Rain Sensor integrated with irrigation system used to save water in farms

Design Options

Design Options	Raspberry pi	Arduino with Wi-Fi	Node MCU Esp8266
Size	Small	Small	Extremely small
Cost	$65	$50	$15
Difficulty	Easy	Medium	Medium
Security	Yes	Yes	Yes
Language	Python	C,C++	C,C++
Response Time	Fast	Slow	Slow
External Memory	No need (Includes SD Card)	Requires	Requires
Communication Protocol	Yes	Yes	Yes
Prior Knowledge	No	No	Yes

Option one: Raspberry Pi:

This option is the easiest in terms of programming since it is depending on an easy programming language (Python) moreover, it is including an SD Card so and operation system so there is no need to external server but the problem is so costly compared to other options.

Option Two: Arduino with Wi-Fi:

This Option including the traditional Arduino board but it is integrated with a Wi-Fi module, in terms of capabilities it so costly especially when we need more than one device in large farms. Moreover, it requires an external server to store the collected data from the sensor since it is not including an operation system or big storage unit.

Option Three: Node MCU Esp8266:

This option is considered the best option in terms of size, cost, and installation also it has the required capabilities and functionality for such types of projects compared to its cost, but it also needs external server including a storage unit to store the collected data from the rain sensor.

I am going for option three for the following reasons:

- Affordable solution
- Extremely small so it can relatively be installed in anywhere at the farm
- In terms of processing it is not the fastest but this project doesn't require high speed processing or response.

Design Structure: