CHICKPEAS (Cicer arietinum L.)

Crop rotation – Chickpeas are a soil-enriching crop and are grown before cereals. When included in crop rotations, they improve soil fertility and may also help to more efficiently exploit soil, especially in inland hilly areas where production alternatives are few.

Soil tillage – The main tillage should be deep (even over 50 cm ripping) and should be preferably done in summer, incorporating the residues of the previous crop and thus favouring the accumulation of autumn rainfall. Tillage is even more important if the previous crop was a green manure crop. Shallow tillage may be sufficient in particularly light soils. A finely tilled seedbed is not required, because chickpea seeds germinate and emerge quite regularly even in coarse-textured soils, provided moisture is sufficient. In this case, it may be useful to roll the soil with light rollers after sowing, thus ensuring better seed-to-soil contact.

Sowing – Chickpeas are generally sown from late winter to early spring, thus avoiding late-winter cold periods and Ascochyta rabiei infections and allowing ease of weed control. In southern areas characterized by high temperatures, low spring-summer precipitation and minimal risk of frost, it is possible to plant chickpeas in autumn (when cereals are usually sown), thus allowing the crop to use the water retained by the soil after autumn-winter rainfall throughout the majority of growing season. When sown in autumn, plants grow better and the first pods set higher on the stem, which is important for mechanical harvesting. Field trials have shown that grain yields are much higher when chickpeas are sown from November to January than when sown in spring. However, cultivars resistant to A. rabiei should be chosen for autumn sowing. The seed must be placed at a depth of 4-6cm; if placed deeper, growth is generally stunted and flowering delayed. Sowing in rows spaced 40 to 50cm, depending on agricultural implements available for weeding, is the most rational choice and reduces seeding rates to a minimum. Since size and weight of seeds may differ remarkably according to variety, seeding rates may vary accordingly. Suggested densities ranges from 20 to 60 plants per m² and seeding rates from 50 to 150 Kg/ha, depending on soil and plant characteristics. Lower rates are preferred for the most fertile and toughest soils, whereas higher rates should be preferred for erect apical-production cultivars. The hardiness and plasticity of this plant make up for its lower density by increasing the number of pods per plant and maintaining the same grain unit weight and size. The average seeding rate for Kabuli varieties is 80-100 kg/ha, i.e. about 30 plants per m². For early and cold-weather sowing, increases of up to 20% are acceptable.

– Generally, local ecotypes are grown. However, very interesting varieties have been recently registered in the Italian Register, both autumn-seeded varieties such as Califfo, Sultano, Pascià, Otello, Emiro, Visir and Alì, which have been tested in production exceeding three tons, and spring-seeded varieties such as Principe, Galia, Molian, Corlian, Etna and Vulcano.

Fertilization – Even though they remove a remarkable quantity of mineral elements, Chickpeas do not require any particular fertilization because, as

explained below, the crop requires nitrogen but can also produce it. Like all soil-enriching crops, the chickpea utilizes soil conditioners very well.
Most of the nitrogen absorbed is of biological origin, from the fixation of atmospheric nitrogen by symbiotic bacteria in root nodules. Opinions differ as to the chickpea's nitrogen-fixing ability, estimated to range from 41 to 270 kg/ha. Small doses of nitrogen (10-20 kg/ha) applied at sowing time can be useful as a "starter" before symbiotic bacteria activity, which depends on root system development, occurs. The response of the crop to phosphatic fertilization is more certain, even if in some cases no yield increases have been recorded. A supply of 40-70 kg/ha of P2O5 seems the most suitable choice for high yields, and also limits the length of the growing period. Potassium should be applied only when deficiency is proven, because soils generally contain enough quantities.

Irrigation – Even if it is a drought-resistant plant, chickpeas may occasionally need irrigation, particularly during germination and early emergence phases in soil with low water-retention capacity.

Weed control – Weed control is important, especially where mechanical harvesting is used. In early growth stages, chickpeas are particularly sensitive to competition from weeds, so in-row hoeing may very crucial to the crop's success. Generally, spring crops should be hoed about thirty days after sowing, and once more if necessary before plants become tall enough to shade the ground and smother weeds.

Harvesting – Chickpeas are harvested when the plants turn yellow and grain moisture does not exceed 13%. This generally occurs between June and July, 90-200 days from sowing, depending on cultivar, sowing period and location. The new cultivars that stand erect and with its first pods higher on the stem, make mechanical harvesting possible. Ordinary combine harvesters can be used, adjusting forward speed, ventilation and beater gaps as appropriate.