WATER-LESS AGRICULTURE

A CHEAP SOLUTION FOR DROUGHT:)

AIM:

- WE SOUGHT TO CREATE A PRODUCT THAT CAN IMPROVE SOIL QUALITY, PRESERVE WATER AND RESIST DROUGHT THEREFORE PRODUCING A BETTER ENVIRONMENT FOR CROP'S GROWTH.
- IT MUST BE HARMLESS AND NON-POLLUTING WITH SUPER WATER ABSORBING ABILITY AND WATER PRESERVING ABILITY WHILE THE ABSORBED WATER CANNOT BE EASILY REMOVED WHEN APPLIED TO SOIL SUBJECT TO MICROBIOLOGICAL DEGRADATION AS A RESULT OF AEROBIC AND ANAEROBIC BACTERIA.
- THE SAP MAKES USE OF NATURALLY FOUND POLYSACCHARIDE IN ORANGE PEELS. THE PRODUCT IS FULLY BIODEGRADABLE, LOW-COST AND HAS BETTER WATER RETAINING PROPERTIES THAN COMMERCIAL SAPS.

DETAILS OF THE PROJECT COMPONENTS

- MATERIALS USED: ORANGE PEELS

  ARTIFICIAL SAP

  3 PLANTS(HIBISCUS)

  WATER (NORMAL GROUND WATER FROM WELL)

  SOIL MOISTURE SENSOR

- PLANT DETAILS: HIBISCUS (NATIVE BREED)

SOURCE OF ORANGE PEELS

- WE WENT TO A NEARBY JUICE SHOP IN RAMAPURAM AND ASKED FOR THE ORANGE PEEL THAT THEY USE FOR MAKING JUICE .
- HE ASKED FOR ONE DAY TIME , AND THE NEXT DAY HE GAVE ONE COVER OF ORANGE PEEL.

FINAL OBSERVATION AND RESULTS

TESTS DONE:

- ABSORPTION TEST
- TEST WITH PLANTS
- SOIL MOISTURE TEST

ABSORPTION TEST

- THE ARTIFICIAL SAP AND THE SAP THAT WE PREPARED WERE PUT TO TEST BY DIRECTLY ADDING WATER TO BOTH THE SAPS , THUS WE WERE ABLE TO DETERMINE THE WATER RETAINING CAPACITY OF THE SAP.
- TO 5 GRAMS OF EACH SAP , 2 GLASSES OF WATER WAS ADDED.

INITIAL IMAGE OF THE SAP

This is the photo of the sap put for absorption on 23rd January 2019

TEST WITH PLANTS

- THREE PLANTS WERE BOUGHT AND EACH PLANT WERE WATERED ONLY ONCE ON 20/1/2019 .
- PLANT (1) : NORMAL SOIL
- PLANT (2) : SOIL WITH ARTIFICIAL SAP
- PLANT (3) : SOIL WITH OUR SAP

QUANTITY OF THE SAP THAT WAS ADDED:

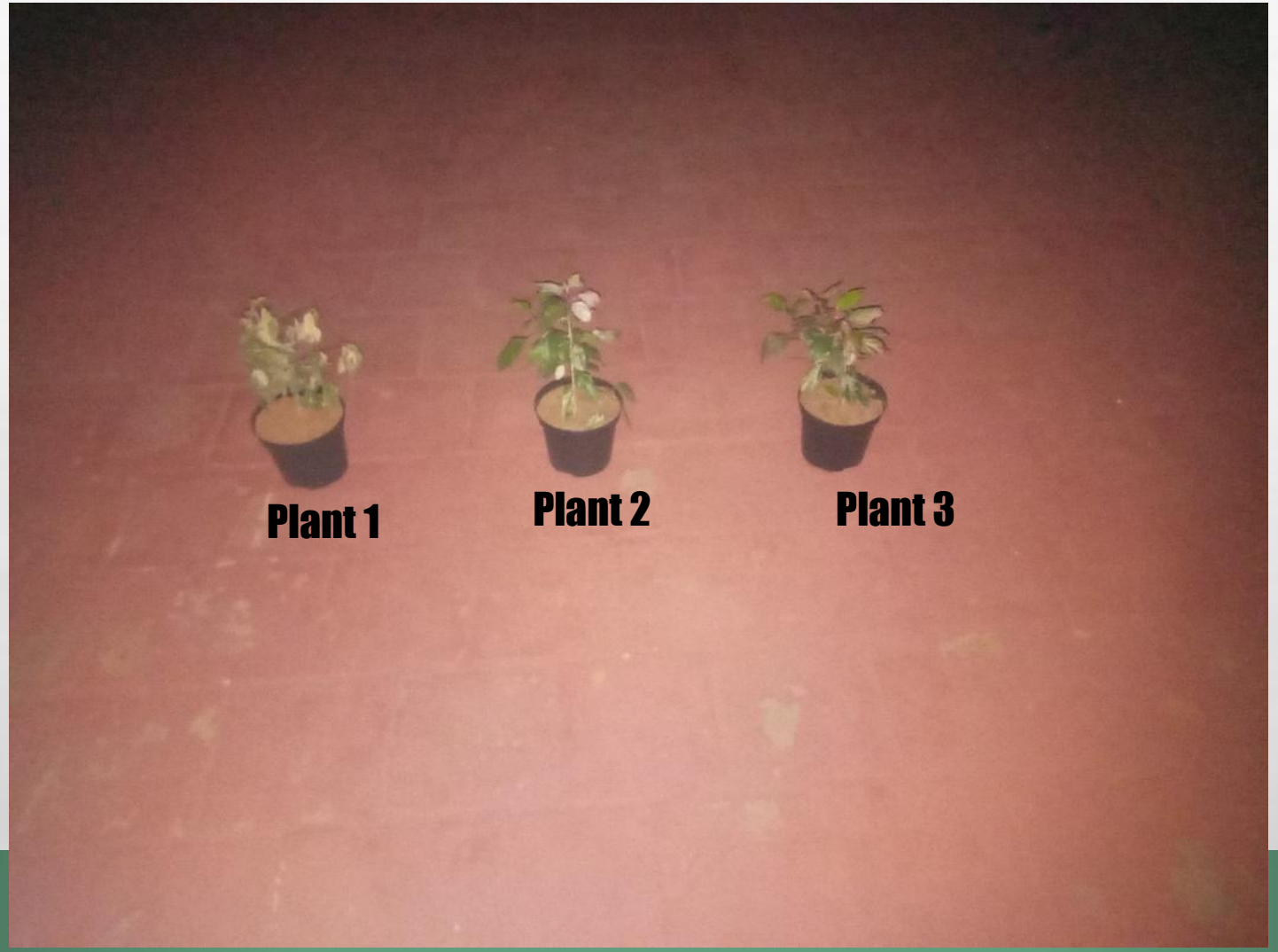
3 SPOONS WAS MIXED WITH 1 POT OF SOIL

DAY 1 ~ (20-1-2019)

DAY 2~(21-1-2019)

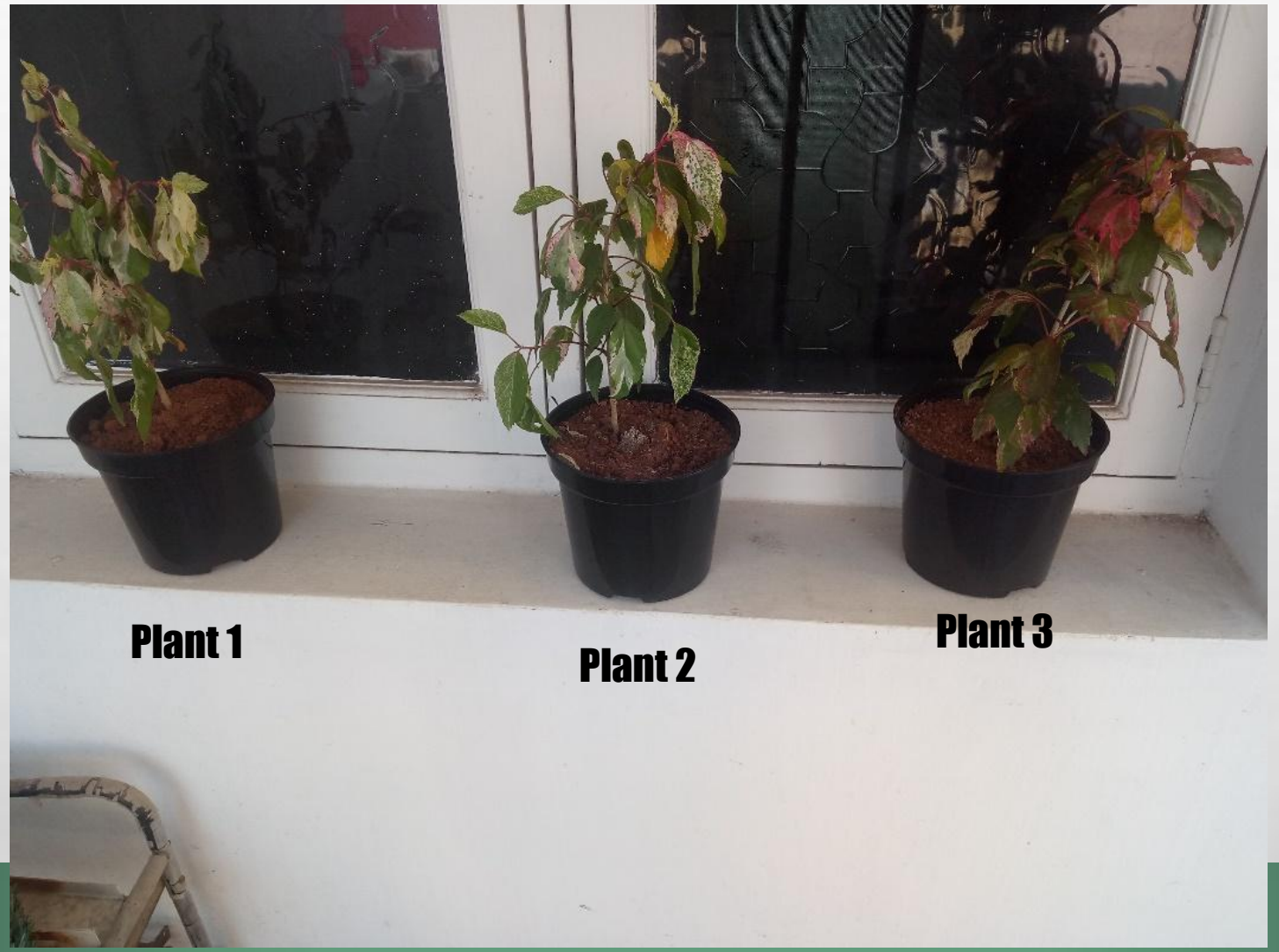
DAY 3~(22-1-2019)

DAY 4~(23-1-2019)



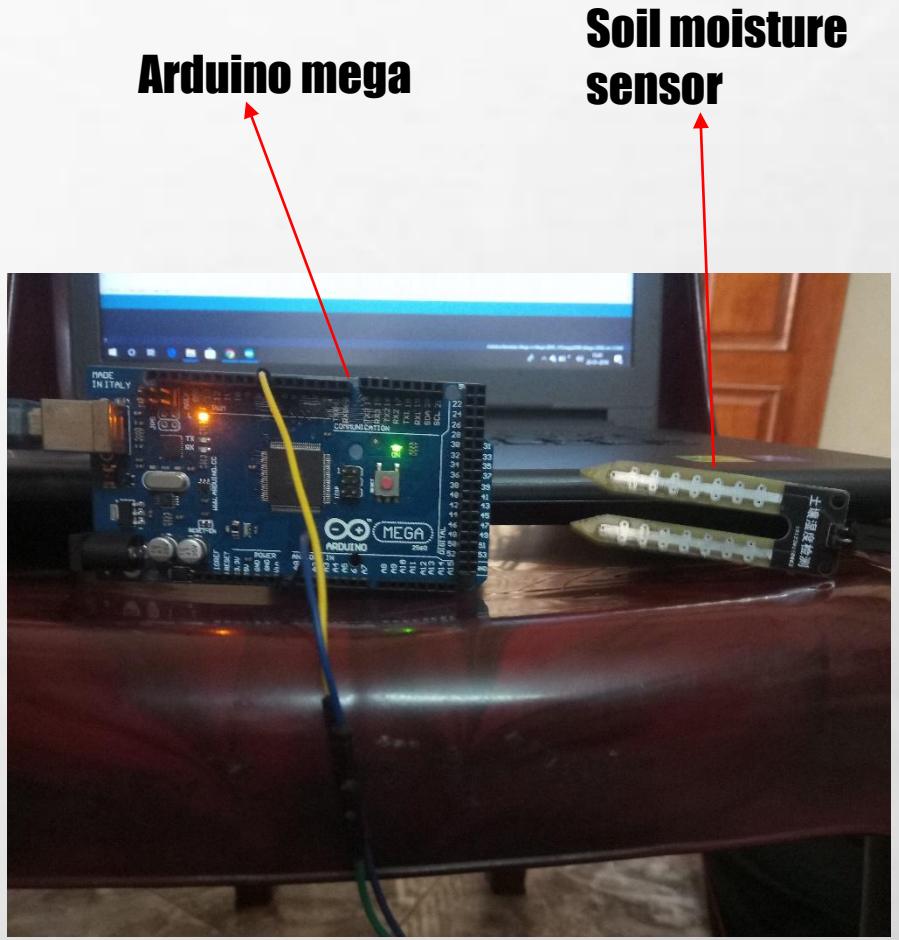
DAY 5~(24-1-2019)

DAY 6~(25-1-2019)



SOIL MOISTURE TEST

- THE TEST WAS CONDUCTED USING FOLLOWING EQUIPMENT
- SOIL MOISTURE SENSOR
- ARDUINO MEGA
- ARDUINO IDE (SERIAL MONITOR)



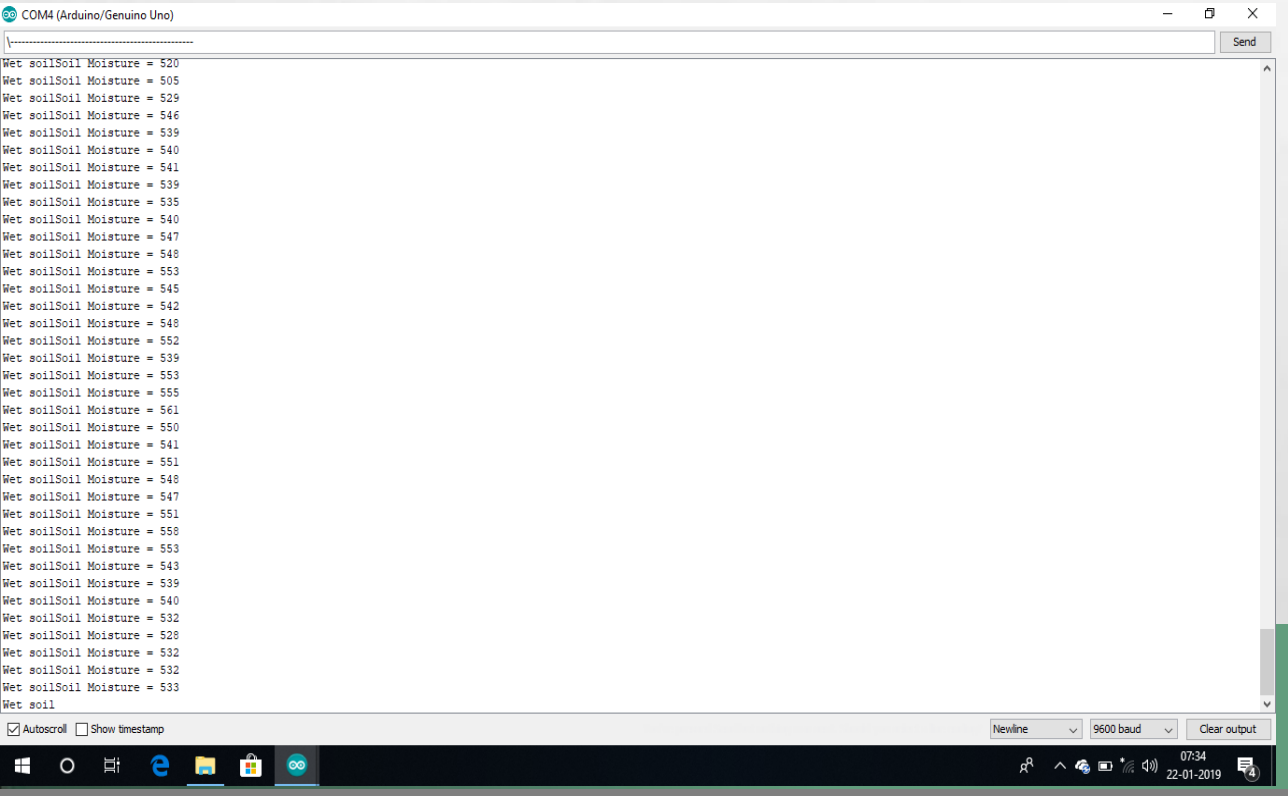
PROCESS OF THE TEST

- THE MOISTURE LEVEL OF THE SOIL WAS CHECKED FOR THREE PLANTS ON 22ND OF JANUARY 2019 AND ON 24TH OF JANUARY 2019.
- WE WERE ABLE TO SEE THE GRADUAL DECLINE IN THE MOISTURE LEVEL OF THE SOIL. HOWEVER THE DECLINE WAS DRASTIC IN PLANT 1 WHERE AS IN PLANT 2 AND 3 IT WAS VERY MINUTE.

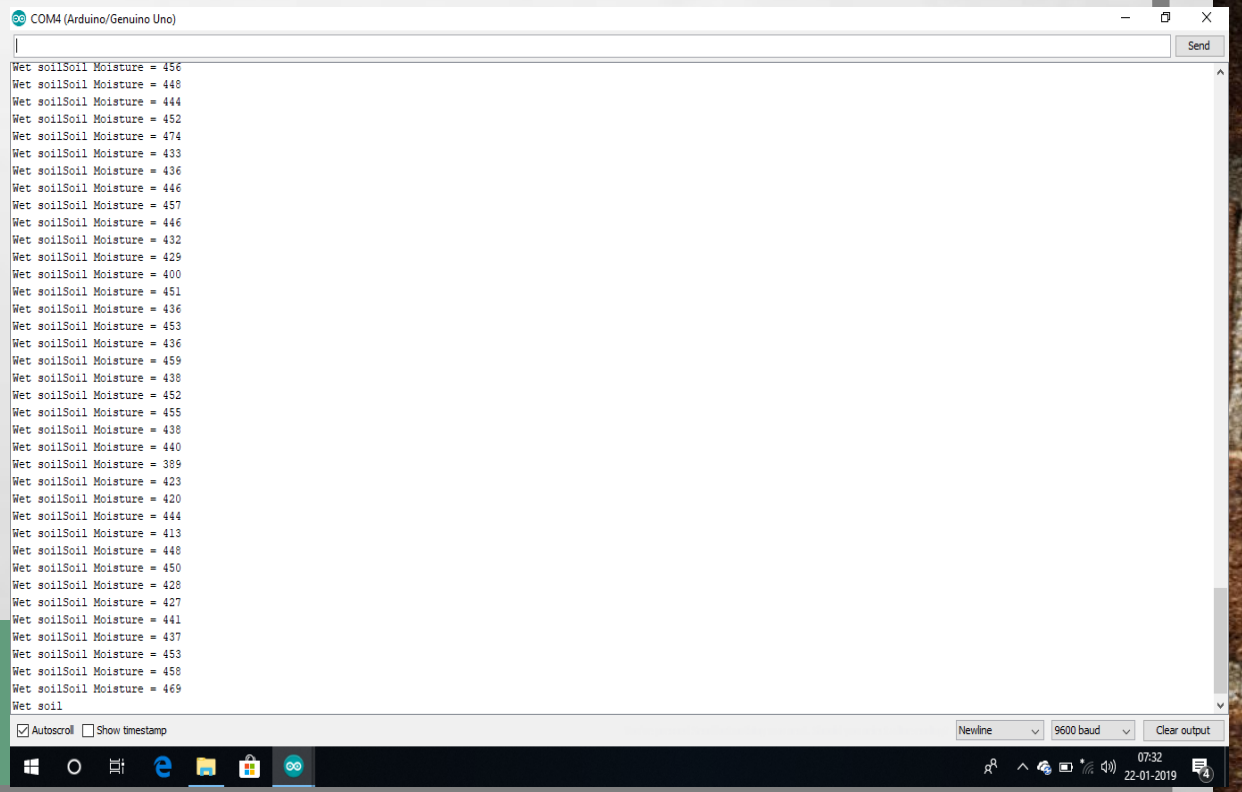
TEST READING

22nd January 2019

PLANT 1



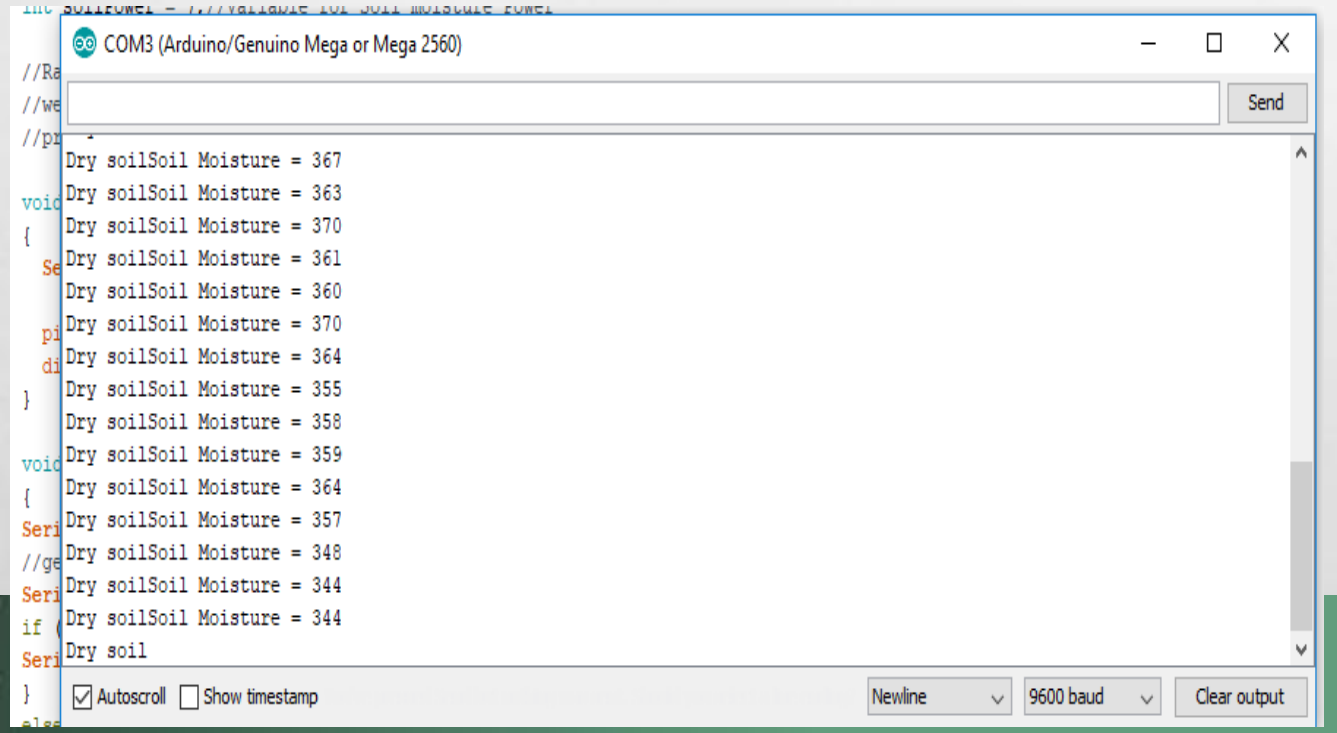
PLANT 3



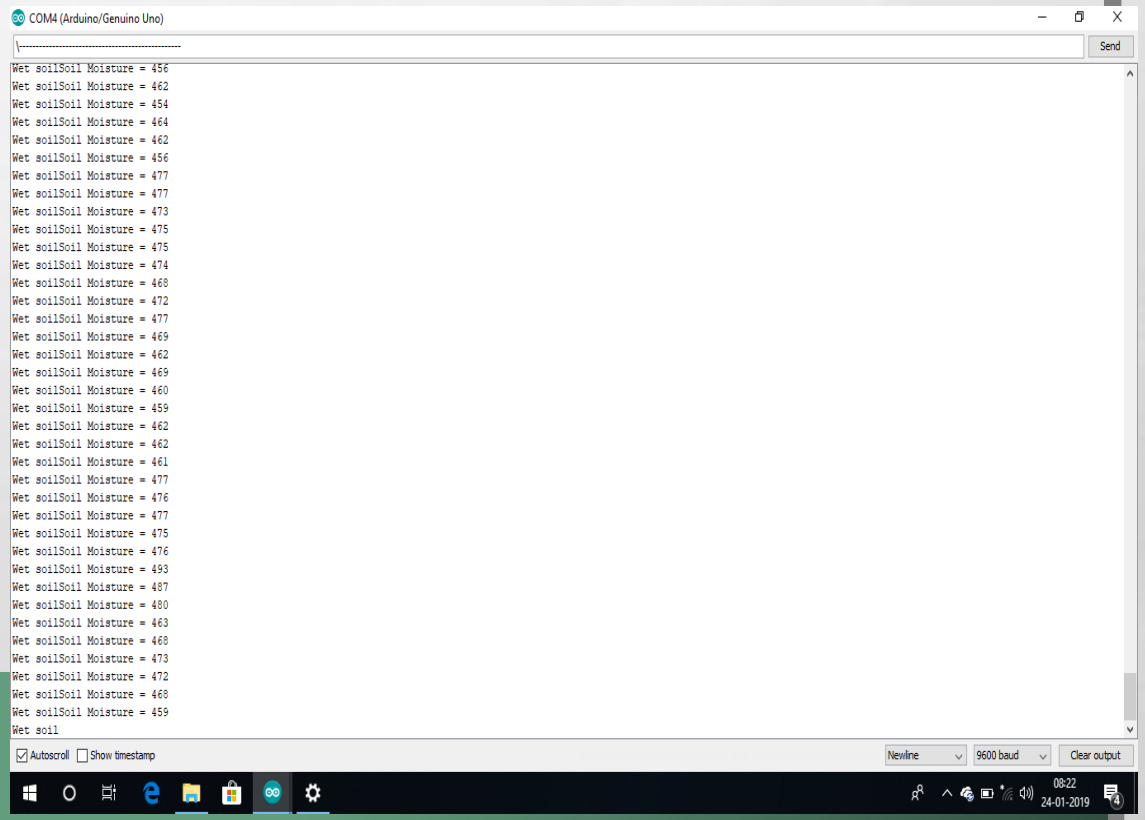
TEST READING

24th January 2019

PLANT 1



PLANT 3



FINAL SUMMARY AND RESULTS

THEREFORE AFTER THE TESTS THAT WE ATTEMPTED AND FROM THE RESULTS WE WERE ABLE TO LIST THE FOLLOWING RESULTS:

- THE SAP THAT WE CREATED WAS ABLE TO ABSORB WATER OF ABOUT 10 TIMES OF ITS WEIGHT AND RETAIN IT FOR NEARLY 8 DAYS.
- THE SAP WHEN USED WITH THE PLANTS RESULTED IN ITS SUSTAINED GROWTH FOR 5 DAYS .
- THIS WILL THUS SAVE THE WATER REQUIRED FOR 5 DAYS THUS HELPING IN THE APPROPRIATE USAGE OF WATER DURING DROUGHT.
- HENCE THE PROJECT IS SUCCESSFULLY COMPLETED.

THANK YOU !