Peregrin

PRODUCTORES Y COMERCIALIZADORES HORTOFRUTÍCOLAS

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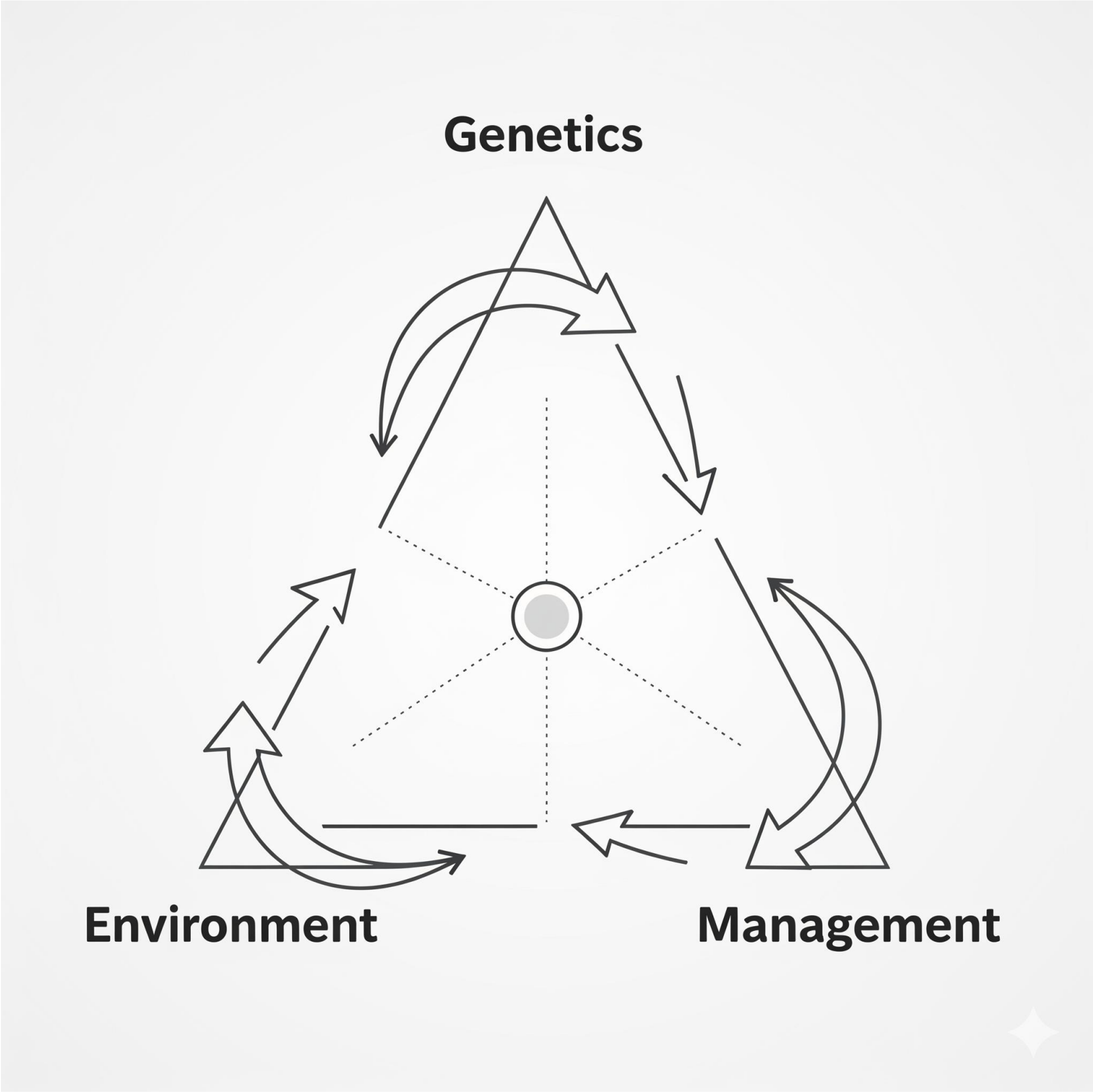
El Valor de Utilizar “Semilla” Certificada de Ajo: El Programa de Peregrin

TRIÁNGULO DE LA PRODUCTIVIDAD AGRÍCOLA



“SEMILLA” DE CALIDAD: PRINCIPALES PROBLEMÁTICAS

DISPONIBILIDAD DE SEMILLA DE CALIDAD GENÉTICA & SANITARIA

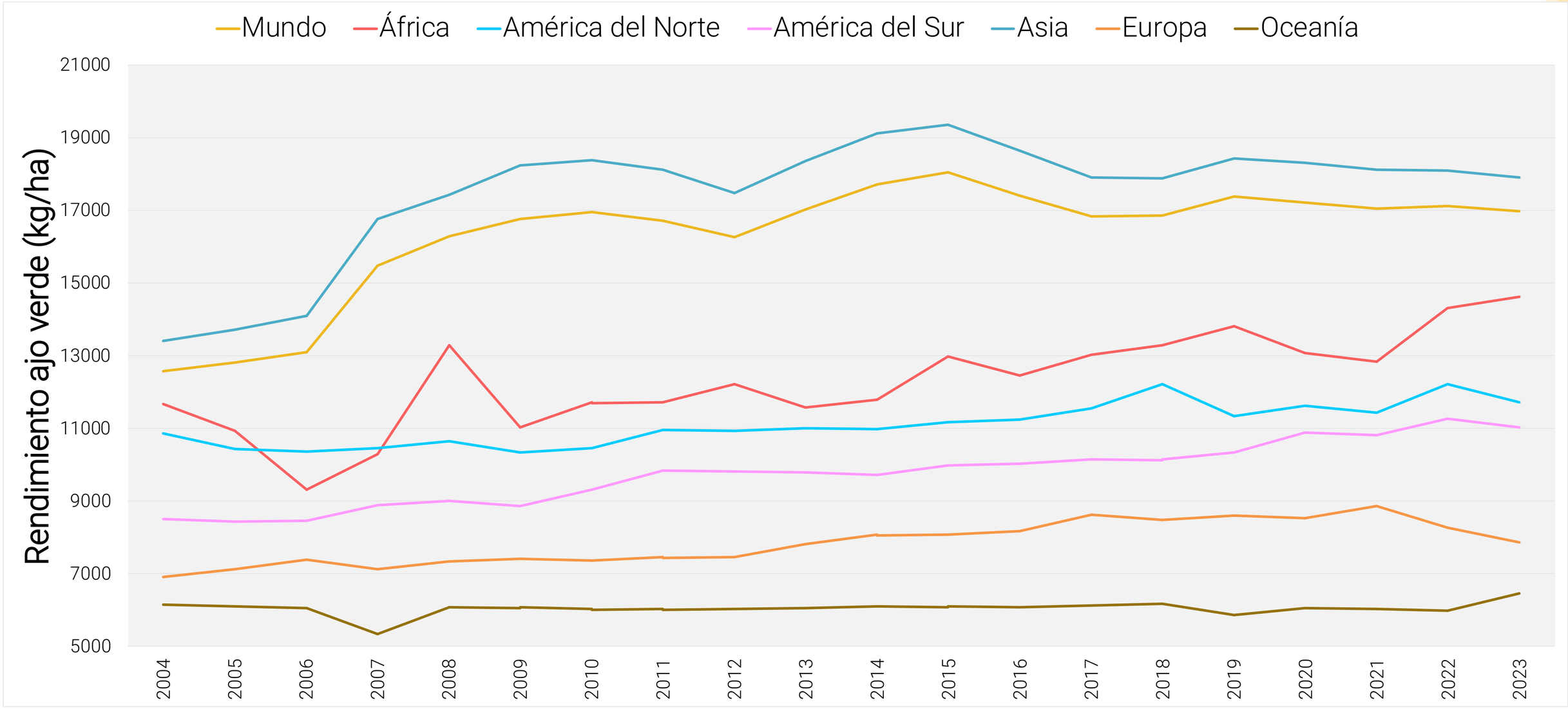
EXPLOTACIÓN TRADICIONAL

PROPAGACIÓN VEGETATIVA

ESTRESES BIÓTICOS & ABIÓTICOS

BAJA PRODUCTIVIDAD

PRODUCTIVIDAD DEL AJO: FAO (2024)



CONCEPTOS CLAVES EN MEJORA DE PLANTAS

físico: clima
suelo, manejo

biológico:
microbioma
planta & suelo

fenotipo → **F = G + A + EP** ← *epigenética*

carga genética

Variedad

Definición (UPOV 1991, Artículo 1 (vi))

"Variedad" significa un agrupamiento de plantas dentro de un **único taxón botánico de rango más bajo**, que *(para especies de propagación vegetativa)* puede definirse por la expresión de características resultantes de un genotipo (**MONOCLON**) o combinación de genotipos **(POLICLÓN), distinguible** de cualquier otro agrupamiento por al menos una de esas características, y será considerado una **unidad adecuada** para su propagación sin alteración.

1. Distinción: debe diferenciarse claramente de cualquier otra variedad conocida.
2. Homogeneidad: debe mostrar uniformidad en sus características esenciales.
3. Estabilidad: sus características deben permanecer constantes tras sucesivas multiplicaciones.
4. Novedad: no debe haber sido comercializada antes de cierto tiempo previo a la solicitud de protección.

IDENTIFICACIÓN GEOGRÁFICA PROTEGIDA (IGP) “AJO MORADO DE LAS PEDROÑERAS”

¿Hay variabilidad (estadística) para caracteres de interés agrícola?

¿ Hay homogeneidad intrafamiliar?

¿Hay diferencias genotípicas?

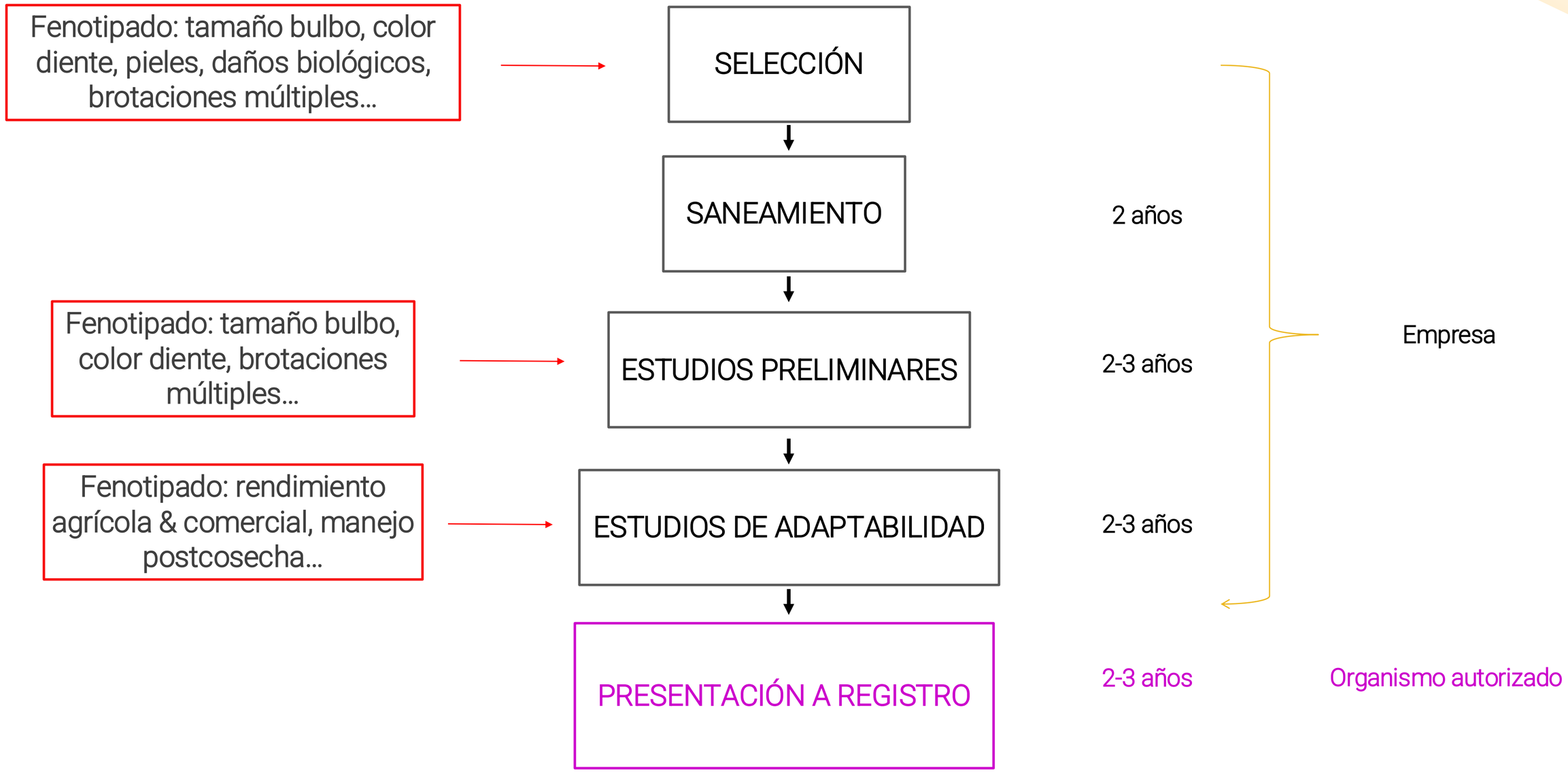
¿Cómo actúan los efectos ambientales sobre las familias?

¿Qué ganancia podemos obtener practicando selección?

¿Podemos crear variedades comerciales?

UNA CABEZA, UNA FAMILIA

PROGRAMA DE MEJORA PEREGRIN: Esquema

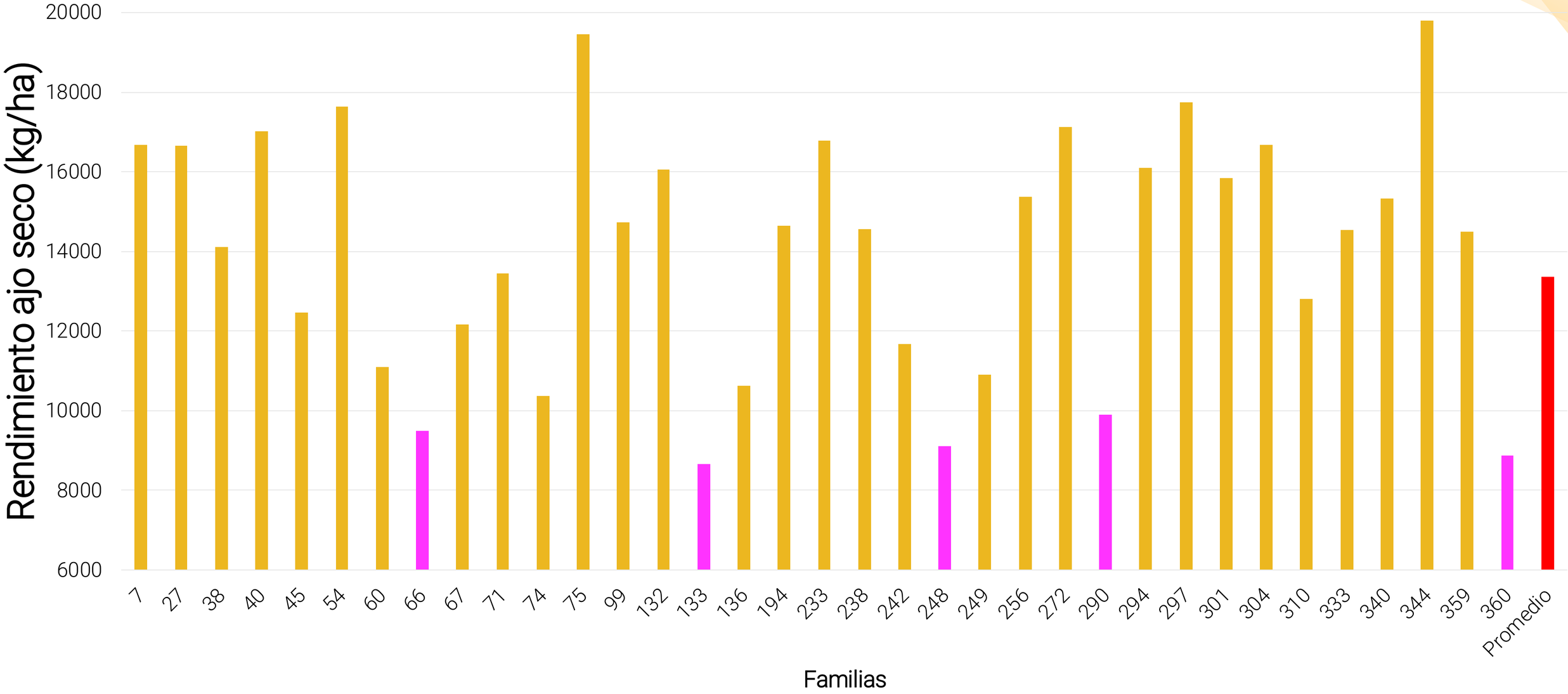


FENOTIPADO: Productividad & GxA (Fase I)

Estudios Preliminares Fase I (2021-2023)

Estudios de Adaptabilidad Fase I (2023-2025)

FENOTIPADO: Productividad de Candidatos Varietales (Fase I)

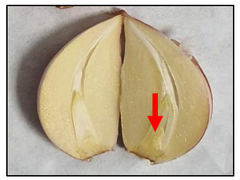


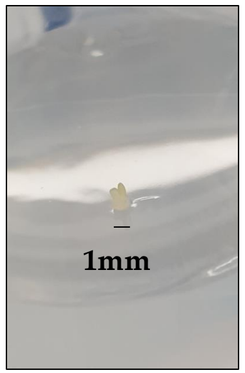
FENOTIPADO: Perfiles Bioquímicos (Fase I)

	Familias	
	194	**294**
Alicina (mg/g de PS)	31,82	60,07
Tocoferol (Vitamina E) (µg/g)	2.23 ± 0.10	3.43 ± 0.08
ANTIOXIDANTES		
Naringenin 1 [ng/g]	159± 9	0±0
Nobiletin [ng/g]	2.68± 0.15	1.82±0.10
Tangeretin [ng/g]	3.05± 0.17	2.62±0.15
Hesperedina [ng/g]	113.64±6.42	36.29±2.21
Isorhamnetin [ng/g]	106.7± 6.03	0±0
2,3-Dihydroxybenzoic acid [ng/g]	21.73± 1.22	0±0
Vanillic acid [ng/g]	859.06± 48.6	545.55±33.29
Caffeic acid [ng/g]	6600.4± 373.6	160.65±9.80
p-Coumaric acid [ng/g]	225.86± 12.78	137±8.36

FENOTIPADO: Resistencia a *Stemphylium* spp. (Fase III)

PRODUCCIÓN DE SEMILLA. Saneamiento por Cultivo de Meristemos

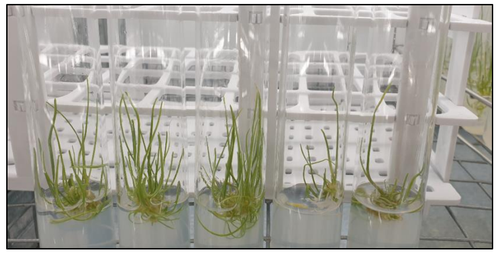




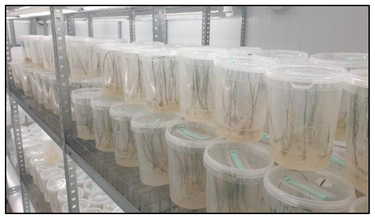
10 days

3 weeks

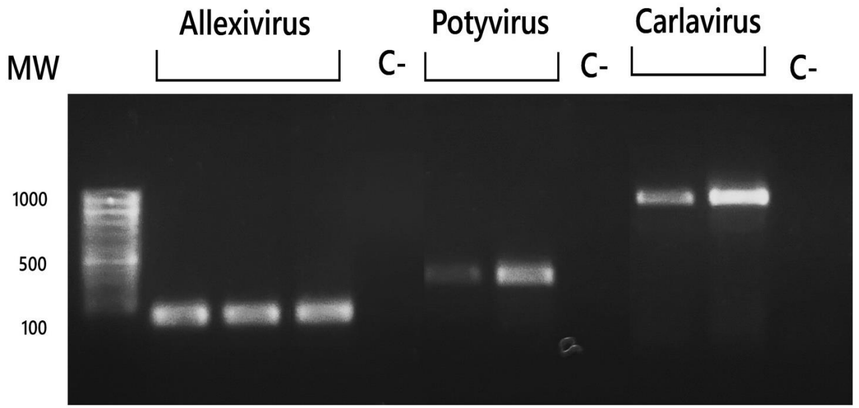
9 weeks



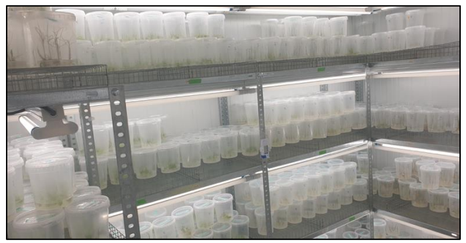
3 months



Conservación



Virus-free



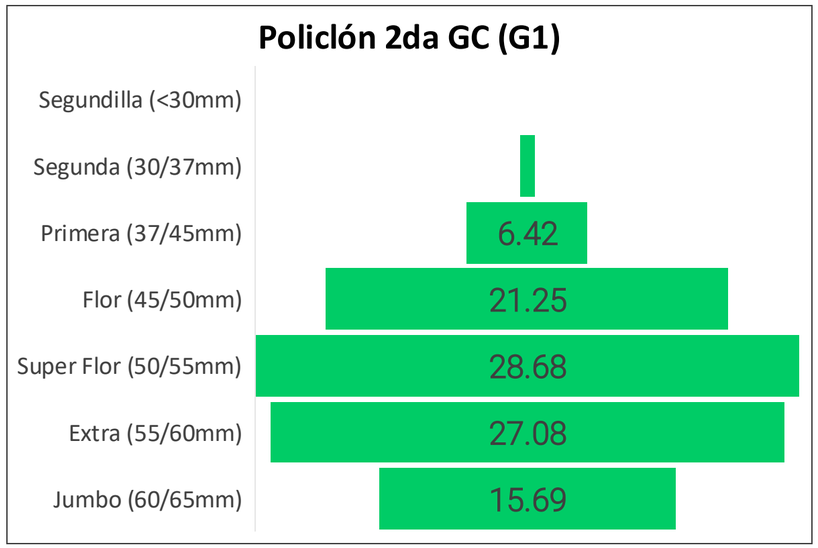
G0

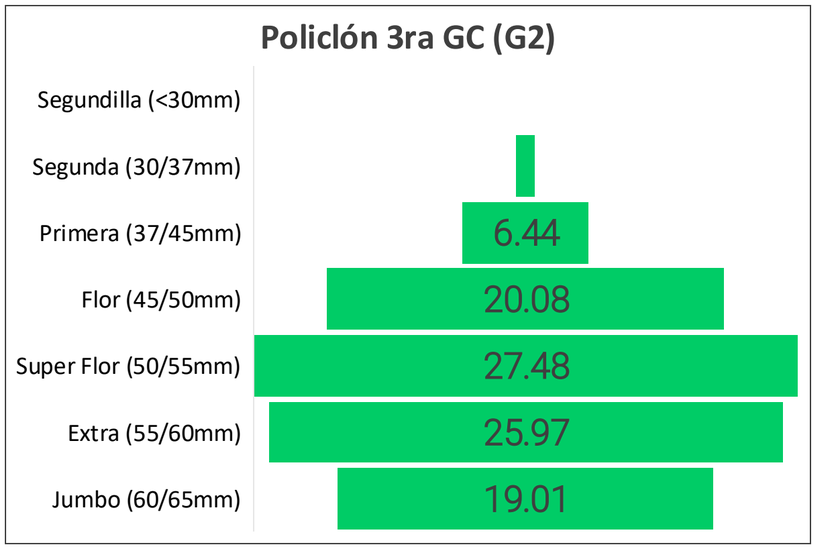
G0

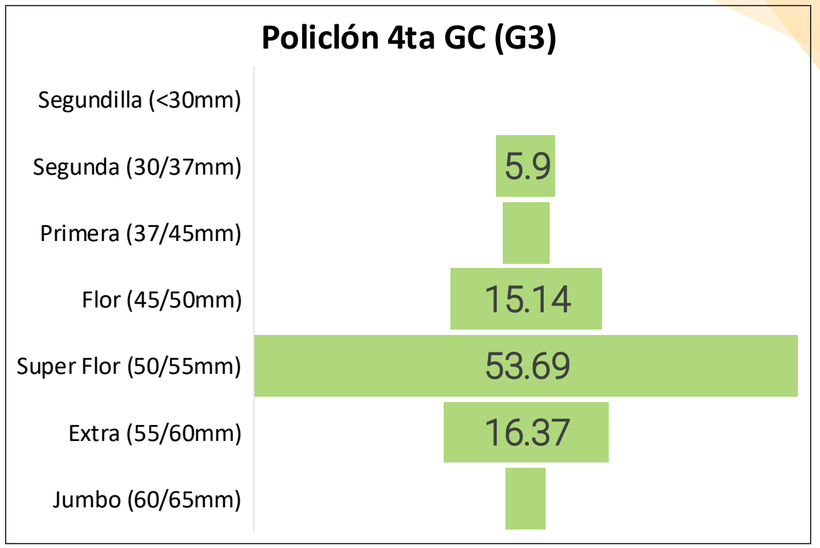
>G6

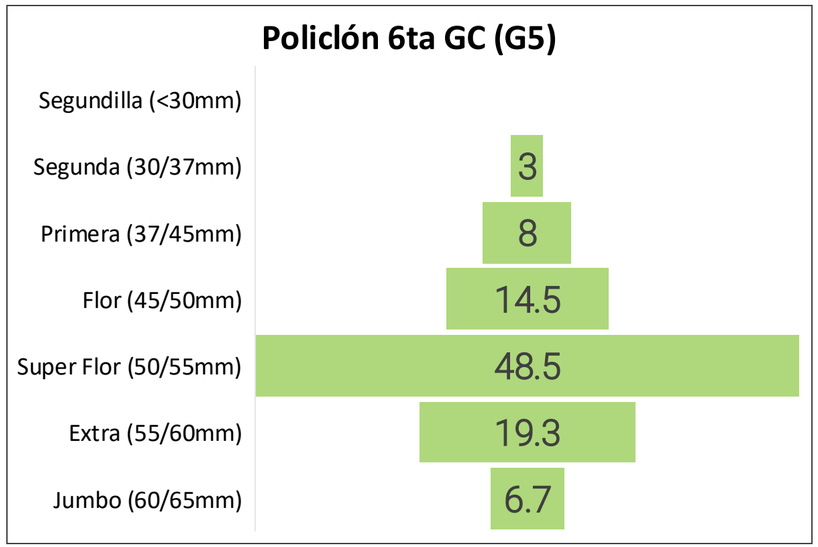
PRODUCCIÓN DE SEMILLA. Calidad Planta In Vitro & G0

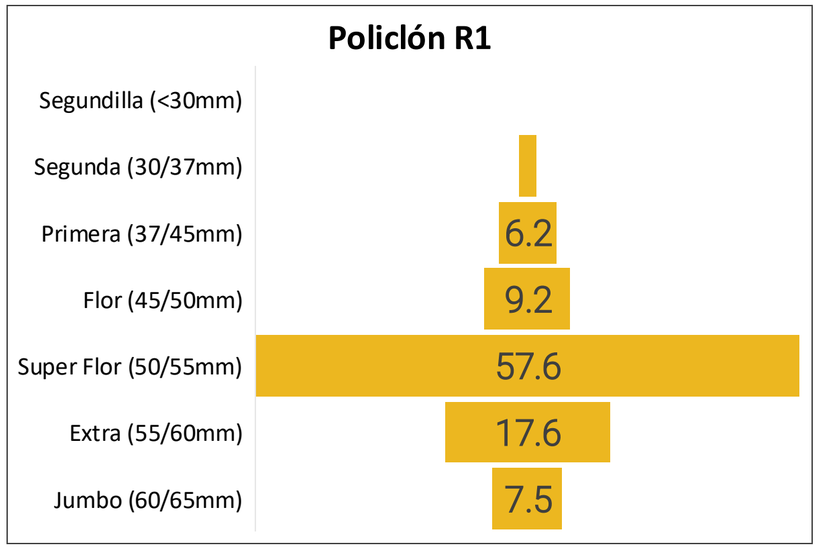
PRODUCCIÓN DE SEMILLA: Escandallo por Calibres (%)

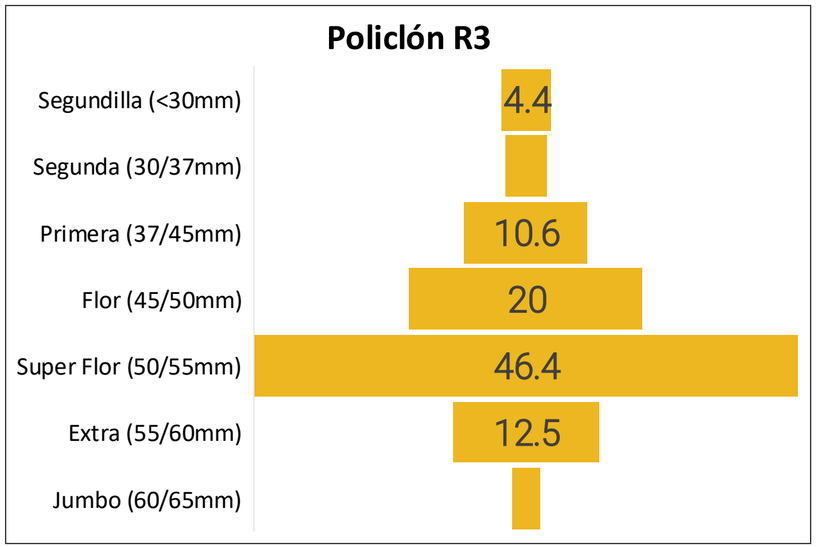




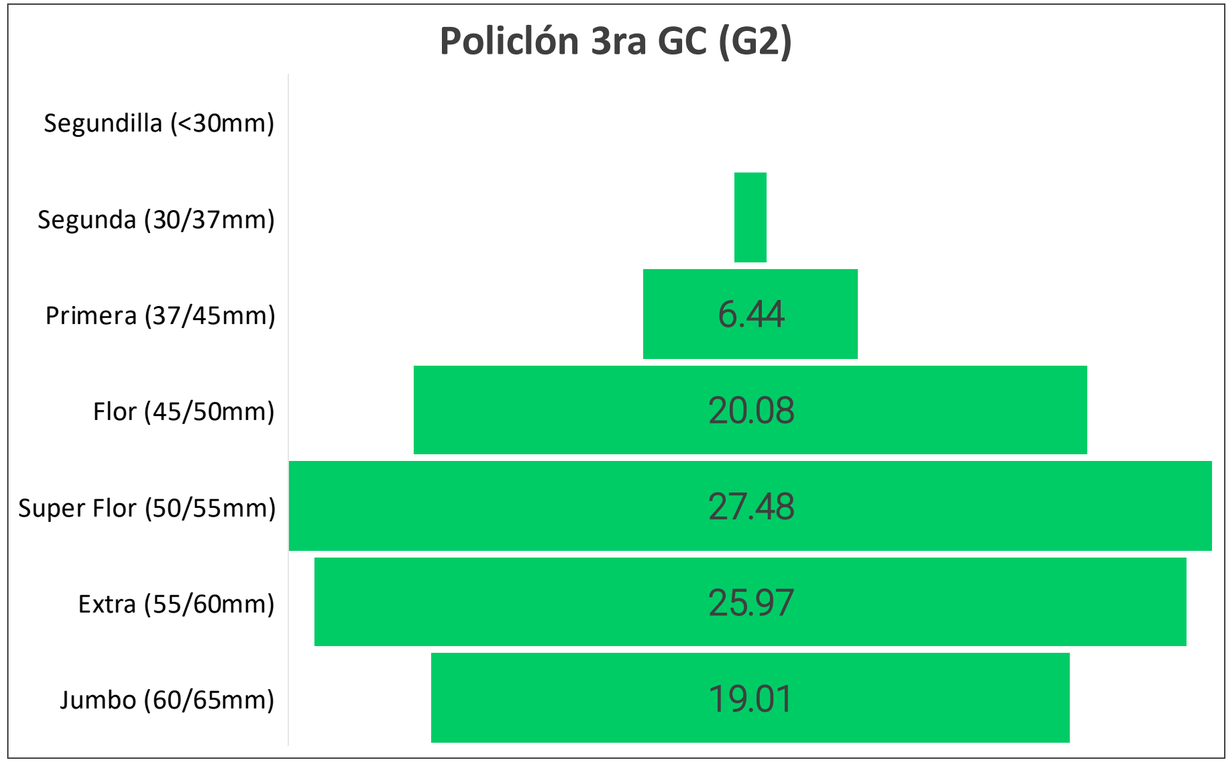


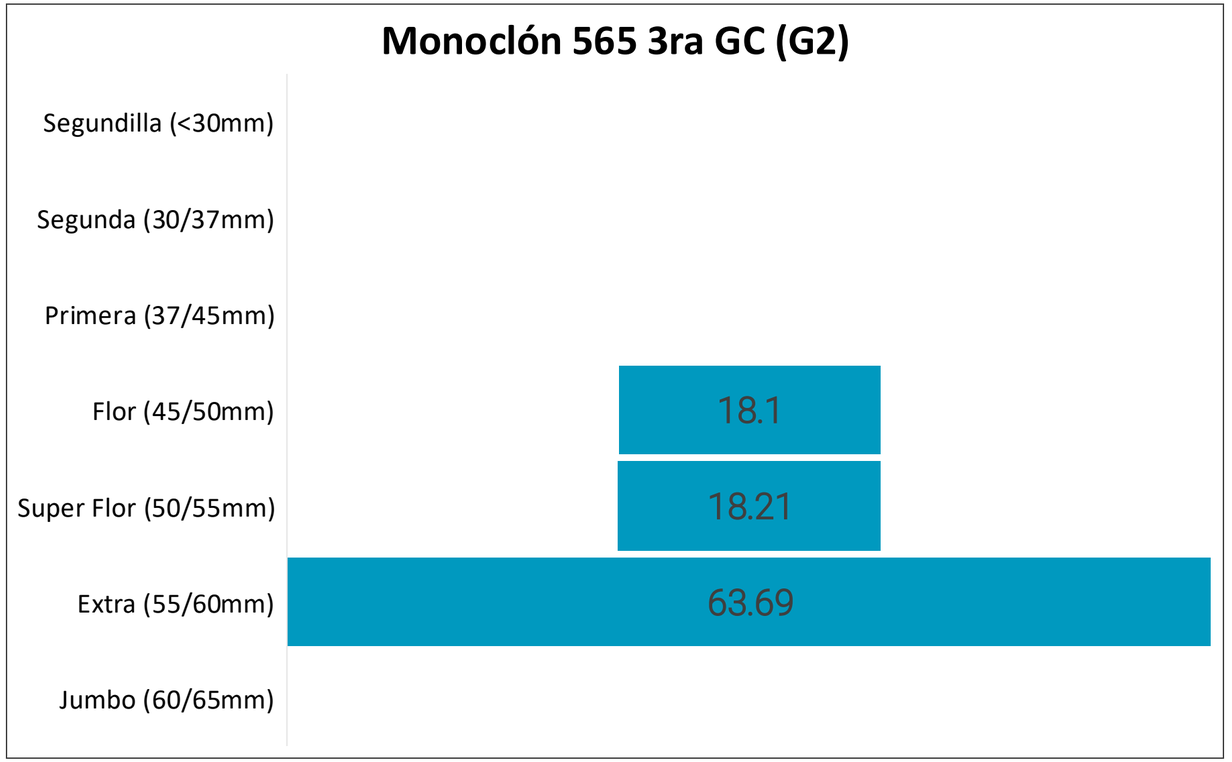






PRODUCCIÓN DE SEMILLA: Escandallo por Calibres (%)





agronomy

MDPI

Article

Toward the Development of Garlic Varieties: The First Attempts

Ricardo Julián Licea-Moreno *, Ángeles Rodríguez-Haro and Juan Antonio Marín-Martínez

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Abstract: Despite garlic (*Allium sativum* L.) being recognized as the second most important species in the *Allium* genus, a limited number of varieties are available worldwide. Aiming to develop new purple garlic varieties, a representative sample was used to determine the extent of phenotypic variability for commercially desirable characteristics. Initially, 360 bolting bulbs were selected based on their size and abundant external scales. After further assessment, 243 bulbs were discarded due to undesirable traits such as light purple color, numerous small cloves, or damage from *Fusarium* spp. and mites. Although garlic reproduces asexually, each bulb was considered to represent a distinct family. Thus, 117 families were planted in a randomized complete block design during the 2021–2022 growing season. Physiological, morphological, and phenological traits were assessed for each family, along with damages caused by pests and pathogens. As a result of these evaluations, 103 families were selected for a second trial the following season. Due to increased selection pressure, only 23 families remained in the program at the end of the second trial. High variability was observed for most traits, with a strong influence from family lineage. Environmental conditions significantly impacted the performance of the families, highlighting the need to evaluate them under diverse environments. The high variability within the selected sample indicates a strong potential for developing new garlic varieties.

Keywords: *Allium sativum* (L.); clonal selection; genotype–environment interaction; landrace; plant breeding; selection pressure

Gatersleben Allium Symposium & ECPGR Activities
20 – 22 May 2025

An Ongoing Program for the Selection of Garlic Varieties, and the *In Vitro* Conservation of Valuable Accessions at Peregrin, Spain

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INTRODUCTION: Peregrin (Spain) runs an ongoing program focused on the selection of garlic (*Allium sativum* L.) varieties and the *in vitro* conservation of high-value accessions. The program combines field evaluation of diverse genotypes—to identify superior traits such as yield, disease resistance, and post-harvest quality—with advanced tissue culture techniques for the long-term preservation of genetic resources. By integrating traditional selection methods with biotechnology, the initiative aims to enhance garlic production while safeguarding biodiversity. This work supports sustainable agriculture and contributes to future breeding efforts, ensuring the availability of elite garlic lines for both research and commercial use

Purple garlic, protected by the Geographical Protected Indication (GPI) *Ajo Morado de Las Pedroñeras*, is a highly valued ecotype known for its high content of sulfur-containing compounds and distinctive organoleptic properties

MATERIALS AND METHODS : Determination of Viral Infections

DEPARTAMENTO I+D+i SECCIÓN AJO

EQUIPO DE TRABAJO

RICARDO JULIÁN LICEA

RESPONSABLE DE I + D+ i LABORATORIO

ÁNGELES ROGRÍGUEZ

MÁSTER EN MEJORA GENÉTICA

LICENCIADA EN BIOTECNOLOGÍA

DANIELA MOSCOSO

LICENCIADA EN BIOQUÍMICA

IVÁN MORENO

TÉCNICO DE LABORATORIO

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¡GRACIAS!