



HIGH ELEVATION SEASON EXTENSION TELLURIDE (SAN MIGUEL BASIN)

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PROJECT INTRODUCTION



Figure 1. 2023 Internship visit at the Telluride research beds.

There is an increased demand for local food production in rural Colorado mountain communities, like Telluride, with extremely short growing seasons where residents must rely on fresh produce and other food items that are trucked into the area. Season extension techniques and growing adapted varieties play a necessary role in crop production in these communities.

In 2011, we began annual growing trials comparing yield and quality of vegetables grown under different season extension covers compared to our coverless control (Figure 2). These different varieties of each vegetable grown were evaluated to determine which variety and cover combination works best in Telluride's high elevation climate.

INTERNSHIP GOALS

- Analyze the trial data from 2011-2022; Make graphs and figures to summarize the information.
- Visit the research site in Telluride twice during the summer for trial assistance and progress reviews.
- Make brochures/growing guides for each crop grown in the trials and include season extension cover material recommendations.

HOW DOES THIS APPLY TO YOUR EDUCATION

By working with ten years of research trial data, I was exposed to different data collection techniques which will prepare me for collaborative projects with different styles of data management.

Writing and summarizing research performed is another larger component of a graduate program. Learning how to disseminate results to the general public will help me with writing my future research articles.

WHAT YOU DID

Growing trials were conducted between 2011-2022 on seven different crops types under a variety of season extension cover materials (Table 1). These covers were Diobetalon, 17 or 30% row cover material, a rigid Solexx cover, and a treatment composed of Diobetalon and 30% row cover layered. My internship role was to take the data collected during these trials and make it accessible to the high elevation communities of Colorado by creating growing guides for each crop. In some guides, this included a recommendation of the cover material that worked best, but some guides included an additional component of a recommended variety of the crop as well. Two visits were taken to Telluride in May and July to visit the 2023 trials. At these visits, we toured the research beds to look at how they were performed and to discuss the expectations and progress of the growing guides (Figure 1). The seven guides were submitted to the internship mentors for the revision process before publication.

Table 1. Crops and treatments tested in our yearly trials.

Crop	Years	Treatments
Beans	2011, 2013, 2017, 2022	Diobetalon, 17% & 30% Row Cover, 30% RC +Dio, Solexx
Broccoli	2016, 2023	Diobetalon, 17% Row Cover, Solexx
Carrots	2015, 2021	Diobetalon, 17% & 30% Row Cover, Solexx
Lettuce	2012, 2013, 2014	Diobetalon, 30% Row Cover, 30% RC +Dio, Solexx
Strawberries	2018, 2019	Diobetalon, 17% Row Cover, Solexx
Squash	2013, 2020	Diobetalon, 17% Row Cover, Solexx
Wintergreens	2011, 2012, 2014	30% Row Cover, 30% RC +Dio, Solexx



Figure 2. Season extension cover materials over research beds. A:17% Row Cover Material, B:Solexx, C:Diobetalon, D: Control w/ plastic chicken wire

WHAT YOU LEARNED

I learned that each season extension cover material created a unique microclimate in their raised beds. These differences were likely due to their differing light penetration, air permeability, and other factors. These unique microclimates lead to our cover material recommendations depending on crops' individual needs (Figure 2). The material that had the largest range of recommendation success were Diobetalon(C) which can be seen below (Figure 3). I learned that while there is not a single material perfect for all crops, in general the season extension cover materials increased our overall yields under high elevation conditions.

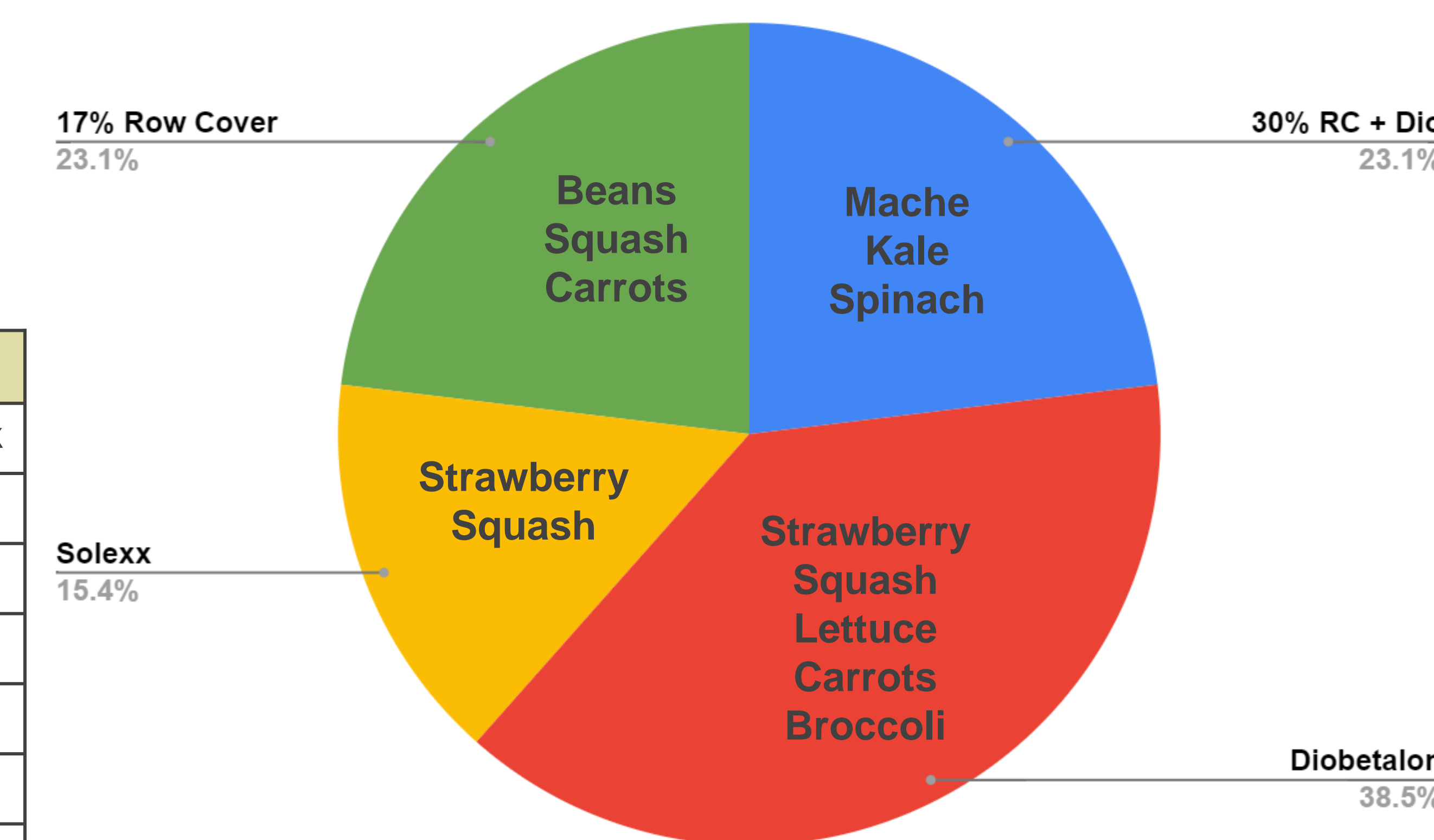


Figure 3. Season extension cover material recommendation by crop.

NEXT STEPS

Our seven growing guides will be reviewed by the San Miguel Basin Extension Office before they are published on the Grow and Give website this Fall. These articles will also be available at Extension talks and tabling events at local spaces like the farmer's market.

The intern and mentor(s) hope to present our findings at a conference like the American Society For Horticulture Sciences (ASHS) in the following year.