

Plant Sentience

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Testing and proving advanced philosophical concepts of plant sentience will rely first on the development of a nuanced **lexicon for plant communication**. At MIT's OpenAg Initiative we have a rare set of tools, unique thinkers in plant science, and unparalleled engineering skills that will allow us to develop a **comprehensive inventory of plant signaling – a plant dictionary** for human understanding. And, as we work to unveil exactly how plants communicate, we will be able to understand the extent of plant intelligence, translated into the human concept of sentience.

Despite the complexity of sentience, in the strictest and simplest sense, it primarily implies the ability to perceive stimuli. Plants are clearly circumscribed within this definition, as there are multiple defined (and undefined) sensing mechanisms within plants. A conservative list of plant 'senses' can be described to include forms of the human concepts of touch, smell, sight, taste, hearing, hygroscopic sensing, gravitropism, electromagnetic field detection, and chemical gradient detection. By some accounts there are up to 15 definable 'senses' utilized by plants. Through these plant 'senses', and the **construction of rigorously controlled environments**, OpenAg will be able to specifically apply isolated stimuli and then richly describe the full panoply of a plant's ability to integrate disparate signaling systems ('senses') into a plant 'thought'. After this sensual stimulation and signal integration, we will precisely record all parameters – chemical, electrical, and many others. In our careful observations of how plants then communicate these signals to their surroundings, we endeavor to characterize forms of the **resultant plant 'chatter', 'singing', 'crying', 'warning calls', etc., originally developed within the more complex ecology—and as a result of specific evolutionary stressors—of the plant's environment.**