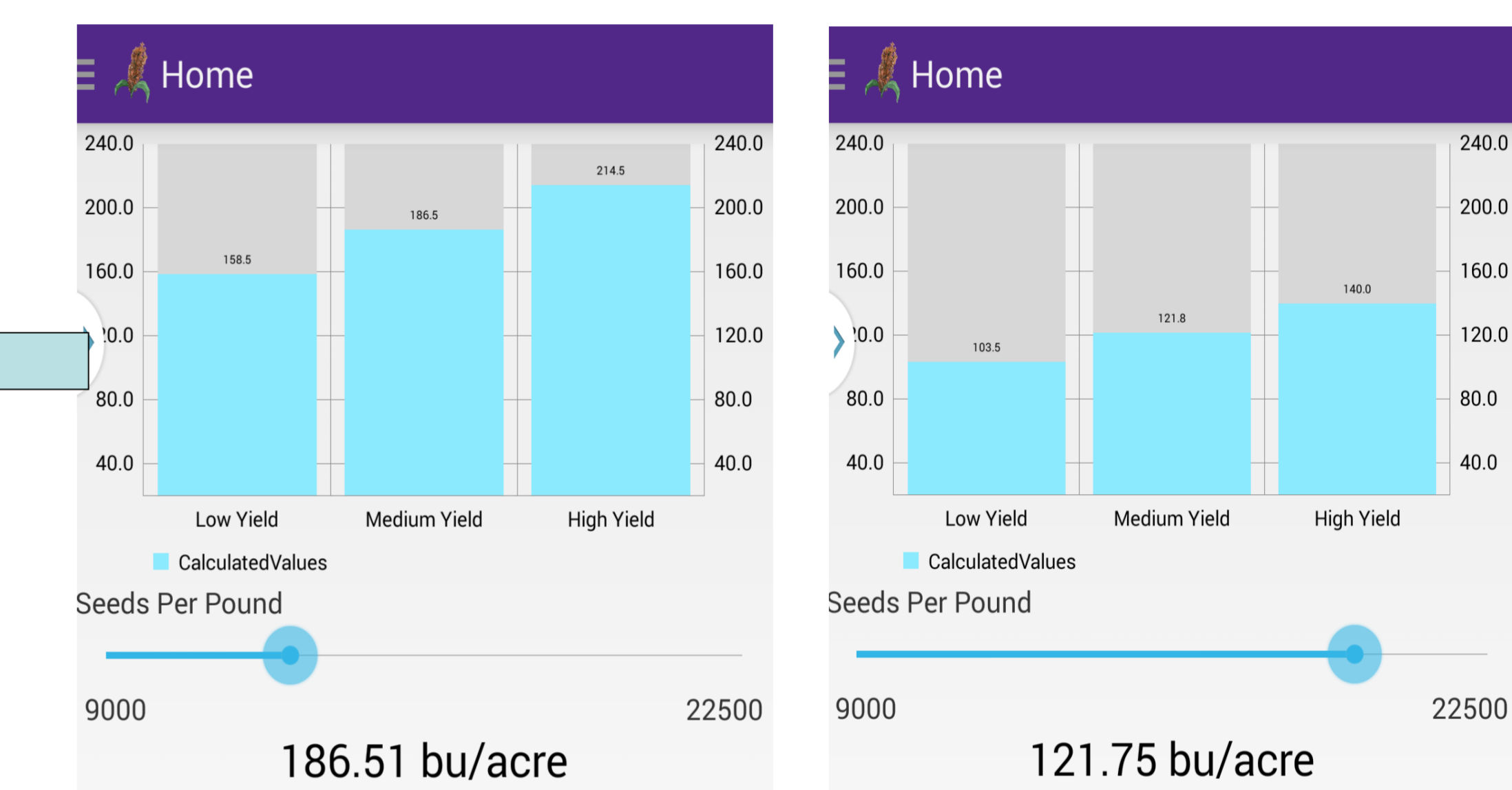


Fig. 8. Set a potential seed weight. Different scenarios can be selected, from very low to high seed weight ("unknown factor").

### Results: Validation & Prediction

Strong correlation was documented for predicted (based on sorghum head imagery collected 2-weeks after flowering) vs. observed (measured at harvest) grain in sorghum heads. Overestimation in grain number was connected to a lack of prediction for grain abortion and bird damage (when those occurred in the field).

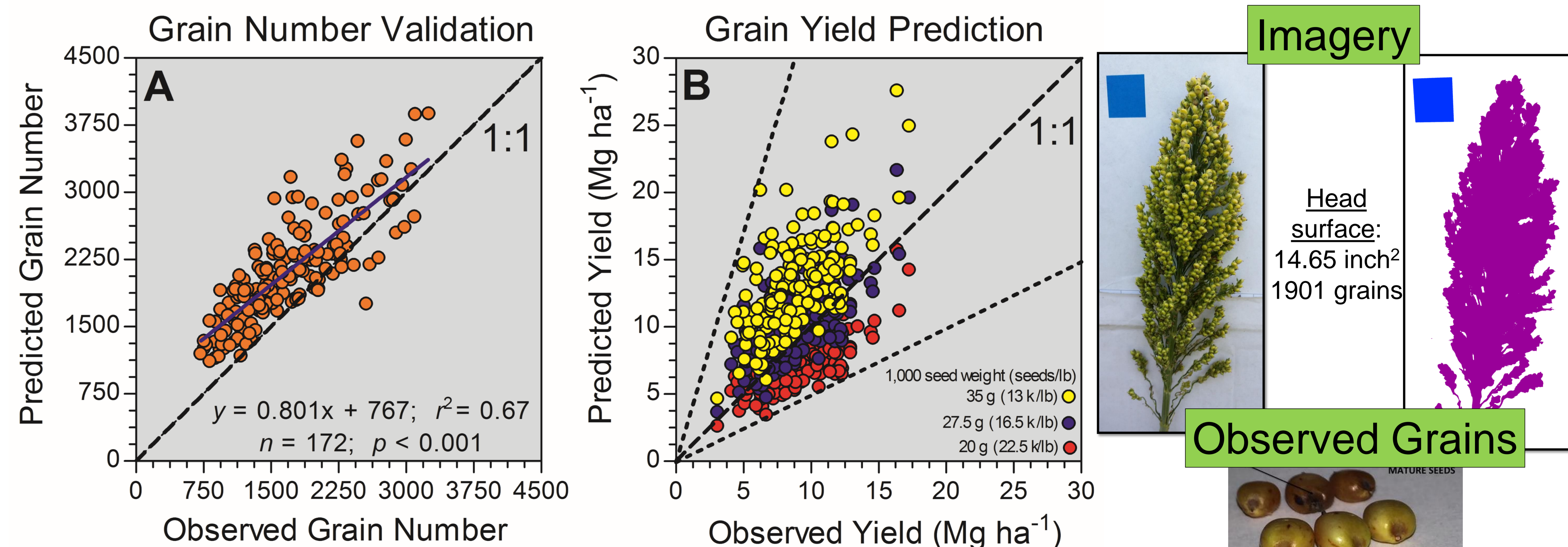


Fig. 11. Grain number validation (A) and yield prediction (B) (predicted vs. observed).

### Conclusions

- SorghumYield® App is an accurate on-farm grain number predictor, which is the main sorghum yield component. Yield prediction occurs based on the seed weight selection ("unknown factor").
- Sorghum producers can start making yield prediction (2-3 weeks after flowering) via utilization of this App.