



## **SEEDS HackSciArt**

### **SEED 24-Medioambiente**

#### **RESEARCHERS**

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#### **1. ESSENTIAL DIMENSION**

*(Objective descriptive information of the scientific seed)*

#### **NAME**

“Pollution, a global change that affects the environmental health of the planet”

#### **KEYWORDS**

Heavy metals, phytoremediation, environmentally friendly

#### **BRANCH**

The use of phytoremediation, assisted or not by microorganisms, to mitigate the effects of contamination is a methodology that falls within the field of plant ecophysiology.

#### **ABSTRACT**

We select plant species with the potential to remove contaminants from a soil. The selection depends on the decontamination mechanism that we want to carry out. We will look for a hyperaccumulator species, if what we want is to extract the contaminant from the environment; subsequently it will be necessary to remove and process the plants so that the contaminant does not return to the environment. We will look for a phytostabilizer species if

what we want is to immobilize, for example, some heavy metal in the soil (at the level of the roots of the plant) so that the contaminant is not available to any organism. Plants immobilize heavy metals by releasing exudates with heavy metal chelating properties from their roots.

## **METAPHOR**

Phytoremediation is an environmentally friendly methodology, with public acceptance and low cost, for soil decontamination. However, it is rarely used because it requires that the area to be decontaminated be left without any economic activity for a long time. In addition, its radius of action is limited to the root system of plants.

## **PHASES OF THE USUAL SCIENTIFIC METHOD**

1. Know the nature of the contaminant and the level of contamination.
2. Carry out a study to select the most appropriate phytoremediation species.
3. Test the phytoremediation capacity of the species under controlled conditions; a previous pilot test.
4. Once we know which is the ideal species, we proceed to plant it in the intervention area (area to be decontaminated).
5. Contamination levels are monitored over time to verify the effectiveness of the intervention.

## **TOOLS**

Apply the scientific method to address the problem (search for information, formulate a hypothesis, experimental design, empirically test the hypothesis to validate or refute it).

## **RESOURCES**

- 1) Bibliographic information collected in databases such as Scopus or Web of Science on plants described as phytoremediators.
- 2) Previous experience of the research team:  
[https://investigacion.us.es/sisius/sis\\_showpub.php?ct=1&cs=&idpers=6178](https://investigacion.us.es/sisius/sis_showpub.php?ct=1&cs=&idpers=6178)
- 3) Availability of means such as greenhouses for the pilot test, prior to field work.



## 2. ADDITIONAL DIMENSIONS

(The following sections add subjective information from the scientific seed, in order to inspire creatives in the creation of a SciArt work. Some of the sections may not have information if the researcher chose not to specify anything.)

### SCIENTIFIC MOTIVATION

I love carrying out research whose results can generate a benefit to society and contributing to protecting the environment undoubtedly generates that benefit.

The applications of this type of actions are very evident with regard to the conservation of our ecosystems. Although it is desirable to put the means to avoid contamination of our environment, when it has already taken place, it is important to carry out actions that improve the situation without generating further destruction. For example, moving earth to remove a contaminant destroys the structure of the soil and affects its fertility and the services it provides us..

## **METAPHYSICS**

All these studies are useless if managers are not willing to apply them. In order not to slow down economic activity, do we leave contaminated soil without intervention for its cleaning? Are we victims of our selfishness when consuming products that come from contaminated soils?

## **ETHICS**

As it may be that there are no common limits, for example, at a European level, that are established when we consider that a crop soil has a level of heavy metal contamination that can be toxic to our health. Do you really want to protect citizens?

## **COLORS**

Green, to me represents the health of an ecosystem.

## **AROMAS**

Floral.

## **FLAVORS**

Fruity.

## **SOUNDS**

Song of birds and buzzing of insects.