

PORTUGAL

PEDO-CLIMATIC CONDITIONS:

Warm and temperate Mediterranean climate, with a distinct wet season in winter.

CROP: Chickpeas

Chickpeas were shown to be very adaptable to the Portuguese climate. Using regenerative agricultural practices with well-known adaptable cultivars, yields of more than 2,8 tons per hectare can be feasibly achieved.



Picture 1: Sprinkler irrigation set up on the chickpea trials (Source: Beotanics)

Since the crops tested in Portugal were pre-commercial varieties, the recorded yields do not correspond to the real yields that can be achieved by growing some of the local varieties.

Given the high yields that can be produced, growing chickpeas in Portugal is a promising option. Additionally, chickpeas can be eaten both in their raw form and when the dried form is cooked, plus the demand for high-protein crops and related products is continuing to grow.

In field trials over the past three years, the '3282' cultivar produced the largest yield (2.8t/ha), while the other cultivars only partially performed, with an average yield of 1.16t/ha. Aphid attacks were observed with all varieties during growth and development.

Chickpeas typically grow to a height of 0.5-0.7 metres. The seeds are contained in pods, which open when the plant starts to dry and when the seeds reach maturity. The colour of the seeds ranges from golden yellow to brown.

Cultivar var.	Avg % of germination	Avg plant density	Avg yield (kg/ha)
3279	14%	12	1657.5
3280	9%	6	1022.5
3281	34%	30	1292.5
3282	24%	19	2785
3283	12%	10	1275
3284	2%	3	577.5

BEST AGRICULTURAL PRACTICES:

● Organic regenerative practices applied:

- Inoculation with Rhizobium bacteria. This didn't significantly raise the yield, although it could be due to the nature of the chosen pre-commercial variety.
- Foliar spraying with organic products for pest and disease control.
- Additional irrigation, especially when the crop is still growing.
- Three mechanical weedings during the growing season.
- The remaining biomass was incorporated into the soil in the form of green manure, which improves soil health.



*Picture 2: The size of the chickpea plant on harvest day (21.07.2021.)
(Source: Beotanics)*

● Best practices for sowing :

- Soil preparation should involve shallow ploughing of up to 30 cm, with lower applications of nitrogen, given that chickpeas are a legume.
- Sowing should be shallow, at a depth of 4 cm, with row spacing of 50 cm and a density of 50 plants per square metre.
- The most suitable time for sowing quinoa is from February to March, although it performs very well even when sown in December, using a mechanical or pneumatic seeder (Table 2).

Cultivar var.	Sowing dates	Germination rate
CASAL VOUGA	November - February	88%
M1	January - April	92%
A1	December - March	89%
C1	December - March	93%

- **Best practices for managing the crops chosen:**

- Soil analysis.
- Proper fertilisation, based on soil and plant needs.
- Proper sowing (on time).
- Seed inoculation.
- Preventive control against pests and diseases.
- Regular irrigation.
- At least three mechanical weedings.
- On-time harvesting.

- **Best practices for harvesting the chosen crops:**

- June to August, depending on sowing time.
- Harvesting with a mechanical harvester.