PROJECT SPONSOR OSU SEED LAB

- Official Seed Lab of Oregon State University and is a part of AOSA AND ISTA. The lab offers a wide range of testing that includes purity, germination, moisture content and many others.

- Seed lab processes over 12,000 samples of seed yearly.

- Current process is labor intensive and takes technicians 10-15min/sample

FIGURE 1: GAMET SEED DIVIDER

AUTOMATED SEED GAMET

Project Objective: Create a automated device capable of obtaining homogenized 5g and 45g samples that will be used for seed analysis

WHAT IS A SEED GAMET DIVER?

- Seed Gamet Dividers (GSD, Figure 1) are used to divide seed samples in two. Every time a sample is poured into the system yield is halved.

- The system is used not only for homogenization but also the division process

HOW IT WORKS

- System uses 4 linear actuators to bring the seed from the disposal shoots back up to the top hopper.

- The arm assembly then pours the seeds back into the hopper and the cycle continues until final samples are achieved.

- The system is controlled using Arduino logic that is driven by the weight being output by the loadcells.

SAMPLING PROCESS

- Cycle is broken into two steps 1) Homogenization 2) Seed Division.

- During homogenization seeds are cycled through the Gamet three times to ensure [an even distribution of all materials in the sample] all dirt and debris are mixed through the entire sample.

- During division, the sample is divided down in order to obtain a 5g and 45g sample.

- Each time seed in poured into the machine, it is halved and exits out the side spouts.
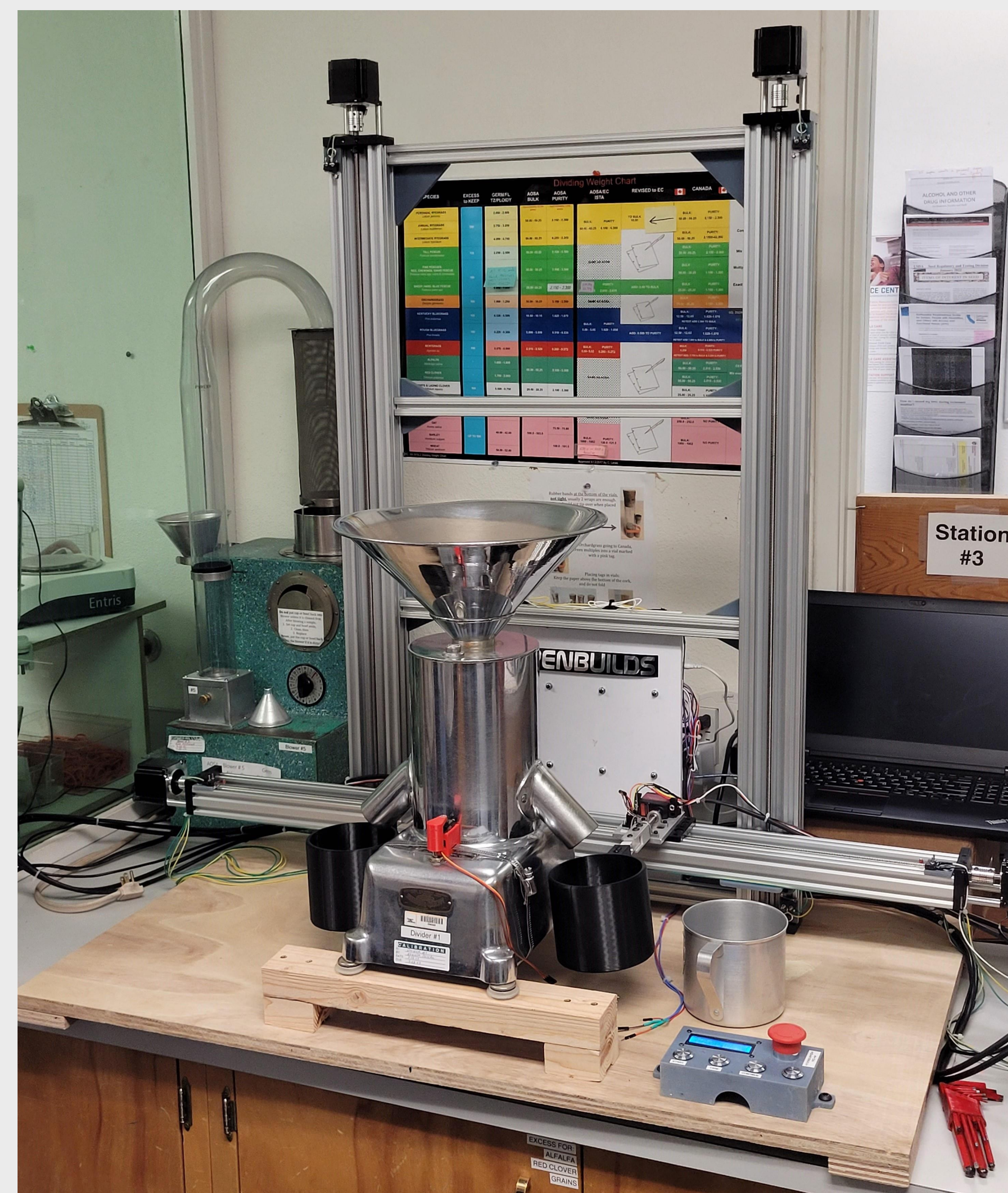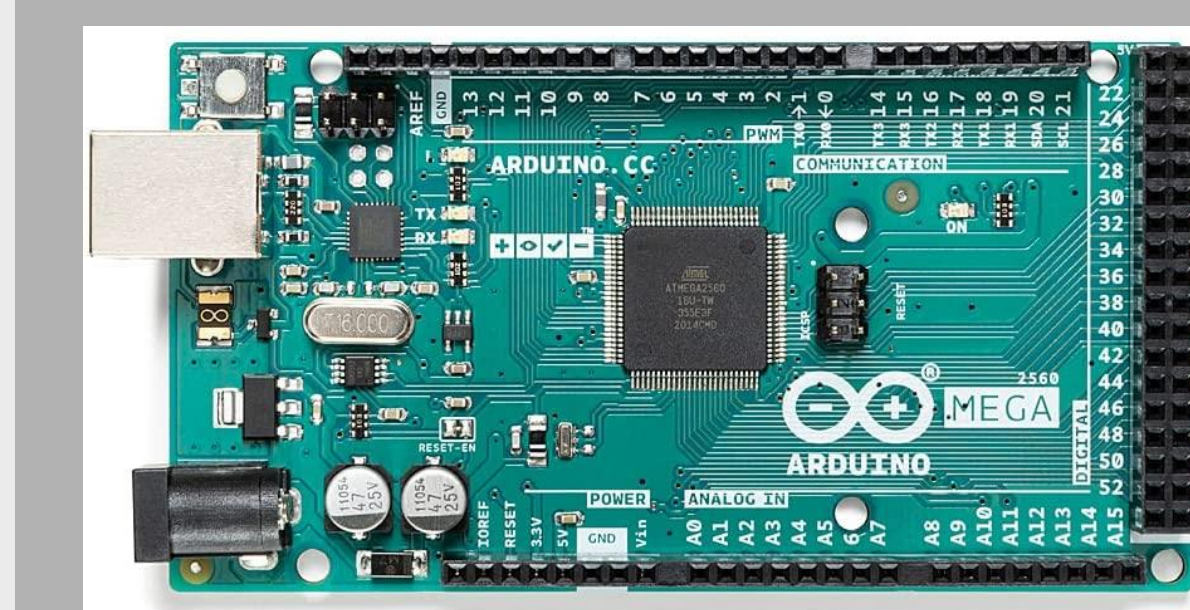

ARM ASSEMBLY

- Load cell (measure cup contents)

- Shaft Mounting Tube (custom prt)

- Motor shaft (custom prt)

- Mounting plate (custom part)

- Servo motor (pour out cup contents)

CONTROLS

- Arduino MEGA

- Stepper Drivers

- 24V power supply

- Bread Board

- LCD Screen/ Button Panel

SOFTWARE

- C++

- 700 plus lines of code

- 20+ code iterations

- Stepper control

- Servo Control

- Load Cell control

THE TEAM

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