

## Moisture Sensor Information

315	Water^			
X	Soil			
900	Air^			
		%Moisture		
		315	100%	
585		432	80%	
117		549	60%	
		666	40%	
		783	20%	
		900	0%	
				Min
				Max
	Water		221.92	307.17
	Soil		348.58	895.79
	Air		901.22	914.1
				TESTED IN SOIL WITH WATER
				ADDED

The moisture sensor we are using has both analog and digital value output. The digital value is a boolean of 1 or 0 which indicates whether or not to dispense water. The analog value gives an arbitrary range which we identified through trials to find an upper and lower bound. The upper bound was found through keeping the sensor dry and in contact with the ambient air as the only fluid. The lower bound was found through keeping the sensor submerged in tap water as the only fluid. Once we identified this range, there were approximately 585 numerical values in between which were broken into increments of 117 or 20% of 585 which relatively gives the %moisture of the material or fluid the sensor is in contact with. The range has saturation as the lower bound and dry as the upper bound.

With this new range of sensor values, we created a conditional statement for the arduino to control the solenoid valve. If the value is below the lower bound, the microcontroller will turn the solenoid valve off; however, turn on if above the upper bounds. This action will take place until the moisture sensor is within the defined range.

In the next step, we are creating a user interface where they can either (1) choose a relative moisture range as defined above or (2) choose a select plant which contains a specific relative moisture range for optimal growth.